

Elements of a Sustainable Trade Strategy for China

Edited by Mark Halle and Long Guoqiang



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State Council, People's Republic of China

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Acknowledgements

We are grateful to Hans-Peter Egler and Deborah Schmidiger from the Swiss State Secretariat for Economic Affairs for their financial and intellectual support at all stages of this project. We thank the Development Research Center (DRC) of the State Council of the People's Republic of China, our key Chinese research partner, for the close cooperation.

We also thank the research partners on this project, whose tireless efforts to consider China's sustainable trade from all angles have challenged our assumptions and, we hope, helped deliver a better sustainable trade strategy: Simon Evenett of St. Gallen University and the Centre for Economic Policy Research, Jiang Qiner of Zhejiang Forestry University, Li Jian of the Chinese Ministry of Commerce, Long Guoqiang and Zhang Liping of the DRC, Jason Morrison of the Pacific Institute, Pan Yue of the Central Party School, Matthew Savage of Oxford Consulting Partners, Song Hong and Yu Lixin of the Chinese Academy of Social Sciences, Joshua Wickerham of AccountAbility, Yu Ling of Renmin University of China, and Simon Zadek of IISD and Harvard.

The London and Geneva study tours were helpful, particularly in exploring the roles of international voluntary standards and the organizations that set the standards. We especially thank those who attended the session on international voluntary standards in London. Special thanks also are given to Yi Shi and Cara Gallen of AccountAbility for organizing the study tours in London. We owe additional gratitude to Simon Evenett for organizing a meeting with the Centre for Economic Policy Research and the U.K. Department for Business Enterprise and Regulatory Reform. We also thank Cheng Shuaihua and Ricardo Melendez-Ortiz from the International Centre for Trade and Sustainable Development, as well as all those who attended the research meetings in Geneva, including Sun Zhenyu, ambassador and permanent representative of China to the World Trade Organization.

And last but not least, we thank David Runnalls, who provided guidance throughout the entire project.

— Mark Halle, Aaron Cosbey and Huihui Zhang
International Institute for Sustainable Development



List of Acronyms

AQSIQ	General Administration of Quality Supervision, Inspection and Quarantine of the People's Republic of China	HCFCs	hydrochlorofluorocarbons
ASEAN	Association of Southeast Asian Nations	IISD	International Institute for Sustainable Development
CCS	carbon capture and storage	ISO	International Organization for Standardization
CFCs	chlorofluorocarbons	LDCs	least developed countries
CO2	carbon dioxide	MOFCOM	Ministry of Commerce of the People's Republic of China
CTNCs	Chinese transnational corporations	NGO	non-governmental organization
EPA	U.S. Environmental Protection Agency	OECD	Organisation for Economic Co-operation and Development
ETI	Ethical Trading Initiative	PCBs	polychlorinated biphenyls
EU ETS	European Union Emission Trading System	R&D	research and development
FDI	foreign direct investment	RCA	revealed comparative advantage
FIE	foreign-invested enterprise	SDRC	State Development and Reform Commission
FTA	free trade agreement	SPS	sanitary and phytosanitary measures
G20	20-Nation Coordination Group	TBT	technical barriers to trade
GAP	good agricultural practice	TNC	transnational corporation
GATS	General Agreement on Trade in Services	TSI	trade specialization index
GATT	General Agreement on Tariffs and Trade	WTO	World Trade Organization
GDP	gross domestic product		
GHG	greenhouse gas		
HACCP	Hazard Analysis and Critical Control Point		



Foreword

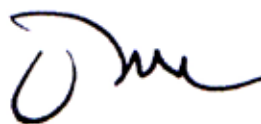
It is in China's best interest to continue pursuing its development in a way that can be sustained over the long run. It is also in the world's best interest to follow a similar path of sustainable development, but it is unlikely the world will follow this path unless China takes the lead. International trade and investment have fuelled China's unprecedented economic growth in the past three decades. It is argued through this publication that trade once again, but *sustainable* trade, could provide China with the opportunity to overcome future challenges and take advantage of current strengths toward its goal of balanced and sustainable development.

The purpose of the research was to explore some of the key elements that could be the basis for a sustainable trade strategy for China. A people-first development strategy for China would recognize that meaningfully employing an increasingly educated population is critical for social harmony. It would also recognize that to achieve sustainable development requires innovation to transform China's current resource-intense production to strategically respond to the increasing pressures from its trading partners and aware consumers.

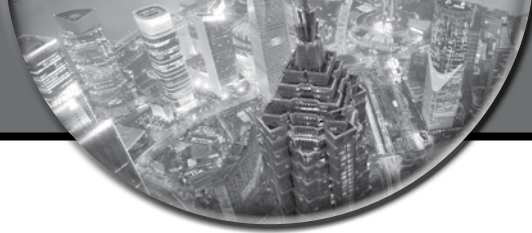
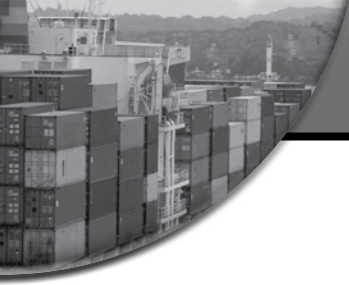
This book collects and summarizes a series of research in key areas that would contribute to a sustainable trade strategy for China to move its production up the value chain, adding knowledge and meaningful employment to service the sustainability requirements of its trade and investment, and thus contributing to its best interests.

As the overview papers and the body of work eloquently describe, China could design a sustainable trade strategy to pursue China's best interests of its trade-led growth while assuring a better living for all—its people and the people of other nations—sustainably.

In closing, I congratulate the authors and editors of the report and the many researchers and others who contributed to this work. I would like to acknowledge the financial and intellectual support of the Swiss State Secretariat for Economic Affairs. I would also like to thank the Development Research Center (DRC) of the State Council of the People's Republic of China for its close cooperation and contribution as our key research partner.




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Introduction

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Trade is not an end in itself, but a means employed to attain a broader goal. For example, countries count on trade to stimulate economic growth which, in turn, creates jobs and secures livelihoods while augmenting government revenue, making other developments possible. But it is these developments that trade policy must serve, not merely the mechanical exercise of increasing exchanges. To the extent that it does, trade policy can be deemed good; but if trade undermines these desirable developments, then it should be reviewed and improved.

Most countries pursue a trade policy principally aimed at maximizing commercial advantage for the export-oriented sectors of the economy. While this approach is understandable and justifiable in narrow terms, it must not be pursued at the expense of other important public policy goals. If the net result of a narrow, mercantilist policy is to grow GDP at a high cost of social marginalization, growth in public unrest or rapid degradation of natural resources and ecosystems, it is easy to conclude that, from a national point of view, the policy is flawed and should be revisited. If, on the other hand, trade policy leads to the sort of growth that creates opportunity for the poorest, reinforces social cohesion and improves the management of natural resources and ecosystems, one might conclude that the trade policy is in line with national aims and is therefore worth reinforcing. The test of any trade policy must not be simply the extent to which commercial exchanges have grown, but how well the country's development goals have been served. The latter is too often neglected.

In 1947, the General Agreement on Tariffs and Trade (GATT) set out the goals of trade relations in material terms. Relations among countries in the trade field were to be "conducted with a view to raising standards of living, ensuring full employment and a large and steadily growing volume of real income and effective demand, developing the full use of the resources of the world and expanding the production and exchange of goods." Human well-being was thought of in terms of "standards" of living, not quality of life and, with the exception of calling for full employment, all of the other aims relate directly and exclusively to economic growth. Indeed, the only reference to the environment (not a term in common use in 1947) was to resources and called only for their "full use."

1947 ushered in the immediate post-World War II world, with most economies slowly rebuilding after a period of conflict and disaster, and with China still in the grips of an internal struggle that would culminate, two years later, in the triumph of the revolutionary forces. In the rich world, two related concepts were very much in the air: the first was that growth in trade would create both mutual dependence and mutual understanding, thus reducing the chances of slipping back into hostility. Indeed, when a country has strong commercial interests in another country, conflict is a serious threat to these interests and there are strong incentives to avoid it. Further, the frequent exchanges that follow from trade relationships improve mutual understanding, providing yet another factor for stability.

The second concept very much on the minds of the participants in the Havana Conference that led to the adoption of the GATT was that protectionist action, taken in response to the Great Depression, had contributed to the build-up of hostility that in turn led, inexorably, to global war. Open trade and prosperity through trade-led growth were seen as fundamental guarantors of future peace.

That faith in open trade appeared to pay off. The post-war decades witnessed not only an unprecedented period of growth but also an unprecedented period of peace—at least among the participants in the global trading system. The goals set out in Havana appeared well on the way to fulfillment. Standards of living rose in all countries participating in global trade. Although full employment remains elusive and continues to fluctuate with economic cycles, the general trend has been upward. There has certainly been a large and steadily growing volume of real income and effective demand. And the rate at which the world's resources have been used in the production and exchange of goods has skyrocketed.



It is the success of this last element that has introduced a growing concern at the global level about the impact of trade on the earth's natural resources and ecosystems. While in narrow economic terms it might be argued that the earth's resources should be exploited to the full in pursuit of economic growth, employment and prosperity, this ignores the inescapable fact that natural resources are finite and that ecosystems can withstand only so much pressure before breaking down. Indeed, growing concern over the impacts of unchecked economic growth led to the emergence of the environmental movement in the 1960s and 1970s and—in the 1980s—to the formulation of the concept of sustainable development.

Sustainable development is not an alternative to economic growth. Indeed, in most parts of the world, advancing sustainability requires building a robust and efficient economy. Full employment also requires a dynamic economy, and demand for traded goods continues unabated. At the same time, sustainability requires moving away from—and eventually discarding—options that, in the short, medium or long term, will begin to undermine and unravel the advances achieved. As is now well-known—and well-accepted in principle, in order to be sustainable, development must not only be economically efficient, but it must also promote social inclusion and justice and make sustainable use of the earth's natural resources and ecosystem services.


This understanding implies that development must meet the triple test of economic, social and environmental viability over time. It follows that trade—as an important source of economic dynamism—must also meet these tests if it is to be a force for sustainability. Trade can no longer be judged simply on the basis of its contribution to GDP growth; it must also demonstrate that it is improving social conditions, preserving or creating livelihoods, improving respect for human rights and advancing social justice; it must demonstrate that its demand for natural resources does not lead to their depletion and that it preserves the range of services provided by natural ecosystems. In short, trade policy must not promote just any sort of trade; it must favour the sort of trade growth that advances sustainable development.

The founders of the World Trade Organization—which incorporated and expanded upon GATT in the mid-1990s—recognized that trade could no longer exclusively serve narrow economic interests, important though these are. The Preamble to the Marrakesh Agreement Establishing the World Trade Organization reproduces the GATT statement of goals almost in its entirety. Interestingly, however, it drops reference to “developing the full use of the resources of the world” and instead calls for expansion of trade and economic relations “while allowing for the optimal use of the world's resources in accordance with the objective of sustainable development.”

Coming only roughly two years after the 1992 Earth Summit in Rio, it is perhaps not surprising that the founders of the WTO recognized that trade must respond to the broader human goal of sustainability. They also recognized for the first time that trade may not be a universal panacea: indeed, “optimal” use of the world's resources should be characterized by approaches that seek “both to protect and to preserve the environment and to enhance the means for doing so in a manner consistent with [countries'] respective needs and concerns at different levels of economic development.”

This complement to the call for sustainability as an overriding objective of humanity recognizes that trade not only must not undermine optimal use of natural resources, it must seek to ensure that trading countries have the means to ensure a healthy environment in the face of the pressures that trade might exert upon them. Perhaps more important, however, it recognizes that countries at different levels of economic development have different needs and might adopt different environmental standards, depending on their development situations and prospects.

So, from a multilateral trading system hell bent on making full use of the world's resources in the interest of



economic expansion, by the mid-1990s we moved to one that (in its aspirations, at least) recognizes that trade must not only contribute to economic growth, it must ensure that this economic growth is compatible with the goal of sustainability and is tailored to the needs of specific countries, given their levels of development. At the time, it is fair to say that nobody fully understood what that implied.

In 1994, when the Marrakesh Agreement was adopted, this shift might have appeared a subtle one, representing little more than an updating of GATT's mercantilist message. Instead, it has proved to be a significant signal of a shift in expectations for the trading system, one that has made its demands with growing insistence over time. What, for example, does it mean in practice to aim for a system of multilateral trade rules that allows for "the optimal use of the world's resources in accordance with the objective of sustainable development"? What changes are required to the existing rules, and what new rules need to be adopted? And how much latitude is available for countries earlier in their development cycles to ensure they have the means to protect and preserve their environments in manners consistent with their needs and concerns?

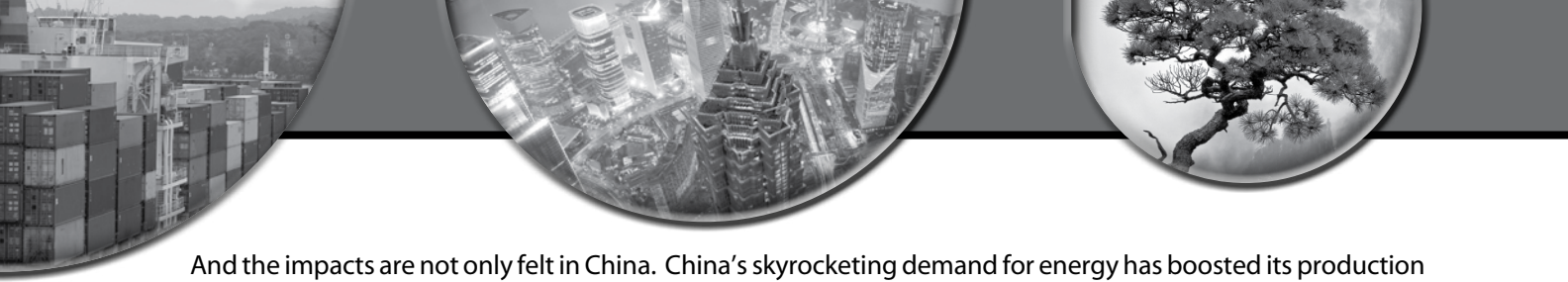
When the preambular text was drafted in 1994, none of these questions had broadly accepted answers and, to a considerable extent, they still do not. What has become clear, on the other hand, is that there is a growing interest in how to take advantage of the benefits liberalized trade can offer while ensuring equitable social development and conserving a healthy environment. It is also clear that the notion that "one size fits all"—that the trade rules fit equally to all countries, irrespective of their developmental stages—is no longer tenable. For each country, there is an optimal balance between opening to trade on the one hand, and preserving the policy space necessary to ensure that trade contributes to the country's development aspirations on the other, a point at which the benefits of trade are maximized while the interests of social justice and a healthy environment are respected. And there is a growing acceptance of the fact that we must now seriously identify where that optimum lies.

. . .

In facing this challenge, China is placed in a particularly interesting position. No country has benefitted more—and more rapidly—from its gradual opening to international trade than has the People's Republic of China over the past three decades. Initially through unilateral action, and since December 2001 as a member of the WTO, China has reaped a rich harvest from trade and investment openness. Not only has export-led growth permitted a growth rate many percentage points higher than its richer peers, it has led to what is perhaps the single greatest development success in the history of humanity—namely, the lifting of hundreds of millions of citizens out of absolute poverty and the creation of a vast middle class in a remarkably short period of time. China has overtaken Japan to become the world's second-largest economy, behind the United States, and it has the third-largest share of world trade behind the United States and Germany.

Clearly, China's phenomenal growth has made it the envy of many other countries, both for the pace of its growth and for the fact that this growth has been sustained at high levels for a long period of time. Trade has transformed the Chinese economy, but it also has led to the emergence of a series of problems threatening the sustainability of its economic achievements.

Best known of these are the environmental and social problems that China faces domestically. The growth in manufacturing and the growth in consumption resulting from the demands of a growing middle class have placed enormous pressure on China's environment. The expansion of infrastructure, the demand for building materials, the rapidly expanding fleets of cars and the multiplication of manufacturing centres is putting considerable pressure on China's environment, with the pace of development often overwhelming China's capacity to deal with the consequences.



And the impacts are not only felt in China. China's skyrocketing demand for energy has boosted its production of greenhouse gases so that, in absolute terms, China has become the world's number one contributor to the build-up of atmospheric carbon, overtaking the United States in 2009 (although, on a per-capita basis, China's emissions are much lower).

Competition for energy, mineral and renewable resources has also been growing, driving up commodity prices and exacerbating tensions between China and its trading partners. The need to ensure a steady and reliable supply of raw materials and energy has led to political shifts in the international landscape that has, of itself, led to a rethinking of political strategy. Whether or not there is any basis for it, China has begun to feel "push-back" from its trading partners as it enters into the competition for the ever-scarcer resources on which its economy relies. The growing presence of Chinese companies throughout the world has been noted with apprehension; it has reshuffled the deck and disturbed patterns of privileged trade that date back to colonial times. In this regard, trade policy in China has assumed ever-higher political importance and is ever more closely linked to strategic foreign policy concerns.

Nor is it clear that the option exists to temper growth and demand and to adopt a more cautious approach to trade expansion in order better to plan China's social transformation and ensure that the environmental price paid for its newfound wealth is not too onerous. With over 17 million new entrants into the job market every year, and with a large-scale migration from the poorer central and western parts of the country to the manufacturing centres on the more prosperous eastern seaboard, China is understandably cautious to take any steps for social or environmental reasons that might lead to a downturn in its growth.


At the same time, the question must be posed: Are the patterns of China's trade expansion sustainable over the medium and long terms? If not, what would it take to bring China's trade within sustainable limits? In what way would China develop or amend its trade policy to favour this transition?

In asking itself these questions, China is exhibiting genuine courage. This is so because no country has, to date, seriously examined just how compatible its trade patterns, trade growth and trade policy are with the wider human goal of sustainability. Not even those countries with the loudest public commitment to sustainability—countries like Norway, Switzerland or Canada—have systematically examined the sorts of changes required simultaneously to expand trade and shift their development trajectories onto sustainable paths.

This written volume does not pretend to offer a comprehensive reply to these questions. It is not in itself a plan that will shift China's trade onto a sustainable footing. It is not a blueprint that can be applied by the Ministry of Commerce or placed before the State Council for endorsement. It is, instead, a first reflection of what issues need to be addressed if this transition is to be designed and implemented, and what areas of trade policy offer the greatest opportunities to shift trade onto a more sustainable footing.

The current undertaking is the outcome of a partnership between the Development Research Center of the State Council (DRC) and the International Institute for Sustainable Development (IISD), undertaken with the generous support of the Swiss Secretariat for Economic Cooperation (SECO). DRC approached IISD, through the Chinese Ministry of Commerce, with the request that we work with them in thinking through the foundations for a Sustainable Trade Strategy for China. The project was very much a joint one. Under the leadership of DRC and IISD, an Advisory Group formed and the project was mapped out. Two-person teams were named for each of the technical elements of the project, each team comprising one Chinese and one external expert. This volume presents the result of this collaborative work.

Our work begins with two overview papers: one that reflects, from an international perspective, upon the



term “sustainable trade” and how it should be understood in the context of trade policy—or, more generally, what it might mean to organize trade in a way that is supportive of sustainable development. The second paper chronicles the development of China’s international trade from a national perspective, reflecting upon the need to re-examine trade with a view toward minimizing its negative impact on social and environmental factors and the need to seek common ground between the objectives of open, rules-based trade and sustainable development—a goal that is also very much part of China’s strategy for the future.

The remaining chapters look at the most important areas in which China must seek amendments to its trade policy that will place it on a more sustainable footing. Each of these “technical” chapters is the fruit of a team that joins the efforts of Chinese and foreign experts.

The first of these chapters explores the link between regulation and sustainability, using the electricity sector as an example. If sustainability is the goal, much can be achieved by putting in place the right set of laws, regulations and technical requirements to ensure that any behaviour not aligned with the needs of sustainability is eliminated. Indeed, much environmental and social regulation has, as a central purpose, language restricting the range of acceptable behaviour. This chapter explores the scope for China to regulate a sector critically linked to its export machine in the interest of wider public policy goals.

The subsequent chapter is related, in that it looks at the role of standards and the potential they possess to direct trade into more sustainable channels. Standards are the most common form of “soft law.” They complement rules and regulations, but their effects can be equally determinant on economic activity, even though many of these standards are not set by governments but by the market. It is often said that “if you control the standard, you control the trade,” and it is sufficient to think of the dominance of Microsoft Windows or the GSM standard for cell phones to understand how true that statement is. And, as China has found out, standards set by large purchasers like Wal-Mart or Tesco can have more impact on the sorts of goods that are traded than WTO rules. How China responds to these issues will determine to a large extent how successful it is in international trade and may also improve the environmental impacts of domestic production more broadly.

China is often called “the workshop of the world” in that it manufactures a wide range of goods that end up in the consumer markets of other countries, rich and poor. China’s dominance in this area is often the source of tension with its trade partners as more and more manufacturing is outsourced from the richer countries to China. What few people realize, however, is how little of the rent in the value chain of these manufactured and exported goods remains in China and is available as an investment in sustainability. One of the key trade policy priorities in China has been to “move up the value chain,” not only capturing markets for high-end manufactured goods, but ensuring that as much as possible of the value-added in manufacturing is secured by China. This chapter examines how China might move up the value chain, both for the reasons stated above and to be prepared for the time when the cost of Chinese labour means that it loses the low-end manufacturing market to other countries such as Indonesia or Bangladesh.

Manufacturing, though a central part of China’s trade policy arsenal, does not describe the full range of China’s export economy. Indeed, services are a rapidly growing element of both China’s domestic economy and of its exports. The environmental footprint of services is traditionally deemed a great deal smaller than that of manufacturing and its social impact more favourable. It follows that a sustainable trade strategy for China would be one that favoured the rapid development of trade in services and that increased the proportion of services in China’s export mix at the expense of trade in goods. The fourth in this set of chapters examines this notion and formulates a series of policy recommendations to China as it examines the opportunities afforded by a focus on building the service sector.



China's success as a trading nation and its ability to shift its trade onto a sustainable footing depend not only on its own policy making but on its trade diplomacy—its interaction on trade matters with its bilateral, regional and global trade partners and its action in the international forums in which trade matters are debated, negotiated and agreed. China cannot adopt sustainability as the central pillar of its trade policy simply by acting on its own, and its trade interests might be negatively affected if it sought to do so. This chapter, then, reflects on China's trade diplomacy and examines how China's policy and practice in its interaction with its trade partners can help set the stage for a sustainable shift not only with respect to its own trade, but with respect to the trade policy of its partner countries. If, for example, China were to decide to import wood only from sources certified as following sustainable management practices, it would change the way in which the countries from which it imports wood and wood products manage their forest resources, affecting a significant portion of global production in this sector.

The final chapter in this set recognizes that, increasingly in China as in other countries, the behaviour of the private sector will determine whether a shift to sustainable trade is successful and that public policy has an important role in encouraging the private sector to follow sustainability principles and to ensure that unsustainable practices are phased out. Constructing the policy framework for China's private corporations is complex and of enormous importance. Both because China wants increasingly to develop and market global brands (in line with the strategy to move up the value chain) and because its corporations are increasingly confronted by the market standards of its clients, it is vital that China learn to navigate the shark-infested waters of voluntary standards. This is not enough, however: China will need to determine when and how it should move from being largely a standard taker to becoming a player in standard-setting bodies and, in some cases, to even becoming a standard maker, creating and establishing Chinese standards that dominate because China is the leading global player in that market sector.

This volume, as conceded above, does not aspire to be a road map that determines China's itinerary as it sets sail from the harbour of traditional trade policy toward the final destination of sustainable trade. It is, instead, a first review of the key milestones on that journey—an assessment of the areas of trade policy that must be studied and understood because their management will determine whether, in the end, China shifts away from a traditional trading system generating serious environmental and social dislocation in its pursuit of wealth and favourable economic statistics or whether China will be a world leader in its search for forms of trade that not only generate the economic benefits on which China has based its growth over the past years, but that result in development offering a long-term, high quality of life to its citizens while laying the foundation for a more equitable, more resilient and stable planet.

In undertaking even this modest foray into the uncharted world of sustainable trade, China has proved once again that it is not only a leader in trade growth but an innovator and a leader in the perpetual search for a better way forward.



1

Sustainable China Trade: A Conceptual Framework

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1.0 Introduction

Over the last 20 years, Chinese policy makers have been burdened with the proverbial curse: to live in interesting times. As described in the Chinese overview paper that is part of this series, unprecedented growth in trade and investment has been responsible for historic gains in income and infrastructure for hundreds of millions of people. However, as that paper also makes clear, China faces monumental challenges in maintaining its course and in successfully managing its powerful economic growth to deliver prosperity and security in the long run. From a trade policy perspective, the key question is how trade can best contribute to China's sustainable development.

To answer this question, we need a guiding framework that can help us assess trade's current impacts and assess the policy options that might be considered. This paper sets out one such framework. It begins by defining what we mean by sustainable development in general. It then uses that definition to make the case for change in China's trade policy, briefly surveying the relevant domestic and international trends and drivers and arguing that many of them seem to be taking us in the wrong direction, or at least not moving us quickly enough in the right direction.

The paper then sets up a framework that defines sustainable development in the specific context of China's trade policy, drawing on the definition of sustainable development and the characteristics of China's trade-related economic development. For each element of the framework, it briefly surveys the current conditions in China, noting how progress might be made. More in depth analysis of this type, though, is beyond the scope of this paper and can be found in the other papers completed as part of this project.


Finally, the paper considers the nature of the types of change that might be suggested in the other analytical papers. Three basic strategies for China are described in an effort to help frame the recommendations that come out of the in-depth work and to help policy makers consider how best to guide China toward sustainable development through its trade policy. In closing, the paper puts forward a research agenda that flows from the analytical framework, identifying several lines of inquiry that will help clarify what constitutes good policy for China in pursuing a sustainable trade strategy.

2.0 Defining Sustainable Development

Sustainable development has been a benchmark objective of the international community since the time of the 1992 Rio Summit on Environment and Development, which brought together 172 governments and 108 heads of state. The Summit, which created the Commission on Sustainable Development (which spawned the UN Framework Convention on climate Change, the Convention on Biological Diversity and the Forest Principles), was initiated in response to the landmark 1987 report of the UN Commission on Environment and Development (the Brundtland Report). The Report forcefully made the argument that progress on development and progress on environment were inextricably linked.

The Report, which first coined the phrase "sustainable development," gives us a working definition: "... development that meets the needs of the present, without compromising the ability of future generations to meet their own needs."¹ Brundtland argued, in particular, the overwhelming need for growth in developing countries, but at the same time noted that such growth needed to be of a different quality than that historically experienced by the countries of the OECD.

¹ WCED (1987), p. 42. The full definition, seldom quoted, continues: "It contains within it two key concepts: the concept of "needs," in particular the essential needs of the world's poor, to which overriding priority should be given; and the idea of limitations imposed by the state of technology and social organization on the environment's ability to meet present and future needs."



In other words, sustainable development is development—making people better off—carried out in such a way that it can endure for many generations. This is a useful foundation for our definition of sustainable development, but it is not enough in and of itself. To properly operationalize the concept of sustainable development it must be put into some specific context. That is, at the general level sustainable development is more like a principle than an operational guideline. As with the principle of justice, for example, which can only be operationalized in the context of a specific case, it is impossible to give sustainable development operational meaning until we ask what it means in a specific context. This is the objective of this paper: to ask what sustainable development means in the context of China’s trade policy.²

At the general level, however, it is possible to go further than the Brundtland definition. There is widespread agreement that sustainable development is comprised of three elements: economic, environmental and social. These are often called the “three legs of the stool”—an analogy that emphasizes the interdependence of the three elements; unless all three legs are strong, the entire stool will not stand.³ Economic activity that ignores environmental imperatives will not itself be viable in the long run; for example, unsustainable fisheries and forestry will quickly undercut their own economic basis. And environmental solutions that ignore the need for social improvements and economic health will lead to increased poverty, which leads to environmental degradation and deprives nations of the financial capacity to tackle environmental problems.

This paper will use the three elements of sustainable development as part of its framework. The interdependence of these three elements is particularly important as a basis for our definition. Sustainable development is sometimes misunderstood by the environmental community to be environmentalism with a disregard of the economic and social factors that must necessarily accompany it and of the balancing that must often be done among the three to achieve a successful final outcome. Similarly, some within the business community see sustainable development as a way to paint environmentally destructive practices green—a rationalization for economic growth without due concern for environmental imperatives.

Another widely recognized tenet of sustainable development is the need to look first for solutions that achieve multiple objectives at once. This guidance, which derives directly from the idea of interdependence, is often framed in terms of the search for “win-win” solutions. Such solutions will not always be possible and there will often be a need to strike a balance among the three elements of sustainable development, looking for the best compromise. But, to the extent possible, it makes most sense to first exhaust the available win-win solutions.

The concept of sustainable development used here is strongly related to the “scientific concept of development,” put forward at the 16th National Congress of the Communist Party of China in 2003 and since elaborated and refined. The scientific concept of development builds on previous conceptions of development that included a promotion in the early 1990s of fast, coordinated and sustainable development—a strong drive for economic development but with consideration for the population, resources and the environment—and a promotion of harmony between man and nature. The scientific concept of development seeks to correct the outcome of that promotion, which often saw economic growth and gross domestic product (GDP) as primarily important, to the detriment of society and the people, and of the natural environment, and which resulted in unbalanced economic prosperity.

The scientific concept of development, while still fundamentally based on the need for economic growth, puts people first and takes a long-term view. It looks for balance between development in urban and rural

2 For an analysis of what sustainable development means in the context of multilateral trade policy, see Cosby (2004).

3 Thousands of uses of this analogy, or the similar “three pillars” concept can be found in the literature, used by governments, intergovernmental organizations, NGOs and business groups. See, for example, Dobriansky (2002), Government of British Columbia (2004), World Business Council for Sustainable Development (2002), Scottish Environmental Protection Agency (2002) and Willard (2005).



settings, aiming at enhanced living standards for all. It also looks for balance between economic growth and achievement of other values such as cultural and ethical standards. And it looks for balance between the achievement of growth and the natural environment, which in the end affects peoples' lives and well-being. In that sense, while the scientific concept of development is very much a made-in-China concept, built on the experience of decades of efforts at development and responding in particular to the Chinese context, it is conceptually very similar to sustainable development, and the fundamental desire for balance among economic, social and environmental objectives is a central part of its character. In this analysis, when we use the term sustainable development, we will be referring not only to the concept as internationally understood, but also to the specific understanding as developed within China of the scientific concept of development.

With this general understanding of sustainable development in mind, the next section turns to a brief overview of domestic and international trends, arguing the need for a sustainable trade strategy for China. Following that, the analysis moves from the general to the specific and the paper lays out what sustainable development means in the context of China's trade policy.

3.0 Domestic Trends

The domestic trends in areas related to trade policy are surveyed in depth in the Chinese overview paper produced as part of this series. It is not the intent of this paper to reproduce that analysis here. Rather, this section will give brief highlights of the trends noted in the Chinese overview to support the argument that a sustainable trade strategy for China is necessary, considering trade's economic, environmental and social impacts.

A fundamental underlying factor is the structure of Chinese trade, one characteristic of which is unprecedented growth over the last 20 years. In that time, GDP maintained an annual average growth rate of over 10 per cent, increasing almost 900 per cent from US\$296 billion in 1986 to US\$2,644 billion in 2006,⁴ though projections for 2009 are substantially lower. Exports of goods and services served as a powerful driver for this unprecedented growth, growing as a percentage of GDP from 11.8 per cent to over 40 per cent, and with value of merchandise exports increasing by more than a factor of 30.⁵ The open-door policy that underlaid much of this growth also involved a torrent of foreign direct and portfolio investment, which rose from US\$1.9 billion in 1986 to just under US\$100 billion in 2005.⁶


Another characteristic is changing composition. Over the last three decades, China has transformed itself from an exporter of primary products to an exporter of manufactured goods. Primary products went from 54 per cent of exports in 1978 to 5.5 per cent in 2006, while manufactures grew from 46 per cent to 94.5 per cent. But while the quality of trade is improving, China is still overwhelmingly a manufacturer for brands owned and marketed by others. Much of China's export stream is processing trade (52.7 per cent in 2006), which involves assembly of imported manufactured and high-tech components, meaning relatively little value added is contributed and little rent is captured. Low research and development (R&D) in China and a predominance of foreign-owned enterprises in the export sector (58 per cent of total exports in 2006) mean few patents and little China-based branding. In the services sector, where the quality of jobs is often argued to be higher, China has a chronic balance of payments deficit.

From an economic perspective, then, the challenges are clear. China generally derives too little rent from the place it occupies on the international product chain. The major value added portions of that chain go to brand owners, innovators and merchandisers, not to assemblers of the products sold. Associated with this

⁴ World Bank (2007a).

⁵ *Ibid.*

⁶ *Ibid.*



distance from consumers (with thin profit margins, and with the lack of indigenous R&D) is the difficulty many exporters have in meeting foreign product and process standards.

From a social perspective this means that trade cannot fulfil its potential as an engine of development and poverty alleviation. China's per capita Gross National Income is still relatively low, falling slightly below the average for the world's low and middle income countries at \$2,000.⁷ Neither can China's trade fulfil its potential to provide the quantity or quality of jobs that China must create to employ its increasing, and increasingly educated, workforce. The Chinese economy faces the difficult challenge of creating some 13 million new urban jobs annually to accommodate laid-off workers, university graduates, demobilized servicemen and migrant workers from rural areas.⁸

Another underlying factor is the nature of production. China's energy intensity of production is 20 per cent higher than the Organisation for Economic Co-operation and Development (OECD) average.⁹ When coupled with significant growth, from an environmental perspective this means increased pollution associated with energy production: greenhouse gas (GHG) emissions and SO_x (responsible for acid rain), among others. It also means a concern for the security of energy supply and other natural resource inputs (oil, water and minerals). Primary energy demand has tripled since 1980 and energy security is a major concern.¹⁰ China has gone from being largely self-sufficient in energy to being the second largest and fastest growing global consumer, its increase in demand from 2002-2005 being the equivalent of Japan's annual energy use.¹¹ Two thirds of China's larger cities face water shortages.¹²

Waste and effluent from the production process are also much higher than OECD norms, meaning critically poor air and water quality. Of the world's 20 most polluted cities, 16 are Chinese, and estimates of the domestic cost of the country's air pollution range from 3-7 per cent of GDP.¹³ About a third of China's river length is ranked as "severely polluted," and a quarter of coastal waters are "highly polluted."¹⁴

From a social perspective, the cost of this is significant health impacts, primarily from poor air quality, but also related to soil and water pollution and hazardous waste. Estimates of health damages from the business-as-usual scenario by 2020 includes 600,000 premature deaths in urban areas, 20 million cases of respiratory illness per year and 5.5 million cases of chronic bronchitis and health damage.¹⁵

Water quality problems typically also impact livelihoods in sectors, like in-shore fisheries and aquaculture, that depend on clean water. Annually, some 300 million people suffer from water-related illnesses and more than 30,000 children die annually as a result of drinking polluted water.¹⁶ The disruptive social impact of climate change is also worth mentioning, though it looms further in the future than the impacts of other forms of pollution. To take just one type of impact as illustrative, the *Intergovernmental Panel on Climate Change* (IPCC) predicts that by 2050 fully one quarter of the Himalayan glacier cover on the Chinese side will have melted, significantly decreasing the source of China's great rivers on which hundreds of millions depend for agricultural livelihoods: the Yangzi, the Yellow and Mekong rivers.¹⁷

7 World Bank (2007a).

8 Liu (2007). Note, though, that at the same time, some sectors in coastal areas like Guangdong and Fujian provinces are facing serious shortages of workers with technical skills.

9 OECD (2007).

10 IEA (2007).

11 *Ibid.*

12 *Ibid.*

13 OECD (2007), p. 65.

14 *bid.*

15 *Ibid.*, p. 239.

16 Ministry of Water Resources (cited in OECD, 2007, p. 239).

17 IPCC (2007).



The full sustainable development challenges of China's trade are surveyed in greater detail in other papers produced for this project. While these trends are well understood by the Chinese government, and while the government has taken significant actions to address them, taken as a whole they make a strong case for developing a sustainable trade strategy.

4.0 International Trends

Several international trends also underscore the importance of a sustainable trade strategy for China. It is difficult to write of trends in the thick of a period of turbulence and dynamism in the global economic system that has few if any precedents in modern history. The current global financial crisis has not yet run its full course and we have not seen the end of its spillover into the real economy. How those impacts will play out, and their full implications for sustainable development in major developing countries such as China, is impossible to say with certainty.

Nonetheless, this section will look at several key drivers that have been important, and will likely continue to be so, in determining an appropriate sustainable trade strategy for China:

- The global economic crisis;
- Trends in commodity markets;
- The multilateral system of trade; and
- The global natural environment.


The global economic crisis—The year 2008 will likely be long remembered as the beginning of a deep and possibly prolonged recession in the global economy. We have not yet seen the bottom of a downward spiral that started with a credit crunch born of the failure of the sub-prime mortgage sector in the U.S. and that rippled out to impact other banks that had invested in packaged mortgage products from the U.S. market with little understanding of the underlying worth of the assets. The credit crisis critically impacted real markets, as firms were unable to access normal modes of operating credit, much less credit for future investments. Layoffs and business failures have ensued as the fallout from the financial crisis has spilled into the real economy.

Global GDP is expected to contract by 1.7 per cent in 2009—the first such contraction on record.¹⁸ High income countries are expected to be even harder hit than most with OECD countries expected to contract by an unprecedented 3 per cent. Volume of world trade is likewise expected to shrink, by an estimated 6.1 per cent in 2009, with an even heavier reduction for manufactured goods.

To date the efforts of central banks (that have cut rates dramatically, even taking the unprecedented step of internationally coordinated cuts) and policy makers that have pledged to inject huge amounts of liquidity into the system, have counted for little. The US\$787 billion stimulus/bailout package negotiated in the U.S. has so far failed to translate into significantly increased lending by the banking system. And statements of coordinated action from the world leaders seem to have had little effect in the markets, though the March 2009 G 20 meeting pledges seemed to have some detectable impact on investor confidence.

In November 2008, China announced a US\$587 billion package of spending on infrastructure and social welfare to stimulate the domestic economy and insulate it from the fallout of the crisis. China's banks were

¹⁸ World Bank (2009a) (GEP). The subsequent figures in this paragraph are also from this source.



not exposed to the toxic assets that sparked the financial crisis, but a significant reduction in exports (down 21 per cent year-on-year in November 2008)¹⁹ has impacted the rate of growth, which is projected to fall to 6.7 per cent in 2009—close to half of the rate for 2007.²⁰ China, though, has emerged better off than most, the result of several factors: one of the most significant stimulus packages of any country; a lower dependence on exports than its Asian neighbours; strategic advantages in key export sectors, such as textiles; and a large foreign exchange reserve.²¹

In such a situation, any sort of prediction is difficult. But history shows clearly that in times of recession the forces of protectionism find their strongest support. The last major global economic downturn—the great depression of the 1930s—was greatly accelerated by the infamous U.S. Smoot-Hawley tariffs, which set off an international round of retaliatory tariffs, greatly exacerbating the existing economic crisis. The tariffs were signed into force by a newly-elected U.S. President Hoover (over the objections of an army of economic advisors), who faced intense pressure to address the beleaguered U.S. agricultural sector and wider problems of national overcapacity.

Despite a G 20 pledge in 2007 not to resort to protectionist measures, a trend to protectionism is evident in some of the domestic stimulus packages, including the U.S. provisions for any federal stimulus to be directed toward U.S. suppliers—the infamous “Buy America” provisions.²² Gamberoni and Newfarmer (2009, p. 1), surveying the increase in trade measures and subsidies proposed or implemented since the advent of the financial crisis, conclude “the trend in protection is up and the full effects of the recession have not yet been felt.”

The most sustained hedge against such protectionism has been the multilateral system of trade rules, which was created as a reaction to the pre-war failure of international cooperation and which has presided over an explosion of volumes in world trade since its creation in 1947. To the extent that the spirit of openness and multilateralism is dampened by the forces of recession, it will be increasingly important to shield China’s exports against attack on whatever pretext, meaning increased attention to: international standards; environmental, health and safety performance of products; environmental impacts from product processing and production; and the spirit of international cooperation enshrined in both multilateral and regional trade agreements.

Trends in commodity markets—Commodity markets have always been characterized by volatility and subject to booms and busts, but even by their normal standards the past few years have been exceptional. Leading up to the economic crisis, prices were at record levels in practically every sector—metals and minerals, oil, food grains and agriculture. Over the period of 2003 to 2008—the longest and strongest commodity boom of the past century—the prices of energy, and of metals and minerals, rose by 320 per cent and 296 per cent, respectively.²³

Since late 2008 these trends have all been reversed with a vengeance. Crude oil prices, which had hit US\$147 per barrel in 2008, dropped to US\$40 in 2009. Prices for lead, zinc and nickel—all closely related to the imploding global automobile markets—dropped 60 per cent or more over the same period. Agricultural commodities showed the same pattern. It is worth noting, however, that even after these drops the prices of almost all commodities are higher than they were at the beginning of the boom in 2003.

19 World Bank (2009b), p. 45 (EAPU).

20 IMF (2009).

21 World Bank (2009b).

22 In reality these provisions merely reflected law that was already on the books—the *Buy America Act*. But they stand as emblematic of the dangers of economic nationalism in the time of crisis.

23 World Bank (2009c) (GEP, 2009).

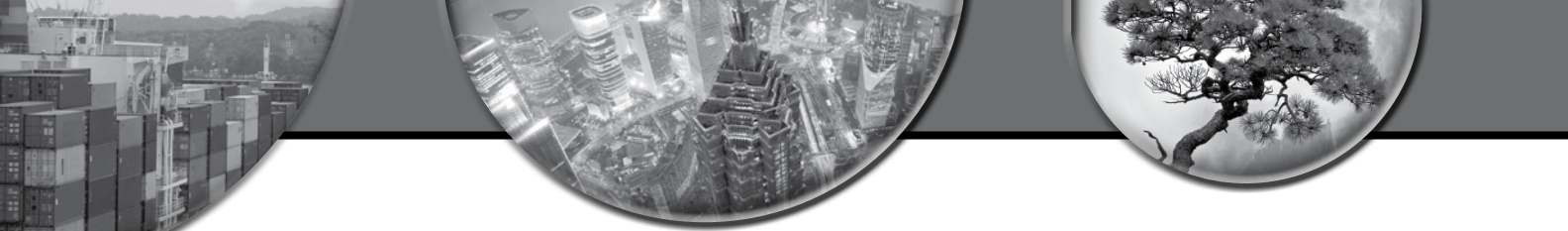
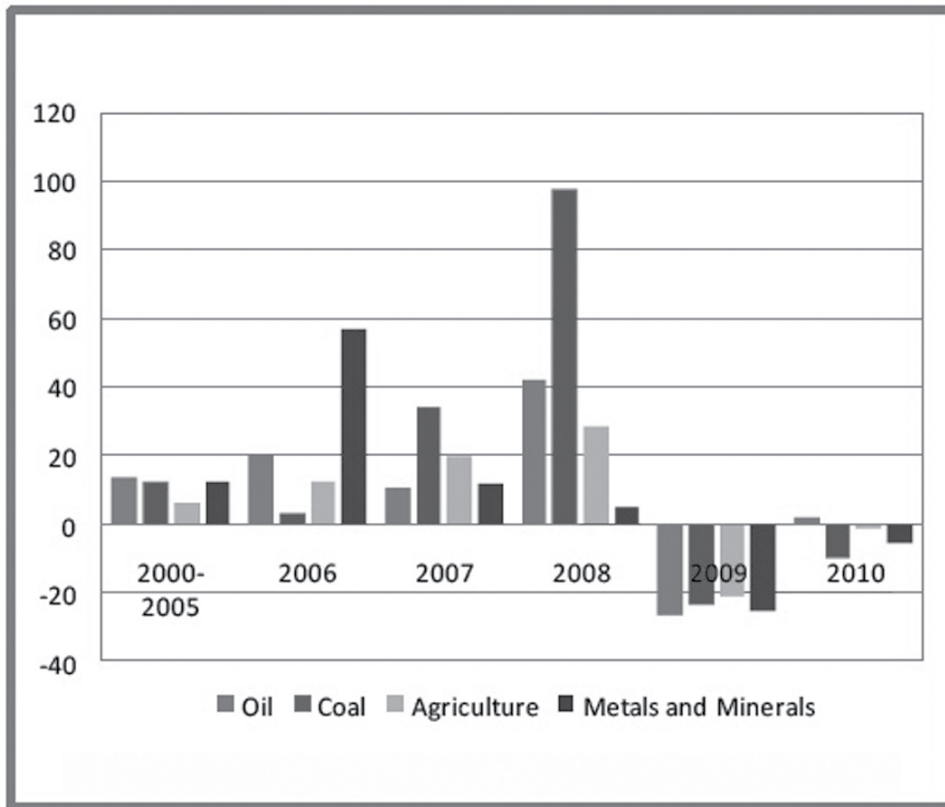


Figure 1: Commodity price changes (per cent). Years 2009 and 2010 are forecasts.



Source: World Bank, 2009c, Table 1.4.

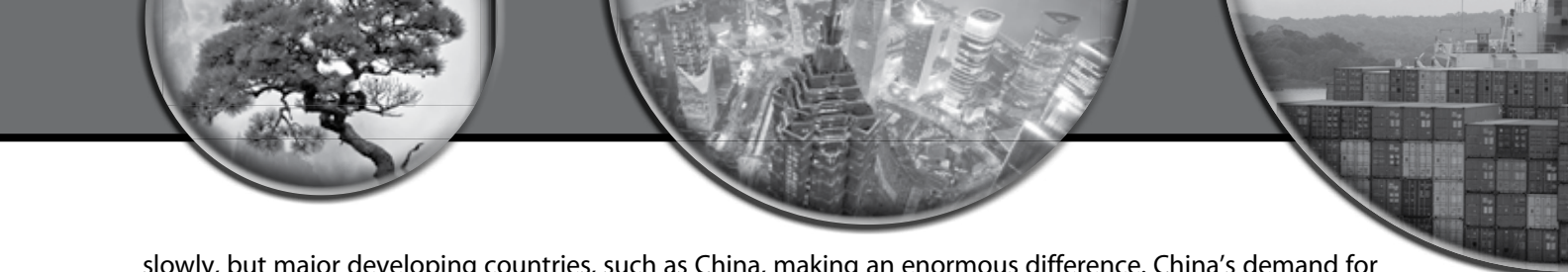
Given their importance as inputs to China's traded goods, particular mention should be made of metals and minerals and oil. Most metals and minerals have seen declining prices in the face of slowing demand. Figure 1 shows the indexed price of metals and minerals forecast to fall by 25 per cent in 2009. A few exceptions: prices for copper have remained relatively strong, mostly due to Latin American supply disruption and aluminum has also remained costly, largely because of tighter regulatory regimes for its key input (electricity). Metal prices are not projected to return to their 2008 heights in the medium term, but nonetheless the government of China has identified long-term security of supply as an important enough issue that it is strategically buying to build up key reserves during these days of low prices.²⁴ Aluminum, iron ore and copper, as well as oil, are all candidates for this type of buying.

Oil deserves special mention because of its role as a primary fuel in the transport of traded goods. Until the hard crash of the present global financial crisis, the international supply of oil had been hard pressed to keep pace with demand. The *Organization of the Petroleum Exporting Countries* (OPEC) exporters had very little slack left in their capacity, which is limited by chronic underinvestment, and supplies from some of the key non-OPEC suppliers, such as the North Sea producers, are beginning to wane.²⁵ This tightness of supply, combined with geopolitical considerations—such as nervousness about the risks of disruption from war, terrorism or domestic unrest in key OPEC and non-OPEC states—created a significant risk premium that is worth an estimated US\$10 to US\$20 per barrel of oil (when oil prices were well below the peak levels of 2008).²⁶ At the same time, demand for oil was hitting record levels with developed country demand growing

²⁴ Simpkins (2009).

²⁵ IEA (2005).

²⁶ Surowiecki (2007).



slowly, but major developing countries, such as China, making an enormous difference. China's demand for oil between 1980 and 2006 almost quadrupled, rising from 1.9 to 7.1 million barrels per day and its projected growth in demand from 2007 to 2030 is 43 per cent of total projected world growth during that period.²⁷ And while there has been a great deal of investment in alternative energy supplies globally, in the end it amounts to no more than a drop in the bucket, particularly for oil, which has few viable substitutes as a fuel for transport.

Oil's effect on transportation has a powerful impact on international trade. It has been estimated that every dollar increase in the price of a barrel of oil results in a 1 per cent rise in average transport costs. In May 2008, when oil prices were around US\$120/barrel, the Canadian Imperial Bank of Commerce (CIBC) World Markets calculated that inflated transport costs were the equivalent of a 9 per cent tariff on all goods shipped from China to North America and declared that the price of oil had eliminated China's cost advantage over U.S.-produced steel.²⁸ The impacts of US\$150/barrel oil, they calculated, were the equivalent of reversing all the tariff liberalization accomplished by the World Trade Organization (WTO) since the 1970s. To the extent that oil prices remained historically high, the importance of a sustainable trade strategy for China was blunted, since the eventual result was less trade overall and a decrease in the contributions, both positive and negative, from trade to China's drive for sustainable development.

Predicting oil prices or even future trends is a game that has created more losers than winners throughout the last four decades. But it seems likely that the days of oil at more than US\$100/bbl are not going to return in the medium term, at least while the world struggles with the impacts of global recession. Even after the recession has receded, the breathing space it has provided will have given us increased total investment in oil production—albeit at a rate much lower than what had been planned—and new technologies for substitutes in transportation, such as mass-produced plug-in hybrids. For the medium term at least, with the World Bank forecasting oil prices to stabilize at \$75/bbl post-crisis, it is unlikely that oil prices will regain their full power to dampen the flows of global trade.²⁹ In the long term, however, the same drivers that pushed oil to the pre-crisis historically high prices will return in force. The most recent analysis by the International Energy Association (IEA) predicts that oil prices will reach US\$200/bbl by 2030.³⁰

The multilateral system of trade—Completion of the negotiations on the Doha Round in the WTO is acknowledged by all to be out of reach for at least several more years. Recently completed elections in India and Brazil have brought to power governments whose intentions with respect to the multilateral system of trade are unclear, but who at a minimum cannot be expected to act as greater champions of that system than their predecessors. A parliamentary election in Brazil in 2010 could bring a similar change with the risk that political will from those key players may be limited. And the world is still guessing as to the ultimate impact of a U.S. Democratic Administration—the Democrats being a traditionally protectionist party, but now led by a strong internationalist. Given a host of other urgent competing priorities, gaining fast track approval for a divisive WTO ratification, even assuming there is a deal to sign, is unlikely to be where the U.S. Administration will want to spend its political capital for several years at least.

Indeed, some wonder whether there will be a deal in the end at all, and point to the contrast between the sluggish and difficult pace of WTO negotiations and the dynamism of negotiations at the regional and bilateral levels.

In general, the receding of the spirit of multilateralism in world trade means a highlighted importance for a sustainable trade strategy for China. An important part of the motivation for such a strategy is the need to

27 IEA (2007) and IEA (2008).

28 Rubin and Tal (2008).

29 World Bank (2009c).

30 IEA (2008).



ensure continued open markets for Chinese exports and outward investment; multilateral agreement has traditionally been the guarantor of such openness. It also means a need to reassess the potential of regional agreements on which China is increasingly engaged in the region.

The global natural environment—From the perspective of China’s trade strategy, the key trend is the increasing public concern for the environment in its key export markets. This is fuelled in the first instance by the hard scientific indicators of worsening global conditions in areas such as climate change and biodiversity. On climate change, the most recent assessment of the Intergovernmental Panel on Climate Change—considered the world’s most authoritative source of information on the subject—has warned that global warming even at existing levels has already impacted several important physical and biological systems.³¹ And it has predicted significant further impacts, including:

- increased risk of flooding for tens of millions of coastal dwellers worldwide;
- increased incidence of extreme weather events;
- reduced yields of the world’s food crops; and
- decreased water availability in many water-scarce regions.

The IPCC warns that the world needs to achieve a 50-80 per cent decrease in GHG emissions by 2050 to have even a 50 per cent chance of limiting temperature increases to less than 2°C—a level considered by many to be the safe threshold beyond which we risk serious and irreversible impacts and the triggering of dangerous positive feedback loops. This level of decrease would be difficult even if we assumed no economic growth over that period, but if we do assume growth the challenge becomes monumental.³²

In the area of biodiversity, the current trends add up to what is argued by many to be the sixth great extinction event in the history of the Earth.³³ The World Wildlife Fund’s (WWF) “Living Planet Index,” covering nearly 4,000 populations of over 14,000 species, dropped by 27 per cent between 1970 and 2005.³⁴ The “Red List” of the International Union for the Conservation of Nature, which catalogues species in danger, counted 16,306 species as “threatened” in 2007, up by 188 species from the previous year.³⁵ The 2007 Red List for the first time also focused on the significant threats to coral reefs, which provide critical habitat as fish nurseries and are threatened worldwide from land-based pollution and warming waters.

In the area of ecosystems services generally, the most authoritative analysis was carried out by the Millennium Ecosystems Assessment (MEA)—a multi-year collaborative scientific effort of hundreds of contributors worldwide, culminating in 2005. It found that “approximately 60% (15 out of 24) of the ecosystem services examined during the MEA are being degraded or used unsustainably, including fresh water, capture fisheries, air and water purification, and the regulation of regional and local climate, natural hazards and pests.”³⁶ As well,

...there is *established but incomplete* evidence that changes being made in ecosystems are increasing the likelihood of nonlinear changes in ecosystems (including accelerating, abrupt, and potentially irreversible changes) that have important consequences for human well-being. Examples of such changes include disease emergence, abrupt alterations in water quality, the creation of “dead zones” in coastal waters, the collapse of fisheries, and shifts in regional climate.

31 IPCC (2007).


32 Jackson (2008).

33 Meyers and Knoll (2001).

34 WWF (2008).

35 IUCN (2007).

36 Millennium Ecosystem Assessment (2005).



The empirical indicators of environmental problems do not matter as much to China's trade flows if they are being ignored by consumers. That, however, does not seem to be the case. The Gallup polls on environment for the U.S. in 2007 found that when Americans were asked what issue would be the most important problem facing the nation 25 years hence, they put environment at the top of the list.³⁷ When asked in 2008 whether they had changed their shopping and living habits over the last five years to protect the environment, 28 per cent of Americans said they had made major changes and 55 per cent reported they had made minor changes.³⁸

Attitudes in Europe and Japan are similar. In France, a 2007 Hongkong and Shanghai Banking Corporation (HSBC) survey found that 44 per cent of respondents claimed to be making changes to their lifestyles to reduce climate change.³⁹ In Japan, a 2007 survey asked what people considered to be the greatest challenges and threats to the world and 72 per cent cited environmental destruction and climate change.⁴⁰

What's more, the trend seems to be toward increased concern. The Japanese survey response was 16 per cent higher than in 2005. Table 1 shows the significant measured increase in U.S. concerns over the environment from 2002 to 2007. It is likely that the concerns are being fed by increasingly alarming reports of environmental deterioration, a trend that if anything looks set to worsen in the coming years. It is not yet known whether the economic downturn associated with the current financial crisis has affected consumers' environmental sentiments, but it likely has at least dampened the enthusiasm for environmental goals, if history is anything to go by.

Table 1: Summary of U.S. environmental attitudes: 2002 versus 2007.

	March 2002	March 2007	Change
	Perçent	Perçent	Perçent
Environmental quality "getting worse"	54	67	+13
Immediate, drastic action needed	26	38	+12
Worried "a great deal" about environment	35	43	+8
Environmental conditions "only fair/poor"	52	59	+7

Source: Saad, 2007 (Gallup News Service).

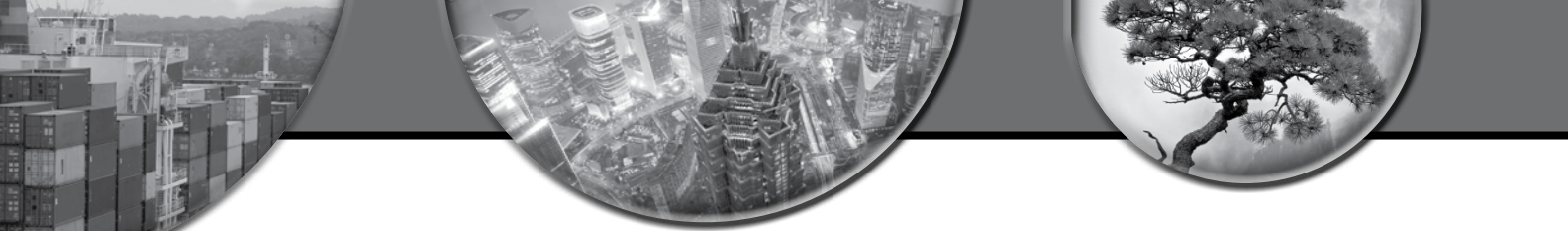
Most of the trends seem to underscore the importance of a sustainable trade strategy for China. Current trade patterns are not achieving their full potential to contribute to the environmental, the economic or the social aspects of sustainable development. And internationally the potential for a decline in multilateralism and the increasing concern over the natural environment seem to reinforce the message. The increasing costs of transport may, in the longer term, decrease the importance of trade to China, but in the short to medium term trade will still be a key part of the Chinese strategy for moving forward.

³⁷ Saad (2007).

³⁸ Jones (2008).

³⁹ HSBC (2007).

⁴⁰ Bertlesmann Stiftung (2007).



5.0 A Strategic Framework for Sustainable Trade

A sustainable trade policy for China must go beyond a strict focus on trade itself, to the wider impacts of trade and to the various elements of national policy that impact on trade in turn. The framework laid out below sketches out the scope of such a strategy. To illustrate how the strategy applies to trade policy, most of this section is devoted to briefly describing how the elements of the framework might contribute to the achievement of sustainable development.

It is comprised of four main elements:

- Sustainable trade in goods;
- Sustainable trade in services;
- Sustainable flows of foreign direct investment; and
- Sustainable flows of outward direct investment.

Each of these themes is further broken down into a consideration of environmental, economic and social impacts, in line with the definition of sustainable development. The remainder of this section is devoted to fleshing out the specifics of the impacts encompassed by this framework.

5.1. Sustainable Trade in Goods

China is not the first country to experience a trade boom, but it is the first to experience one quite so powerful and sustained. As noted above, exports of goods and services as a percentage of GDP grew from 11.8 per cent in 1986 to over 40 per cent 30 years later, and the value of merchandise exports increased over 30 times. In just the three years between 2003 and 2006, exports increased by over 120 per cent.⁴¹ Imports followed the same trend, though at a lower rate, growing by 91 per cent in the same period.⁴² This kind of phenomenal growth presents a challenge to China's policy makers: how to ensure that it contributes to the goal of sustainable development?

In answering this question, this paper will follow the framework set forth in Section 5.0 to look at China's trade in terms of its environmental impacts, its economic sustainability and its social impacts, and to ask how China might ensure that its trade evolves to help foster sustainable development. A schematic diagram of the framework as it applies to sustainable trade in goods is shown below in Figure 2.

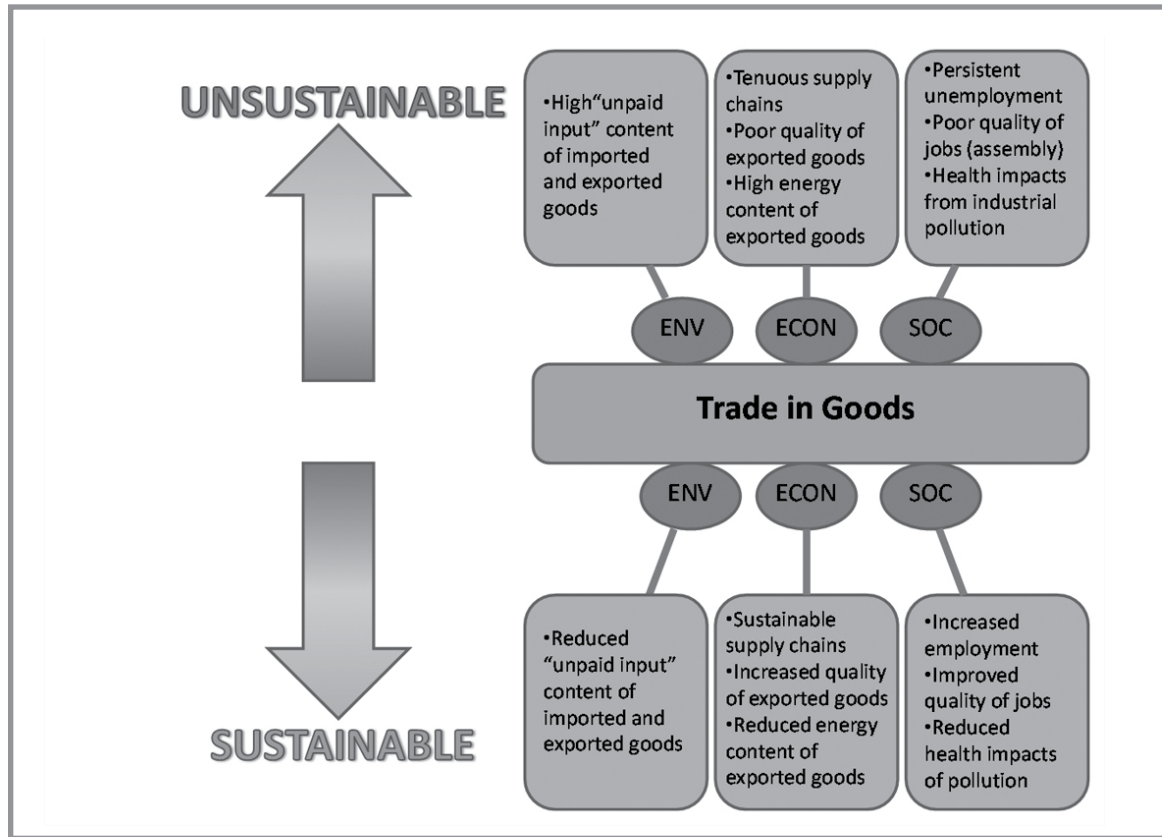
5.1.1 The Environmental Impacts of Traded Goods

In elaborating a sustainable trade strategy for China, one key concern is that trade should not contribute unduly to environmental damage and should in fact contribute to environmental integrity, in line with the objective of the 11th Five-Year Plan (FYP) to conserve resources and protect the environment. In that context, the key area on which policy makers might focus in attempting to reduce the environmental content of China's trade is in the area of unpaid inputs, a concept developed in more depth below.

⁴¹ Economist Intelligence Unit Country Profile, 7 September 2007.

⁴² *Ibid.*

Figure 2: Sustainable trade in goods.



Exported goods—The unpaid input content of exports can be thought of as the amount of natural capital China “exports” along with the goods and services it sends abroad. The primary types of unpaid inputs in this context are air and water quality and biodiversity.⁴³ Where a production process needs to degrade these elements of natural capital, they can usefully be thought of as unpaid inputs to that process. The point has been argued by some analysts that if one does include these unpaid inputs in the cost of production, China’s export trade involves a transfer of wealth to the rest of the world. Making China’s trade sustainable will involve lowering the value of those transfers.

OECD (2007) makes the case that air and water pollution are serious concerns in China. Despite impressive comprehensive efforts to reduce the environmental content of manufacturing and processing trade in particular, the scale of production has increased at such a rate as to overwhelm the positive effects of technological progress and tougher standards. In addition to pollution related to energy production, there are concerns about agricultural and manufacturing water effluent and about the generation of industrial solid waste. Industrial air pollution in the form of toxics and volatile organic compounds is also a concern. The Green GDP Accounting Research Project found that in 2004 the costs of environmental degradation—including air and water pollution, solid waste creation and pollution accidents—in China amounted to more than 3 per cent of GDP.⁴⁴

Biodiversity loss is also a concern. Though there have been significant efforts to come to terms with the biodiversity impacts of traditional Chinese medicine exports in particular, several species of flora and fauna are still threatened

43 The need to lower intensity of use of market-valued resources (such as mineral resources) is discussed in Section 5.1.2, The Economic Sustainability of Traded Goods.

44 SEPA/NBS (2006).



by export trade from China.⁴⁵ The biodiversity content of exports as considered here would only include species harvested in China; imports and transshipment of endangered species is also an issue and is discussed further below.

The wider problem to be addressed is the environmental content of *all* production in China, not just production associated with exports. The point is that exports, with a value of over 37 per cent of GDP, are responsible for a significant portion of these economy-wide problems.⁴⁶ As such, lowering the environmental content of exported goods deserves attention in any overall effort to make China's foreign trade more sustainable. The Government of China has recognized this challenge and begun to deal with it through tariff structures and trade prohibitions that punish inefficient, polluting and high-resource consuming exports.⁴⁷

There have also been elements of a positive approach to lowering the unpaid input content of trade, such as the promotion of green foods exports from China and of China-made eco-labelled products. The pursuit of these kinds of niche green markets has significant potential.

Imported goods—Phase I of the China and Global Markets project looked at three commodity chains for imports to China, with waste electrical and electronics equipment (WEEE) being considered as one import. The other two were forest products and cotton. A second phase is underway looking at three additional commodity chains, tracing the story and impacts of China's demand for them as imports, and includes:⁴⁸

- copper;
- fish and fish products; and
- palm oil.

One hypothesis to be tested is that the chain of production, processing and transportation that brings these goods to China is environmentally destructive in the countries involved. In the forestry sector, for example, the sheer scale of import growth—from 20 million cubic metres of round wood equivalent in 1995 to 75 million cubic metres by 2003, with projections of 100 million by 2010⁴⁹—gives rise to concerns about sustainability of supply and loss of biodiversity. While OECD notes that some supplier countries have effective forest management systems in place, it warns that many others have “poor records in forest stewardship.”⁵⁰

Obviously the primary responsibility for environmental sustainability in such supply chains rests with the national governments where the environmentally damaging activities take place. But it can also be argued that China as the consumer should be aware of the nature of that damage, and moreover should play a strong role in helping those countries to address the challenges involved. This argument can be particularly strongly made where the countries in question are part of China's regional sphere of cooperation and influence (where China is beginning to play a valuable leadership role). And it can also be made in cases where the trade involved is illegal or misreported (the forestry sector again is a good example), in which case only the combined efforts of importing and exporting states will be effective in addressing the problem.

45 OECD (2007), Table 6.2.

46 World Development Indicators database. The figure is for export of goods *and* services in 2005.

47 For example, in June 2007 export tariffs were increased for 142 low-end, high-polluting and resource-intensive goods, while export tax rebates on several similar goods were scrapped (Xinhua, 2007).

48 See <http://www.iisd.org/trade/china/markets.asp>.

49 OECD (2007), p. 303.

50 *Ibid.*



5.1.2 The Economic Sustainability of Traded Goods

A sustainable trade strategy for China must go beyond merely focusing on environmental sustainability; it must also address economic sustainability. International trade in goods has been an important part of China's unprecedented drive to prosperity in recent decades, and as such it is important to ensure that it continues to play a role in achieving the objectives China has set for itself in terms of economic development and social wellbeing. In this context, there are at least four important concerns—lowering the energy content of traded goods, ensuring the sustainability of supply chains, ensuring the quality of exported goods and participation in international rule-making forums. Each is examined below.

The energy content of China's exports is the amount of energy embodied in the value added of those exports. In other words, energy content is the total amount of energy needed to produce a good, minus the amount of energy needed to produce any imported components. There are several reasons to aim at reducing this figure, not all of which are economic, including: increasing energy efficiency increases energy security; it increases competitiveness by lowering prices; and it lowers emissions associated with energy production, including local pollutants and GHGs.

The most direct benefit of lowering the energy content of China's trade is energy security. China is now the third largest importer of oil after the U.S. and Japan—accounting for more than 33 per cent of global growth in demand between 2000 and 2006.⁵¹ While natural gas currently accounts for only a small share of total energy in China, the plan is for imports to fuel a tripling of supply over the current decade.⁵² In 2007, China for the first time became a net importer of coal. The strategy of "going out" by some of China's major oil companies is in part aimed at these concerns, but IEA (2007, p. 179) argues that this strategy may be at most minimally effective.

The potential competitiveness gains from increased efficiency are substantial. Compared to their competitors in OECD countries, average energy consumption per unit of output in key Chinese sectors is significantly higher. Consumption of coal for thermal power generation is 40 per cent higher, and the figures for steel, cement and pulp and paper are 21.4 per cent, 45.3 per cent and 120 per cent higher, respectively.⁵³ Moreover, these are average figures, and they contain some highly inefficient installations, though there are efforts underway to close down the worst of these.

Energy efficiency goes hand in hand with reducing pollutants and GHG emissions. With coal accounting for 90 per cent of power generation in China in 2006,⁵⁴ there is a direct relationship between the reduction of electricity demanded and the emissions of SO_x, NO_x, mercury, particulates and other pollutants associated with coal burning. Coal is also the most carbon-intensive of major fuels, accounting for a major portion of China's GHG emissions. In 2004, the energy content of China's exports was responsible for an estimated 23 per cent of its carbon dioxide emissions.⁵⁵

It should be stressed that energy efficiency in China has improved markedly across the economy, falling by over 50 per cent between 1990 and 2002 (though since then it has begun to climb again)—rates that have few parallels anywhere in the world. The 11th FYP aims for a reduction in energy intensity of 20 per cent between 2005 and 2010—a highly ambitious target. Targets for the development of clean energy sources (including renewable, nuclear and hydro power) are also ambitious, with a goal of 15 per cent of power from renewables by 2020, but even so these will make up only a small proportion of total capacity additions.⁵⁶

51 IEA (2007), p. 80.

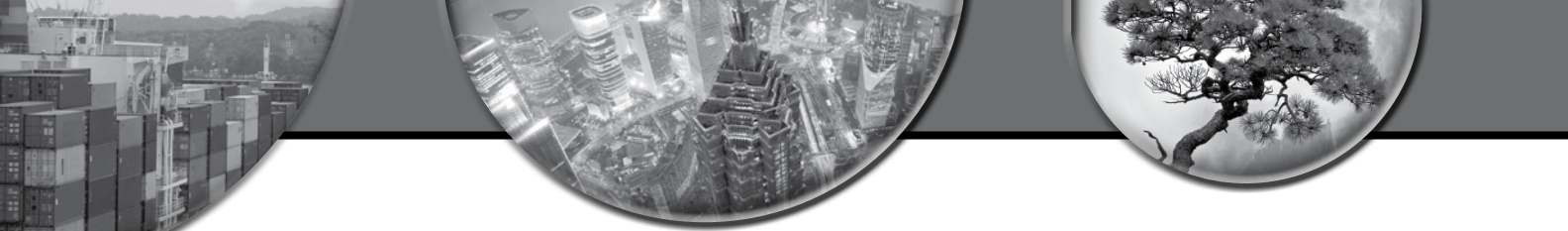
52 CLSA Asia-Pacific Markets (2005).

53 OECD (2007), p. 77.

54 IEA (2008), p. 530.

55 Wang and Watson (2007), p. 4.

56 IEA (2007), p. 274.



Energy conservation is also a high priority; some 160 standards have been promulgated under the 1997 Energy Conservation Law, and various types of economic instruments and pricing reform have been implemented.⁵⁷ Energy subsidies were estimated to have dropped an astonishing 58 per cent between IEA's 2005 and 2006 analyses.⁵⁸ As well, several targeted initiatives (such as the National Development Reform Commission's Top-1,000 Enterprises Energy Efficiency Program) have been undertaken. However, there is still a long way to go.

Sustainability of supply chains—We need to look at key commodity supply chains to assess their environmental impacts in the host states. The sustainability of those chains is also important from an economic perspective because they fundamentally underpin continued Chinese growth.

The meteoric rise in demand for commodities worldwide over the last 15 years has in large part been driven by China. China's combined share of world demand for aluminum, copper, nickel and iron rose from 1990 levels of 7 per cent to reach 15 per cent just 10 years later and are projected to reach 40 per cent by 2010.⁵⁹ China is now the third largest importer of oil, and is forecast to constitute 43 per cent of total global growth in demand between 2007 and 2030 (though it is far from certain that the required investments will be made to allow that kind of growth in global supply).⁶⁰

A key concern is the longevity of supply of many resources, given current known reserves and projected rates of consumption. For example, while population and demand continue to grow and as projected new technologies appear, many key metals have short lifespans; one set of estimates predicts that platinum would be exhausted in 15 years, antimony and silver in 15-20 years, indium (used in LCD screens) in 5-10 years and hafnium (used in computer chip manufacturing) in 10 years.⁶¹ Even for more plentiful metals such as copper, tin and platinum, the salient issue may be the price increases that precede any absolute depletion of reserves. New discoveries, efficiency of use, substitution and new recycling technologies will all work to prolong the availability of non-renewables, but if these are to play their full potential role it will be important to know where the critical bottlenecks are before they become realities.

Ironically, some renewable resources may be an even greater cause for concern. The growth in China's forest products imports was noted above, as were concerns for sustainability of supply from those countries with poor forest management regimes.

The sheer magnitude of China's import volumes of many resources and the unprecedented increases projected in the coming decade make it important to ask whether sustainability of supply may become an obstacle to a smooth development path. In essence, this concern is the well known *energy security* concern, broadened to include not just fuel supplies, but also other supplies critical to economic development. The answers will be useful in guiding China's policies on, among other things, technology development, resource use and outward investment.

Ensuring the quality of exported goods—Maintaining the ability of China's exports to contribute fully to China's development means, among other things, ensuring that Chinese exporters are able to meet foreign buyers' standards, such as those related to health and the environment. Indeed, as tariff barriers are systematically reduced worldwide, non-tariff barriers have become the primary concern for developing country exporters in many sectors. Past experience has shown that there is a valuable role to be played by governments, working in collaboration with industry associations and individual producers, in disseminating relevant foreign standards and information on alternative technologies or products.⁶²

57 OECD (2007), p. 77.


58 IEA (2007), p. 280.

59 CLSA Asia-Pacific Markets (2005), p. 4.

60 IEA (2008), p. 93.

61 Cohen (2007).

62 See, for example, Tewari and Pillai (2005) (discussing the Indian government's response to standards affecting the Indian leather industry);



There are two aspects to this challenge. First, there is the obvious need to assist those enterprises that need information and are striving to better meet foreign standards. As well, however, there is a need to ensure that low-standard or unscrupulous domestic producers do not tarnish the reputation of Chinese exporters as a whole. Several high-profile cases of sub-standard or counterfeit products have in the last year threatened to undermine China's image as a quality exporter.⁶³ Some damage may already have been done, with industry organizations in the U.S. and other major export destinations calling for stricter regimes of testing and monitoring—regimes that will in the end raise costs for all exporters to those countries—and reports of orders to Chinese suppliers being cancelled.⁶⁴ But more worrying is the longer-term overall erosion of China's image as a producer of high quality goods—an image that is central to the objectives of the 11th FYP in transforming the mode of China's trade growth from quantitative to qualitative.

The various agencies responsible for domestic standards take this challenge seriously, and are closing down offending facilities and pursuing criminal charges against suspected perpetrators. The broader, more difficult, challenge is strengthening the domestic regulatory regimes such that they can effectively police the conduct of a daunting number of producers across many sectors.

Participation in international rule-making forums—Another way in which China might contribute to the economic sustainability of its export sector is to actively engage in the international processes by which trade-related international standards are set. There are several such processes, both organizations and treaties, affecting different aspects of trade:

- International Organization for Standardization (ISO);
- World Intellectual Property Organisation;
- Codex Alimentarius Commission;
- International Office of Epizootics;
- International Electrotechnical Commission;
- International Accreditation Forum;
- International Organization for Legal Metrology;
- International Plant Protection Convention; and
- International Treaty on Plant Genetic Resources for Food and Agriculture.

In these settings, decisions are made that determine the rules by which exporters around the world must play. While the processes are mandated and designed to be sensitive to the needs and circumstances of developing countries, this is a difficult task given that developing country participation is often limited, for financial, technical and human resources reasons.⁶⁵ China's efforts in this regard are undoubtedly

PRCEE (1999) and UNCTAD (2003) (discussing the Chinese government's response to standards affecting the leather, footwear and textile industries).

63 Barboza (2007). Particularly worrisome are those cases where the results were horrific and newsworthy, such as toxic ingredients in medicines, pet food and infant formula, and high lead content in children's toys.

64 Lipton and Harris (2007).

65 Henson, Preibisch and Masakure (2001).



more effective than those of most developing countries, but the challenge remains important.

5.1.3 Social Impacts of Traded Goods

The 11th FYP sets a target of increasing trade in goods from \$142 billion in 2005 to \$230 billion in 2010. But it also focuses on changing the mode of growth, from sheer growth in quantity to an improvement in quality. This evolution has already been going on, as China's domestic capacity to produce input goods increases, the share of processing trade decreases, and technologically sophisticated goods account for a growing share of China's exports.⁶⁶

But if China's international trade is to play its full potential role in supporting the social aspect of sustainable development, it still has far to go in this direction. In a detailed summary of the challenges ahead, Ministry of Commerce Vice-Minister Wei Jianguo has argued that China's current export pattern is strongly characterized by "low-level, low-grade, few brands and low return."⁶⁷ While China's share of processing trade is decreasing, it still accounts for some 55 per cent of exports, and for many products China does not control R&D or marketing, but merely acts as manufacturer.⁶⁸ The problem with this mode of trade is that the greatest rents in the supply chain accrue not to the manufacturer but to those controlling the marketing and the technology—the owners of the internationally recognized brands.

This means, first, that less income accrues to China as a result of trade than would otherwise. In general, higher levels of income contribute to social sustainability, though it matters to whom that income accrues. It also may mean that the quality of employment is less than it otherwise would be, involving overwhelmingly unskilled labour and repetitive or dangerous tasks.

A separate but related challenge is to ensure that the evolution of China's trade patterns contributes to increased *quantity* of employment. It remains to be seen whether a move away from a factor-intensive growth model can be made to do this or whether it will in fact aggravate the problem. It is predicted that there will be a shortage of some 10 million jobs over the period of the 11th FYP, as the population over 16 grows (by 5.5 million per year), migrant workers add to the urban workforce (6.7 million in 2006) and the continuing reform of state-owned enterprises further swells the ranks of those looking for work.⁶⁹

5.2 Sustainable Trade in Services

Chapter 4 of the 11th FYP sets ambitious targets for the development of China's services sector and trade in services. By 2010, value added in the services sector as a percentage of GDP should have grown 3 per cent over 2005 levels. And by 2020, value added from the sector should reach 50 per cent of GDP, up from just under 40 per cent in 2006, with service exports reaching \$400 billion by 2010.

This push is in recognition of the varied benefits that such a restructuring might bring for China, including support for a competitive exporting sector, industrial upgrading and a further decoupling of economic growth from environmental damage.

Much of the discussion below centres on investment, although there is a separate section on investment (Section 5.3) that follows. One of the key modes of services trade is through investment (so-called **Mode 3, or commercial presence**), as when a foreign investor establishes a service-providing business in China.

66 Li and Syed (2007).

67 Wei (2006).

68 *Ibid*; Zheng and Wang (2007).

69 Liu (2007).

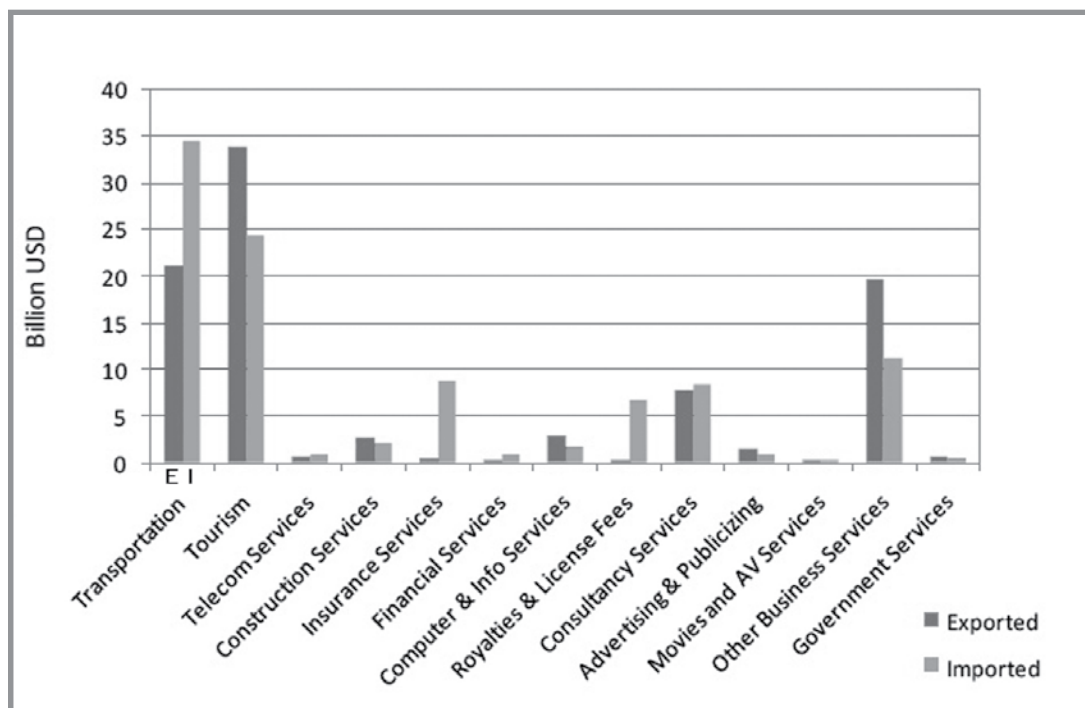
As such, it is not possible to talk about trade in services without at the same time talking about services-related investment.

A schematic diagram of the framework as it applies to sustainable trade in services is shown in Figure 3.

5.2.2 Environmental Impacts of Services Trade

Many services have few if any environmental impacts, being benign labour-intensive economic activities. But this cannot be said of all services. By far the two largest elements of China's traded services are transportation (mostly commercial sea transport) and tourism, which together accounted for 60 per cent of exports and 58 per cent of imports in 2006 (see Figure 3).

Figure 3: China's trade in services (2006).



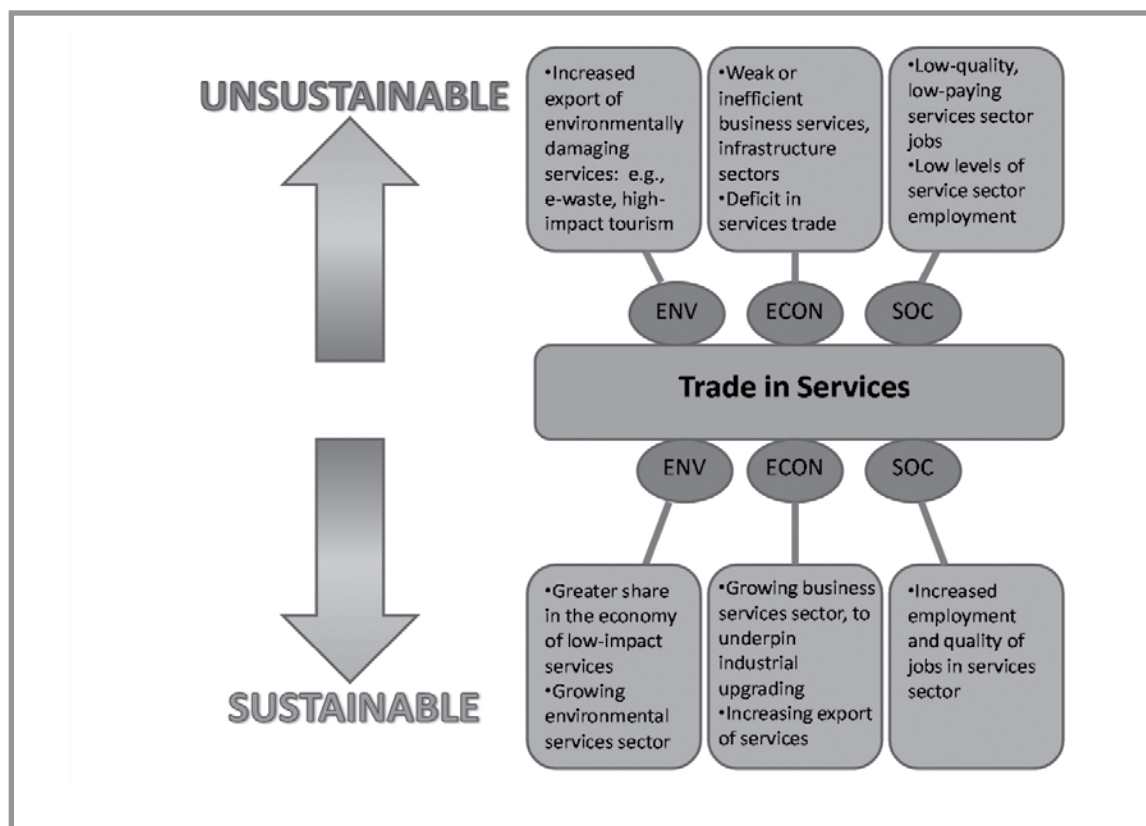
Unlike business services or financial services, for example, these two sectors can in fact be environmentally damaging. Existing modes of transport rely exclusively on polluting fossil fuels, though sea transport is the least environmentally damaging of the widely available alternatives. And tourism, if unsustainably managed, has been shown to have serious environmental consequences in terms of demand for resources and degradation of visited locales, though there has been little empirical analysis of the impacts in China.⁷⁰ In the end, however, while there are clear and important differences between the various activities that fall under the heading of services, the tertiary sector overall is believed to have a lighter environmental impact than primary or secondary sector activities, and thus growth in this sector is seen as a desirable way to uncouple economic growth from environmental damage. From an empirical perspective, however, a better target

⁷⁰ For an early and comprehensive survey of environmental and social impacts of tourism, see WWF (2001). OECD (2007) cites tourism as one of the major forces for habitat destruction and erosion of biodiversity in China, while also noting its potential to bring in revenue to support the wildlife and habitat that tourists want to see.



for growth would be those specific sub-sectors within the services sector that are shown to consume few resources and create little pollution

Figure 4: Sustainable trade in services.




A notable exception to the good environmental reputation enjoyed by services trade is the “export” of waste management services via the import of hazardous waste or recyclable materials. The Ministry of Science and Technology reports that over 70 per cent of home electronics discarded in developed countries eventually make their way to China, of which only about 10 per cent is recycled.⁷¹ The remainder are subject to crude methods of dismantling and decomposition that emit large amounts of toxic gases and contaminated wastewater. WEEE is a particular concern due to the significant toxicity of the contents, such as lead and cadmium.

Efforts to lower the environmental impact of this type of export of services have been undertaken, such as the regulation and restriction of imports of certain types of waste under the *Law on Prevention and Control of Environmental Pollution by Solid Waste*, the efforts by State Environmental Protection Administration and the General Administration of Customs to combat illegal traffic in WEEE, and the release of the draft *Regulation on Recycling of Used Home Electronics* by the State Development and Planning Commission in 2004. But there is still a long way to go, both in promulgating legislation and in its implementation.

Environmental services can be expected to result in environmental *improvements*. These can include, for example, environmental assessment; environmental monitoring; remediation of environmental disasters; and engineering consulting on projects dedicated to environmental improvement, such as wind energy

⁷¹ Cited in Wang (2007).



infrastructure. To the extent that this type of service is available in China at prices and quality comparable to that available internationally, liberalization of this part of the services sector will have little impact on environmental quality. If, however, better price and quality are available abroad, liberalization will have positive impacts.

From a perspective that is broader than environmental, however, there is a tension between the desire to develop this sector domestically and the desire to open it up to immediately bring in the best of what is available internationally. Economic development might be better served by fostering the growth of those sectors domestically, particularly as there may eventually be export markets for such services. As such, the 2000 Chairs' Report to the China Council for International Cooperation on Environment and Development, delivered in the run up to WTO accession, recommended: "To make environmental services in China mature and developed as soon as possible, and to meet the need of China's increasing environmental protection needs, China needs to open this sector gradually."⁷² But from an environmental perspective it is not clear whether a long-run strategy of domestic excellence or an immediate opening to global excellence would be more effective.

5.2.3 Economic Impacts of Services Trade

China's services sector has traditionally been in a position of deficit with respect to other countries and in recent years that deficit has been increasing. China's balance of services trade in 2001 was a deficit of US\$5.93 billion, but by 2006 this had increased to US\$8.83 billion. As shown in Figure 4, the primary export is tourism, followed closely by transportation (most of which is sea transport). And the primary import is transportation, followed closely by tourism. Other important imports are consultancy (which is also exported), royalties and licensing fees, and insurance services.

From a purely balance of payments perspective, it would make sense to try to increase exports of services, keeping in mind that there may be mitigating environmental and social concerns. This desire to "close the deficit" is at least in part responsible for the ambitious objectives laid out in the 11th FYP with respect to services.

Probably of greater concern, however, was the need for a strong services sector as a support for domestic industry and as a part of an overall strategy for industrial upgrading. There is strong evidence that a country's services sector affects economy-wide growth.⁷³ Business services (such as finance, legal, information and distribution services, and infrastructure services such as communications and transportation) are essential underpinnings of productivity in a modern economy. Repeated studies have shown that openness to Mode 3 investment in these areas results in higher rates of economic growth overall—not just in the opened sectors. China's drive to upgrade its manufacturing sector in particular will depend on high-quality, low-price services.

As with environmental services, the tension is between cultivating domestic excellence in those services sector (which might mean slower growth in other sectors, at least in the near-term, but would temporarily shelter domestic firms from negative employment shocks) and opening up to global excellence with more immediate results for service-dependent sectors. Since joining the WTO, and in the process of regional integration, China has made great strides in opening up its services sector to foreign investment, but more could be done yet if it were decided that liberalization were an appropriate part of a sustainable trade strategy.⁷⁴

⁷² CCICED (2000).

⁷³ For good overviews of the literature, see Hoekman (2006) and Hoekman and Mattoo (2008).

⁷⁴ Mattoo (2002).



5.2.4 Social Impacts of Services Trade

The two most important types of social impact that services trade might have are changes in quality and quantity of employment. These potential benefits depend, however, on the characteristics of the services in question. The many types of economic activity covered under the banner of services trade are hardly a homogeneous bunch. Some will be more labour intensive, while others will provide better quality jobs.

The key question is: what impact will trade policy have on services sector activity and, specifically, what policies can increase the export of services that create more and high-quality jobs? With respect to trade policies and liberalization of services trade, there are two scenarios.

In the first scenario, liberalization of services trade leads to the import of services that create more and better jobs for China. Typically, labour intensive services such as hospitality and retail services provide high employment levels, but it is an empirical question whether these are high quality jobs or not. Less labour intensive services such as finance, insurance, business and information technology tend to be unquestionably high-quality jobs, but may employ fewer people per unit of output.

To add another layer of complexity to the issue, there is a tension between indigenous growth of services sector firms (a long-term proposition in many cases—which might be fostered by maintaining barriers to certain services sector trade) and the import of services (which might initially imply greater employment levels). Another consideration is the fact that domestic development of the relevant sectors will eventually lead to export of those same services, which also has employment implications.

The second scenario depends on the dynamic discussed above—the ability of a vibrant services sector to underpin industrial upgrading. This argument applies in particular to business services such as finance, as well as to infrastructure services in areas such as telecommunications. It can be argued that industrial upgrading does provide better and more jobs, and so whatever policies might lead to that end are good from a social perspective. Again, however, there is a tension between establishing such services domestically and allowing them to be imported—policies that imply very different policy decisions with respect to liberalization in the business service sector. There is also the consideration that domestic development of services might lead eventually to their export, if they can become internationally competitive.

In the end, there are several possibilities. The key decision is probably whether to develop a domestic services sector or to follow a path that allows for the import of services. The answer will differ from service to service and needs to be informed by an assessment of the potential for China to become competitive in the provision of any given service.

5.3 Sustainable Foreign Direct Investment

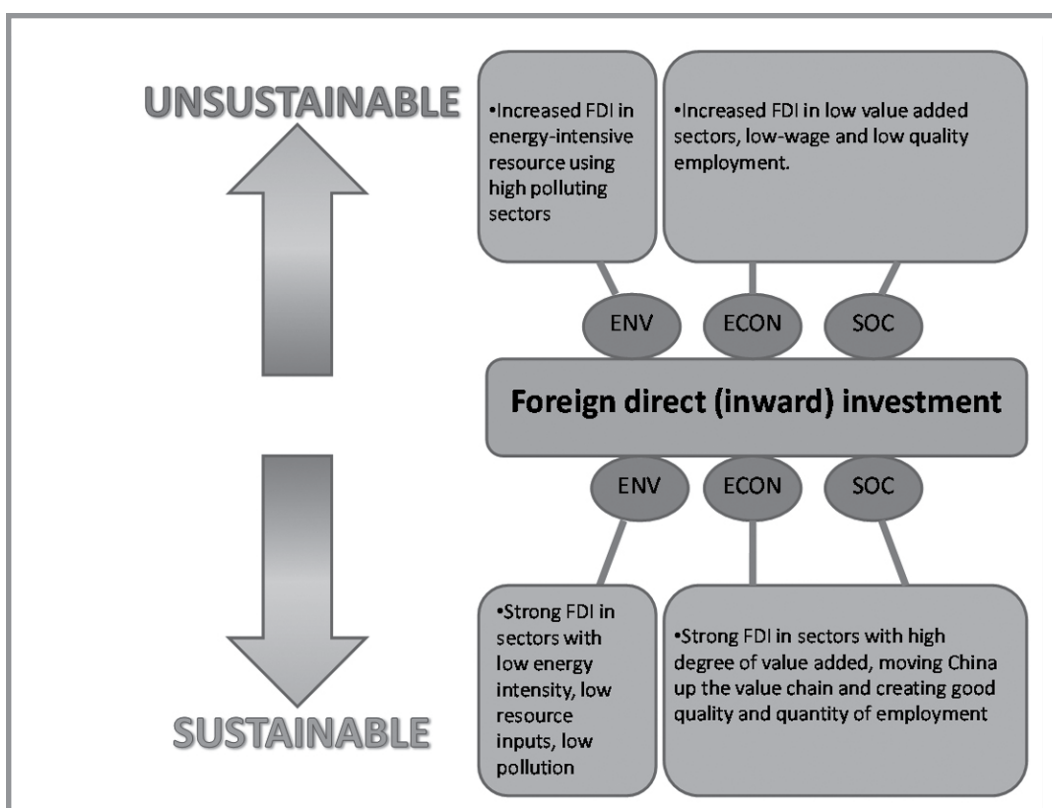
Investment is integrally linked to trade in several ways. Most obvious, a sizeable amount of foreign investment is used as a platform for manufacturing, which relies on imported intermediate goods, the output of which is often exported.

A sustainable trade policy for China cannot ignore the role of investment as a fundamental contributor to trade and as a determinant of the character of trade flows. Nor can it ignore the influence that outward investment might have on China's exports. This second issue is explored in Section 5.4, while this section is devoted to analysis of foreign direct (inward) investment. A schematic diagram of the framework as it applies to sustainable foreign direct investment is shown in Figure 5.

China's record on foreign direct investment (FDI) is remarkable. At almost US\$70 billion in 2006, China's FDI was the highest of any developing country (a distinction it has held since 1993), accounting for over 18 per cent of all developing country inflows.⁷⁵ The recent years' figures are more than double the annual average inward FDI from 1990-2000.⁷⁶ Some 70 per cent of this investment is concentrated in manufacturing.⁷⁷

The challenge for China is to ensure that these considerable flows contribute to the goals enunciated in the 11th FYP and other stated objectives for sustainable development. From an environmental perspective, it is important to ensure that the FDI China receives is in sectors that align with the stated priorities for environmental improvement (low energy, low resource inputs and low waste production). From an economic and social perspective, the challenge is to encourage investment that helps move China up the value chain and will provide safe, rewarding employment.

Figure 5: Sustainable inward FDI (foreign direct investment)



This is being done through measures that penalize or prohibit processing trade in certain categories. The most recently announced list of restricted categories (July 2007) covers 2,247 customs codes or some 10 per cent of all customs codes.⁷⁸ In part, the classifications are based on a desire to restrict operation of, and investment in, sectors that are highly energy consuming, highly polluting and resource intensive, as well as in those sectors where there is low value-added. These controls function as *indirect* screening measures for FDI in that they discourage investment in penalized sectors.

75 UNCTAD (2007).

76 *Ibid.*

77 OECD (2006), p. 38.

78 MOFCOM/General Administration of Customs (2007).



China's ability to directly screen FDI is limited by obligations it has under various international investment agreements, including:

- the WTO's Agreement on Trade-Related Investment Measures, which prohibits performance requirements;
- the *General Agreement on Trade in Services*, which demands pre-establishment of national treatment in services sectors where it has been offered;
- over 100 bilateral investment treaties;⁷⁹ and
- investment provisions contained in various regional trade agreements.

While these obligations constitute real barriers to most types of screening that discriminate between foreign and domestic investors, discrimination on the basis of nationally-defined sustainable development objectives in the pursuit of environment, social and economic goals may be in line with China's various obligations, provided that domestic investors in like circumstances are similarly treated.⁸⁰

One of the key areas of interest is flows of FDI in the services sector, which is discussed above. It is important to remember that China's international obligations under investment law will limit the scope of what it can do to screen services investment. Some agreements (such as the Association of Southeast Asian Nations Investment Agreement) allow for national and most-favoured-nation treatment in the establishment of covered services for member countries—a provision that basically prohibits any form of screening.

5.4 Sustainable Outward Direct Investment

A schematic diagram of the framework as it applies to sustainable outward direct investment is shown in Figure 6. China's strategy of "going out" (*zouchuqu*), first proposed in 2000 and launched in 2002, encourages domestic enterprises to invest abroad. Selected non-state firms had been allowed to do so since the late 1980s, but policy measures in support of the strategy have given rise to a remarkable growth since 2002. Data on outward direct investment (ODI) are difficult to obtain and definitions vary from source to source, but the United Nations Conference on Trade and Development's World Investment Report puts Chinese ODI in 2005 at US\$68 billion.⁸¹ Several analysts suggest that official figures may significantly understate the extent of ODI.⁸² One analyst estimates that outbound investment from China rose by over 85 per cent per annum between 2000 and 2005.⁸³

Energy investments (primarily oil and gas) dominate the mix at 52 per cent with basic materials, telecommunications and consumer electronics following at 12 per cent, 9 per cent and 5 per cent respectively.⁸⁴ Motivations for ODI vary and include:

- securing supplies of energy and raw materials—for example, oil investments by *China National Offshore Oil Corporation* (CNOOC), Sinopec Corporation and *China National Petroleum Corporation* or

79 This includes 22 bilateral investment treaties (BITs) signed by Hong Kong Special Administrative Region of China and Taiwan Province, out of the 101 ratified agreements listed in UNCTAD's BITs database (valid as of 1 June 2008).

80 There are, however, two obligations normally found in international investment agreements that are *not* relative to any domestic standard of treatment, but rather are absolute—fair and equitable treatment and obligations related to expropriation.

81 UNCTAD (2007).

82 Frost (2005), Hong and Sun (2006), and Deutsche Bank (2006).

83 Deutsche Bank (2006).

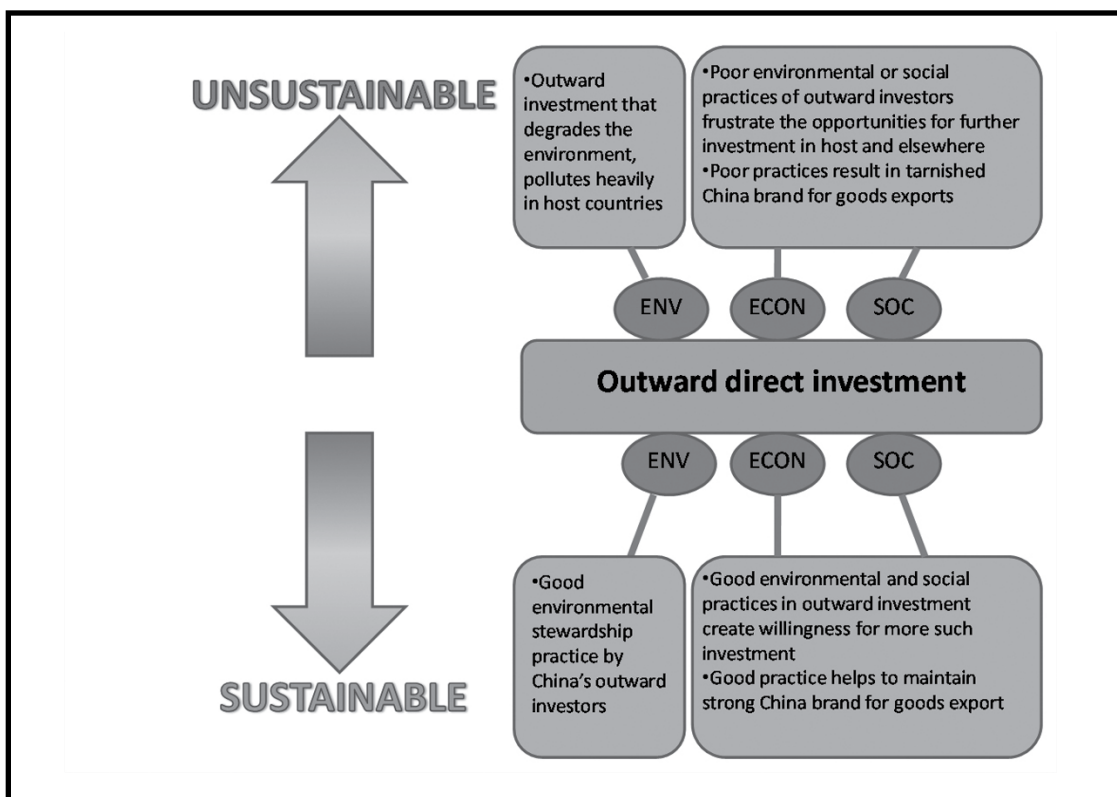
84 *Ibid.*

China Minmetals Nonferrous Ltd.'s takeover attempt of Noranda Inc.;

- acquiring global brands to compete with global marketing networks—for example, Haier Global's bid for Maytag Corporation and Lenovo Group Limited's acquisition of International Business Machine (IBM) Corporation's PC division; TCL Group's joint venture deals with TV giant Thompson Company and cellular phone giant Alcatel; and
- acquisition of strategic technologies—for example, Huawei Technologies Co.'s acquisition of Marconi Corporation and Beijing Optoelectronics *Technology* Group Co. Ltd.'s acquisition of Hyundai Display Technology Inc.

There are two reasons for a focus on the conduct of Chinese investors abroad. First, their conduct will reflect, positively or negatively, on the "China Brand," affecting the market for China-made exported final and intermediate goods. Second, their conduct will influence the receptivity of governments to further investment, particularly in the form of mergers and acquisitions in key sectors.

Figure 6: Sustainable outward direct investment.



The China Brand is essentially the composite impression that consumers (final consumers and commercial buyers) have about China, formed by a flow of information from scattered sources, primarily featuring the mass media. While there are a number of exemplary corporate citizens among China's outward investors, there are also some whose conduct may jeopardize the reputation of the country as a whole. In a cross-country assessment of "responsible competitiveness," China placed the lowest of the BRICs (fast-growing developing economies - Brazil, Russia, India and China).⁸⁵ It scored relatively high in the policy category,

85 AccountAbility (2007).



but poorly in business action and social enablers, meaning government action was commendable, but was not matched by similar actions on the ground. Treatment of workers and environmental responsibility are clear areas of importance and can strongly affect consumers' readiness to buy China-made goods. The issues here fall into a mix of the three categories of environment, economic or social. The environment impacts of foreign investment are important in their own right. The possible economic and social effects of any poor environmental and labour practices are also important; anything that makes consumers less likely to buy China's exports is worthy of concern.

The second area of concern is also linked to China's reputation and influenced by the conduct of investors abroad. If China and its investors are badly perceived, there will be political resistance to further Chinese acquisitions abroad. This sort of resistance may already have contributed to the unsuccessful bid by CNOOC for Unocal Corporation (U.S.), the blocked takeover bid for Noranda Inc. (Canada) by China Minmetals Nonferrous Ltd. and the similarly blocked bid by Huawei Technologies Co. Ltd. for 3Com Corporation (U.S.). The larger the investment, the more vulnerable it might be to this sort of problem; it is noteworthy that the Unocal and Noranda deals were the first and third largest Chinese outward mergers and acquisitions based on announced value between 2002 and 2006.⁸⁶ This sort of trend has significant implications for social and economic objectives, given that one of the clearest strategies available to Chinese firms for moving up the value chain is through foreign acquisitions.

There are not many precedents for home state action to ensure the responsible conduct of its investors abroad. One policy lever being increasingly used in OECD countries is conditional lending by export credit agencies and mandatory environmental impact assessments for projects of certain size in certain sectors.⁸⁷ There have also been several attempts of late to have U.S. outward investors held legally liable for aspects of their conduct abroad.⁸⁸ In the end, while it is clear that this is an important area of focus, there is probably a need for more research on the actual conduct of China's ODI enterprises, and on the impacts that conduct may have on perceptions of China as an exporter and investor.

5.5 Precedents for a Sustainable Trade Strategy

There are few precedents on which to draw in creating a sustainable trade strategy for China, as no country has set out to undertake such an exercise before. There are, however, partial precedents that are instructive.

Most countries pursue trade strategies that are designed to foster economic growth and a few also aim more broadly to improve a variety of social welfare indicators as well, such as employment and income levels. But none has yet gone further to consider the strong links between the economic and social progress and the environment.


Environmental policy as well may be crafted to go beyond environmental improvements to broader sustainable development objectives. Germany and Japan, starting in the 1990s, adopted tough environmental regulations aimed at fostering environmental efficiency and waste minimization. While these were, on the face of it, environmental measures, they in fact had the express aim of also improving the economic efficiency of the regulated firms. Edda Müller, chief aide to Germany's Minister for the Environment, put it most succinctly: "What we are doing here is economic policy, not environmental policy."⁸⁹ The hope was that the firms would become more efficient as global competitors and also would be able to export their solutions to firms in other

86 Deutsche Bank (2007).

87 OECD's June 2007 "Recommendation of the OECD Export Credit Working Group" benchmarks a range of ECA procedures against World Bank practice and includes a requirement for environmental impact assessment.

88 This is through use of the *US Alien Tort Statute* (28 U.S.C. § 1350). See Lee (2006) for a summary of the jurisprudence on this statute.

89 Cited in Moore (1992), p. 20.



regulated countries that came after them. The foundation for this hope is the central theme of the much-argued “Porter Hypothesis,” which postulates that tough regulation actually fosters competitiveness.⁹⁰ The mass of literature that the hypothesis has formed seems to lend some credibility to its tenets.⁹¹ Whether the hypothesis has validity or not—a question that is beyond the scope of this paper—the intent of the German and Japanese strategies was clearly to use national environmental policy to foster sustainable development more broadly. There are parallels to this effort in the proposal for China to foster sustainable development through its trade policy.

At the sectoral level there are also partial precedents of this type. Denmark, for example, has been extremely successful in fostering a wind turbine sector that not only provides for 19 per cent of its energy consumed (the world’s highest level), but also powers a vibrant export sector.⁹²

These sorts of examples abound and provide instances of economic or environmental policy that serves all the goals of sustainable development. But none of them is as comprehensive as what is proposed in this analysis and thus the lessons to be taken from them are less directly relevant than they could be.

This is both good and bad news. On the negative side, it means a lack of experience and expertise on which to draw in formulating the details of such a strategy. On the positive side, it means that any such move by China would be a pioneering effort and properly managed would garner the kind of public attention internationally that would again contribute to the goals of sustainable development.

6.0 The Nature of Change: Guidance for Policy Recommendations

The papers produced as a companion to this one will consider in greater depth the challenges of a sustainable trade strategy for China in various sectors. Each will consider the challenges inherent in the status quo, and the type of policies that might be brought to bear in harnessing trade and investment as a more powerful engine of sustainable development. In this closing section of the paper, three types of change are described, all of which are legitimate responses to the challenges described in those papers, but all of which imply very different approaches.

Faced with any sort of challenge, three distinct strategies are possible:

normalization: meet the requirements of international norms, complying as necessary

exceptionalism: opt out of meeting such norms and expectations, arguing that you are an exceptional case

transformation: change the nature of the game by the force of your actions, working to transform international norms to better suit your realities

Normalization is a straightforward compliance response. Challenges are identified (for example, Chinese firms have trouble meeting foreign and international standards; exports are dominated by processing trade) and efforts are made to meet the norms required to surmount those challenges. In the area of standards, for example, these might take the form of technical assistance or better information flow about foreign standards from national contact points to domestic firms. Normalization has the advantage of being relatively

90 Porter and van der Linde (1995).

91 For an extensive survey of the literature, see Wagner (2003).

92 Only part of this success, though, can be attributed to deliberate sectoral strategies. See Krohn (2002).



easy to identify and implement, but the disadvantage is it leaves the operator always slightly behind the wave of evolving requirements.

Exceptionalism argues that in some ways China is an exceptional case. Existing international norms of sustainable development may be inappropriate for Chinese firms that would, under this strategy, seek to develop their own norms and practice or continue to adhere to traditional ones. This is a strategy of opting out of the international rules and norms.

Transformation involves a fundamentally different strategy. It would involve actually seeking to change the rules of the game, to adapt them such that they more closely follow to the Chinese realities. In the area of standards, for example, this might involve Chinese influence on the making of collaborative international standards or it might mean Chinese influence in forums such as the Codex Alimentarius, the International Standard Organization or the WTO. In the area of regional trade agreements (RTAs), this might mean creating a new template for RTAs that does not follow established practice in key areas. This strategy involves a careful study of the existing regimes, a thorough knowledge of the interests of the country and a strategic vision of how to bring the two together. The potential benefit of transformation is that it achieves requirements that better suit national circumstance. The downside is that it can only be achieved by an actor that has enough clout to demand change and it involves pioneering efforts—difficult to envision and implement because of their novelty.


In the papers drafted as part of this project, policy recommendations will fall into these three categories. It is hoped that this brief taxonomy will help in choosing which of those recommendations are most suitable for China as it pursues its sustainable trade strategy.

7.0 A Research Agenda

The foregoing analysis has explored the key issues for China as it considers the nature and implications of a sustainable trade strategy. In the course of that analysis, it becomes clear that there is a need for deeper understanding of several issues to inform policy makers. That is, even where there may be desire to formulate and implement a sustainable trade strategy for China, there is a need for more supporting policy analysis to inform such a process. Some of the key areas for future research are laid out below. This is not an exhaustive list, but it tries to capture from the preceding discussion those areas that are of particular interest.

The discussion on trade in goods made it clear that China has significant interests in a “China Brand” that can be significantly affected by its performance on international standards. This argument was also echoed in the discussion on China’s outward investment. There are really two related lines of research needed here. The first deals with standards set by foreign governments (technical regulations, in trade parlance), primarily set in the context of trade in goods and applicable to China’s exports. In this area, there is a need to better understand first the state of those standards with respect to current Chinese practice. Are they in fact a barrier given current practice? Which sectors have been particularly successful or troubled in meeting such standards? Are the standards suited to Chinese realities? As well, there is a need to explore the relationship between the domestic regime for standard setting and the capacity of domestic firms to meet foreign standards, searching for ways in which the domestic regime might contribute to better performance at the international level. As well, it is important to understand better the role domestic standards regimes might play in assessing foreign standards.

The second line of research with respect to standards concerns the growing body of standards laid down at the international level by non-governmental actors. These standards, which are typically created by a mix of civil society and private sector actors, seem to be emerging as just as important as technical barriers laid down by governments—a sort of soft power regime of governance that firms are increasingly expected to play in.



How significant are these sorts of standards; what are the trends? Have Chinese firms been actively engaged in their creation? What is the best strategy for Chinese firms in addressing such standards and what role can the government play in facilitating that strategy?

The discussion on trade in goods, particularly exported goods, repeatedly comes back to the need to alter the structure of Chinese productive activity, in particular the manufacturing sector. The argument was made that an industrial upgrading might benefit the environment through greater efficiency, benefit the economy through a move up the value chain to more profitable activities, and improve social conditions through higher quality better paying employment. But the question remains how this is to be accomplished. There is a clear need for an in-depth picture of China's manufacturing sector, and its potential for upgrading, with particular attention to the notion of "clean upgrading." There is solid experience at the international level on which to draw in discerning best practice in this area.

In the same vein, the discussion above made frequent reference to areas of policy and regulation that lay quite outside the goods and services producing sectors, but which nonetheless had significant influence on the performance of China's trade activities. An important lesson of the analysis is that trade policy has to be concerned with policy in other areas as well. A key example is energy policy, given that energy production and use determines industrial competitiveness, drives environmental impacts and has real implications for public health. It would be useful for China's trade policy makers to explore best practice in regulatory instruments for such sectors, based on domestic and international experience.

The discussion of services trade in this paper makes it clear that the services sector is key for any China sustainable trade strategy. Services have clear impacts on domestic levels of economic development and employment through their direct effects as economic activity. And perhaps more important they underlie China's hopes for industrial upgrading; there are demonstrated links between the availability of business services such as telecommunications, transport and finance and the strength of a country's industrial sector. But several questions remain. Given the importance of business services, would a strategy of liberalization in these sectors best serve China's needs, or would it be better to develop indigenous services capacity? What are the implications for balance of trade in services of the two options and what are the near and long-term economic considerations?

Finally, an overarching question raised by the preceding discussion concerns China's engagement at the regional and multilateral levels in international trade agreements. Given the need for a sustainable trade policy, and China's ascension as a regional and world leader in a model that it has more or less created for itself, what are the implications for China's relations with its immediate region, where its imports and exports are a significant factor in its neighbours' sustainable development prospects? Similarly, at the multilateral level, how should China's pursuit of its own path to sustainable development affect its role and positions at the WTO? Does the current state of negotiations at that level have implications for China's regional engagement strategies?

This is not an exhaustive list of the research questions that derive from the analysis in this paper. It is rather a selection of what seem to be the key needs for deeper understanding to underlie elaboration and decision making on China's sustainable trade strategy.



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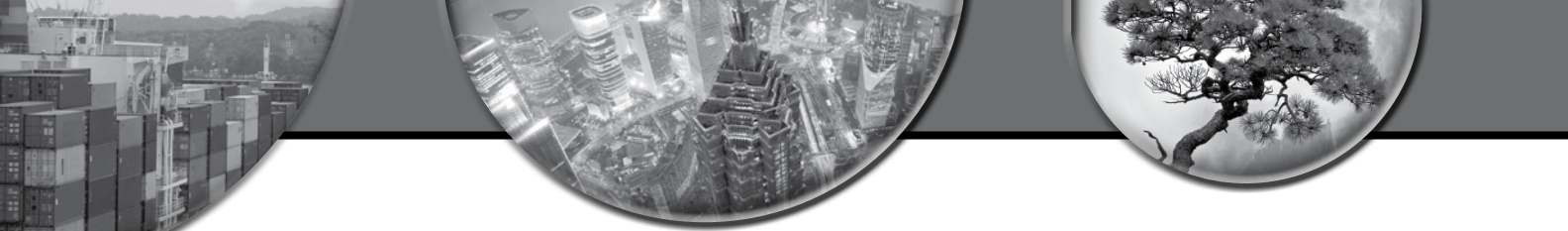
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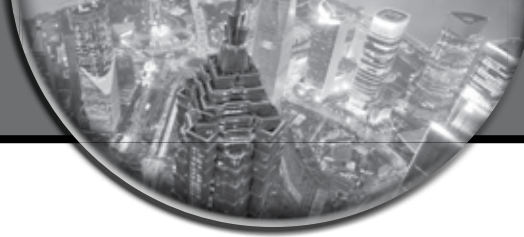
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2

China's Sustainable Trade Strategy: An Overview

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¹ Opinions expressed in this paper are those of the author and should not be attributed to the institute to which the author belongs.



China's emergence as a big player in world trade is a significant development in the global trade system. China introduced its trade reform policy at the end of the 1970s when China ranked 32nd among nations in global trade, due to China's "Import Substitution" strategy. Thirty years later, China became the world's largest exporter.

China's fast trade development is attributed to its implementation of a strategy and policy featuring "active absorption of foreign direct investments and encouragement of foreign trade development" for the sake of coping with global economic integration and international industrial relocation. This strategy has accomplished immense results; however, it has faced growing challenges. The swift expansion of China's economy has given rise to increasingly severe problems regarding resources, energy and the environment. Globally, the fast growth of China's trade volume has triggered an increasing number of trade frictions between China and other countries and caused relations between China and other countries to become more complicated.

Under such new circumstances and in lieu of recent national changes and relations with the rest of the world, China must implement a sustainable trade strategy. In this paper, the author analyzes three areas of a sustainable trade strategy. Section 1.0 is a review of the evolution of China's foreign trade, Section 2.0 analyzes the challenges that China's foreign trade now faces, and Section 3.0 discusses the overall train of thought and main content of a sustainable trade strategy.

1.0 Development of China's Foreign Trade

1.1 Review and Status Quo of Foreign Trade

1.1.1 Fast Growth of China's Foreign Trade

China introduced its trade reforms in 1978 and has endeavoured to increase its export volumes by ushering in export-oriented, foreign-invested enterprises. Meanwhile, China reformed its national economic system and enhanced the competitiveness of manufacturing industry exports. Thus, China's foreign trade volume has grown rapidly. For example, China's total import and export value grew to US\$2,207.22 billion in 2009 from only US\$20.60 billion in 1978. In 31 years China's foreign trade value has increased 106-fold and posted an average yearly growth rate of 16.3 per cent. Accordingly, as the Chinese economy opens up, the degree of China's economic dependence upon foreign trade has reached 44.9 per cent.²

The constantly increasing competitiveness of China's exports also has manifested itself in the marked change in China's balance of foreign trade. Despite China's fast economic growth, which has helped increase import volumes, China's foreign trade has recorded a favourable balance since 1994. Many researchers feel China is repeating the history of the United States, Germany and Japan, featuring "a favourable trade balance for years during a period of time when the manufacturing industry's competitiveness is becoming stronger at a fast pace"; researchers also note that China will maintain a favourable trade balance for a number of years.³

² China's dependence upon foreign trade reached 66.2 per cent in 2007 and then dropped due to the global financial crises and subsequent appreciation of Chinese currency.

³ In 93 of the 97 years from 1874 through 1970, the United States recorded a favourable trade balance; Germany has continuously recorded a favourable balance of trade throughout the 54 years from 1952 to 2005. Japan has maintained a favourable trade balance since 1981; see W. Zixian and Y. Zhengwei, 2006, "Reasons of Formation, Evolution Trend of and Countermeasures for China's Favorable Balance of Foreign Trade," Issue 17, Political Research Office of the Ministry of Commerce, 18 September.

Table 1: China's overall import and export values from 1978 to 2009.

Year	Import/Export		Export		Import		Balance
	Billion US\$	Y to Y%	Billion US\$	Y to Y%	Billion US\$	Y to Y%	Billion US\$
1978	20.64	39.41	9.75	28.39	10.89	51	-1.15
1979	29.33	42.13	13.65	40.1	15.68	43.9	-2.02
1980	37.82	28.94	18.27	33.83	19.58	24.93	-1.31
1981	44.02	16.39	22.01	20.44	22.02	12.42	-0.01
1982	41.61	-5.49	22.32	1.43	19.29	-12.4	3.04
1983	43.62	4.83	22.23	-0.43	21.39	10.92	0.84
1984	53.55	22.77	26.14	17.61	27.41	28.14	-1.27
1985	69.60	29.98	27.35	4.63	42.25	54.15	-14.90
1986	73.85	6.1	30.94	13.13	42.90	1.54	-11.96
1987	82.65	11.93	39.44	27.45	43.22	0.73	-3.78
1988	102.78	24.36	47.52	20.49	55.27	27.89	-7.75
1989	111.68	8.65	52.54	10.57	59.14	7.01	-6.60
1990	115.44	3.37	62.09	18.18	53.35	-9.8	8.75
1991	135.70	17.56	71.91	15.81	63.79	19.58	8.12
1992	165.53	21.98	84.94	18.12	80.59	26.33	4.36
1993	195.70	18.23	91.74	8.01	103.96	29.01	-12.22
1994	236.62	20.91	121.01	31.9	115.61	11.21	5.39
1995	280.86	18.7	148.78	22.95	132.08	14.25	16.70
1996	289.88	3.21	151.05	1.52	138.83	5.11	12.22
1997	325.16	12.17	182.79	21.02	142.37	2.55	40.42
1998	323.95	-0.37	183.71	0.5	140.24	-1.5	43.48
1999	360.63	11.32	194.93	6.11	165.70	18.16	29.23
2000	474.30	31.52	249.20	27.84	225.09	35.85	24.11
2001	509.65	7.45	266.10	6.78	243.55	8.2	22.55
2002	620.77	21.8	325.60	22.36	295.17	21.19	30.43
2003	850.99	37.09	438.23	34.59	412.76	39.84	25.47
2004	1154.55	35.67	593.33	35.39	561.23	35.97	32.10
2005	1422.12	23.17	762.00	28.43	660.12	17.62	101.88
2006	1760.69	23.81	968.97	27.18	791.61	19.92	177.46
2007	2174.07	23.5	1218.12	25.7	955.95	20.8	262.17
2008	2561.63	17.83	1428.55	17.27	1133.09	18.53	295.46
2009	2207.22	-13.84	1201.66	-15.88	1005.56	-11.26	196.1

Source: China Custom Statistics, various years.

1.1.2 Structure of Foreign Trade Has Constantly Improved

From 1978 to 2009, the ratio of primary commodities in China's exports fell to 5.3 per cent from 54 per cent and the percentage of manufactured products grew to 94.7 per cent from 46 per cent. In 2006, China ranked first place globally in terms of production volumes of over 170 varieties of products and also first place globally in terms of the export volumes of 774 varieties of products. Thus, China has turned from an exporter of primary products into a major exporter of manufactured products. Among other things, the percentage corresponding to electromechanical products in China's total export commodities has reached 59.3 per cent and the percentage corresponding to new and high-tech products is 31.4 per cent (year 2009), almost the same as the average levels recorded in OECD (Organisation for Economic Co-operation and Development) countries.

The mix of imported commodities has undergone changes, and the percentage taken up by primary commodities has increased from year to year, reaching 28.8 per cent in 2009. With regard to the imported manufactured products, the percentages occupied by electromechanical products and by new/high-tech products have grown year to year. An overwhelming majority of these imports are industrial equipment and important component parts. In fact, foreign trade has given a stimulus to China's pursuit of industrialization and advancement of its industrial technologies.

Table 2: The structure of China's international trade (per cent).

Year	Primary Goods		Manufactured Goods					
			Total		Machinery and Electric Goods		High- and New-tech Goods	
	Export	Import	Export	Import	Export	Import	Export	Import
1985	50.5	12.4	49.5	87.6	6.1	43.6		
1990	25.6	18.5	74.4	81.5	17.9	40.2		
1995	14.4	18.5	85.6	81.5	29.5	44.8	6.8	16.5
1998	11.2	16.4	88.8	83.6	36.2	45.6	11	20.8
1999	10.2	16.2	89.8	83.8	39.5	46.8	12.7	22.7
2000	10.2	20.8	89.8	79.2	42.3	45.7	14.9	23.3
2001	9.9	18.8	90.1	81.2	44.6	49.5	17.5	26.3
2002	8.7	16.7	91.3	83.3	48.2	52.7	20.8	28.1
2003	7.9	17.6	92.1	82.4	51.9	54.5	25.2	28.9
2004	6.8	20.9	93.2	79.1	54.5	53.8	27.9	28.8
2005	6.4	22.4	93.6	77.6	56	53.1	28.6	30.0
2006	5.5	23.6	94.5	76.4	56.7	54	29.1	31.2
2007	5.1	25.4	94.9	74.6	57.6	52.2	28.6	30
2008	5.4	32.0	94.6	68.0	57.6	47.5	29.1	30.2
2009	5.3	28.8	94.7	71.2	59.3	48.9	31.4	30.8

Source: China Custom Statistics, various years.

1.1.3 Regional Structure of China's Foreign Trade

Nearly 80 per cent of China's total foreign trade has been with its top 10 trading partners (see Table 3). China's major trading partners—for example, Japan, South Korea, ASEAN and Taiwan Province—account for about 42.4 per cent of China's imports. The United States and European Union take 38 per cent of China's exports. A high percentage of China's mainland exports to Hong Kong have targeted the Occidental market. The regional structure of China's exports is the result of the relocation of industrial facilities in the production network of East Asia—investors from Japan, South Korea and Taiwan have relocated their processing and assembling lines for manufactured products into China, boosting their upstream products to be exported to China and re-exported to the Occident. Such a structure is bound to incur an imbalance in bilateral trade between China and its major trading partners. Specifically, China has a trade deficit with most East Asian economies and a favourable trade balance with the Occident.

Table 3: China's top 10 trading partners, 2009.

Rank	Export		Import		Import/Export	
	Country	%	Country	%	Country	%
1	EU	19.7	Japan	13.0	EU	16.5
2	US	18.4	EU	12.7	US	13.5
3	HK SAR	13.8	ASEAN	10.6	Japan	10.4
4	ASEAN	8.8	South Korea	10.2	ASEAN	9.7
5	Japan	8.1	Taiwan Province	8.5	HK SAR	7.9
6	South Korea	4.5	US	7.7	South Korea	7.1
7	India	2.5	Australia	3.9	Taiwan Province	4.8
8	Australia	1.7	Brazil	2.8	Australia	2.7
9	Taiwan Province	1.7	Saudi Arabia	2.3	India	2.0
10	UAE	1.6	Russia	2.1	Brazil	1.9
Total		80.8		74.0		76.5

Source: China Custom Statistics, 2009.

1.1.4 China's Position in the World Trade System Has Greatly Improved

With the fast growth in total value of China's foreign trade, the country has rapidly moved up on the list of the world trading powers to be the biggest exporter and the 2nd biggest importer, up from 32nd place in 1978. World Trade Organization (WTO) statistics show that in 2009 China's export value was 9.6 per cent of the world's total and its import value was 7.3 per cent of the world's total.

Table 4: Position of China in the global trade system, 1978–2008.

Year	Import/export (billion US\$)	World Ratio (%)	World Ranking
1978	20.6	2.9	32
1981	44.0	1.1	22
1985	69.6	1.8	10
1990	115.4	1.6	15
1995	280.9	2.7	11
1998	324.0	2.9	11
1999	360.6	3.1	9
2000	474.3	3.6	8
2001	509.7	4	6
2002	620.8	4.7	6
2003	851.2	5.6	4
2004	1154.8	6.2	3
2005	1422.1	6.7	3
2006	1760.4	7.2	3
2007	2176.2	7.7	3
2008	2563.3	7.9	3
2009	2207.2	8.8	2

Source: Statistics Database, WTO.


China is becoming more important to its trade partners. In 1978 China had only about 40 trading partners, but by 2007 it had more than 220 trading partners (six trading partners have each recorded a sum of bilateral trade with China in excess of US\$100 billion). WTO statistics show that five economies have considered China their top trading partner, while 28 others considered China one of their top three trading partners and 56 economies considered China one of their top five trading partners.

1.2 Export-Oriented Trade Strategy Drives China’s Fast Foreign Trade Growth

Before the late 1970s, China implemented an “import substitution” strategy and its foreign trade developed rather slowly. After adoption of the trade reform policy, China opened its labour-intensive sectors—ahead of other sectors—to the outside world, encouraged export-oriented foreign investments in its territory and adopted export-encouraging foreign exchange and taxation policies. These changes allowed China to make full use of its competitive edge including a well-built industrial foundation, a well-developed infrastructure, and a cheap and flexible labour market, creating one of the world’s most important processing and production bases.

1.2.1 Formation of the Export-Oriented Strategy

Prior to adoption of its trade reform policy, China implemented the import substitution development strategy, which effectively applied various economic resources to boost the country’s pursuit of industrialization through the planned economy system. By the 1970s, China had built a relatively complete industrial system; however, the industrial system formed under the “import substitution” strategy was poorly competitive in



the global arena. Therefore, shortly after adoption of the trade reform policy, China was, like most other developing countries, suffering not only a savings gap, but also a foreign exchange gap, summarized by Hollis Chenery (the former World Bank's chief economist from 1972 to 1982) as the "two-gap" model.⁴ Inspired by the successful experience of certain economies in East Asia with respect to export orientation, China began to employ an export-oriented strategy in its labour intensive industries, while continuing import substitution in capital and technology intensive industries. China's key policies were:

- to attract export-oriented foreign investors; and
- to increase international competitiveness of domestic exports.

1.2.2 Policy That Attracts Export-Oriented Foreign Investors

(1) Establishment of Special Economic Zones and other special function zones.

Initially, when China opened the country to foreign investors, neither its hardware (principally infrastructure facilities) nor its software (policies, laws, governmental administration and services, among others) could meet the requirements of foreign investors. Therefore, China had to use the successful experience of other countries in building export processing zones. Since 1980, China has set up Special Economic Zones in Shenzhen, Zhuhai, Shantou and Xiamen to create an investment climate that would attract foreign investors. Concrete policies included:

- establishing a full range of infrastructure facilities;
- applying preferential taxation policies toward foreign investors, including exempting their imported equipment from tariffs and reducing or exempting their corporate income taxes; and

identifying foreign invested projects and granting incentives to those export-oriented projects (putting forward performance requirements on foreign invested projects mainly related to domestic contents, balance of foreign exchange and export ratio, along with a 50 per cent reduction in corporate income taxes payable by export-oriented enterprises whose export values exceed 70 per cent of their respective output values).

Based on its preliminary success in building special economic zones, in 1984 China established Economic and Technological Development Zones in 14 coastal cities and implemented policies similar to those applied to Special Economic Zones. Then China built up New- and High-Technology Industry Development Zones, Bonded Zones, Export Processing Zones and numerous special function zones of other types with virtually identical policies. By doing so, China created an investment climate attractive to foreign investors. China successfully combined its competitive edge of cheap land and labour with the competitive edge of foreign investors of technology, management and international marketing networks.

Special function zones have now become important bases for the development of China's foreign trade. In 2009 the total export value recorded by these special function zones was 33.1 per cent of the country's aggregate export value, while the total import value posted by these special function zones was 37.1 per cent of China's aggregate import value.

⁴ H. Chenery and M. Bruno, 1962, "Development Alternatives in an Open Economy: The Case of Israel," *Economic Journal* 72: 79-103.

Table 5: Roles of Special Economy Zones in China's foreign trade, 2009.

	Import and Export		Export		Import	
	Billion US\$	Ratio %	Billion US\$	Ratio %	Billion US\$	Ratio %
Special Economic Zones	186.25	8.4	104.18	8.7	82.07	8.2
Economic and Technology Development Zones	229.06	10.4	108.35	9.0	120.71	12.0
New- and High- Tech Industry Development Zones	79.96	3.6	42.42	3.5	37.54	3.7
Bonded Zones	114.43	5.2	37.14	3.1	77.29	7.7
Export Processing Zones	151.38	6.9	101.44	8.4	49.94	5.0
Bonded Logistic Zones	9.52	0.4	3.87	0.3	5.65	0.6
Total	770.60	34.9	397.40	33.1	373.20	37.1

Source: China Custom Statistics, 2009.

(2) Implementation of the processing trade policy.

When China implemented its trade reform policy, those players in labour-intensive industries in Japan and other newly industrialized economies in East Asia were seeking a new place to relocate their labour-intensive production facilities (due to the sharp increases in their domestic production costs). These investment projects all feature huge import and re-export volumes/values because the raw materials and component parts have to be imported from their countries or other economies, and their products have to be re-exported. To meet the needs of these foreign invested projects, the Chinese government implemented the processing trade policy, under which those materials and parts imported by enterprises for the sake of processing and to be re-exported out of China are exempted both from tariffs and import related taxes (mainly the Value Added Tax, VAT). This policy has eliminated the impediment wielded by China's high tariffs and VAT against using imported materials and parts. As the processing trade spreads along China's industrial value-added link, custom houses and commodity inspection and quarantine authorities are improving their supervisory practices and offering much more convenience with respect to customs clearance and carrying forward of goods across multiple customs, enabling the processing trade to spread throughout the entire country. So far, processing trade has played an important role in China's foreign trade.

Table 6: Role of processing trade and foreign invested enterprises in China's foreign trade, 2009.

		Export		Import	
		Billions US\$	Ratio (%)	Billions US\$	Ratio (%)
Total		1201.66	100	1005.56	100
Mode of Trade	Ordinary trade	586.98	48.8	533.87	53.1
	Processing trade	529.83	44.1	322.34	32.1
	Others	84.85	7.1	149.35	14.9
Type of Enterprises	State-owned enterprises	190.99	15.9	288.47	28.7
	Foreign direct investment	672.23	55.9	545.21	54.2
	Others	338.44	28.2	171.88	17.1

Source: China Custom Statistics, 2009.

Foreign invested enterprises now play a dominant role in China's export scene. In 2009, foreign investors contributed 55.9 per cent and 54.2 per cent of the country's aggregate export and import values, respectively. Processing trade is a major mode in which foreign invested enterprises conduct foreign trade. In the first half of 2006, up to 74.7 per cent of the total export value and 54.9 per cent of the total import value of foreign invested enterprises hailed from the processing trade. Of these processing trade exports, 81.3 per cent stemmed from foreign invested enterprises, which indicates the importance of the processing trade policy in attracting foreign investors to carry out export activities in China.

1.2.3 Export Promotion Policies

The Chinese government has applied export encouragement policies to domestic enterprises. Foreign investors are also entitled to enjoy these policies. To be specific, these policies include:

(1) Implementation of an exchange rate system conducive to exports. Under the import substitution strategy, in order to bring down the costs of industrialization, China—which was then adopting a planned economy system—over-estimated the exchange rates of China's renminbi (RMB) externally, while keeping down the prices of agricultural products and enhancing the prices of industrial products internally. Since the 1980s, however, to encourage exports, the exchange rate of RMB against the US\$ began to depreciate, from about 1:1.7 in 1981 to 1:8.7 by 1994, although it then began to rise slowly and is now at about 1:6.8.

A dual exchange rate system was implemented to encourage exports in the mid-1980s. The Chinese government allowed exporters to retain a portion of their earned foreign exchange and sell their foreign exchange at exchange rates higher than the official rates on foreign exchange swap markets, where the exchange rates were determined by the market rather than by the government. This is a sort of encouragement granted to exporting enterprises. Import substitution sectors were allowed to import equipment and technologies at officially stipulated exchange rates that were artificially over-valued to reduce their import costs. In 1994, China implemented a reform to its foreign exchange system, cancelled the foreign exchange swap market and introduced a single, manageable floating exchange rate system.



(2) Tax rebating for exports. Pursuant to the WTO rules, export products can enter overseas markets at indirect tax-free prices. China started to implement its policy of indirect tax rebating for export in 1985. Its initial practice was to refund Product Tax imposed upon export products to exporting enterprises. After the reform of the taxation system in 1994, China eliminated Product Tax and imposed VAT and excise taxes; export tax rebates thus changed to VAT and excise taxes refunds that imposed upon export products. This allowed Chinese exporters to compete on an equal basis with competitors from other countries in the world market. But as a result of the rather fast growth of China's export volume, the amount of export rebates grew at a rapid pace, generating considerable pressure on the competent Chinese finance authority. Meanwhile, in recent years, China's favourable balance of foreign trade has been growing at an excessively fast rate. Therefore, the Chinese government gradually lowered the export rebate rates for multiple commodities.⁵ This caused a significant drop in tax rebates for export commodities and resulted in many Chinese companies exporting products at prices that contained the indirect taxes.

(3) Liberalization of foreign trade rights. Under the planned economy and the import substitution strategy, the government tightly controlled enterprises' rights to engage in foreign trade. When China introduced its trade reform policy, only a dozen foreign trade companies were allowed to engage in foreign trade. After the trade reforms swept over the country, apart from allowing foreign invested enterprises to engage in foreign trade on their own, the Chinese government allowed a growing number of production-oriented enterprises to engage in foreign trade (specifically, to export their products directly). After China's accession into WTO, it made a radical reform of its trade system, changing the former examination and approval system of trade into a registration system, under which any enterprise can engage itself in international trade. To date dozens of thousands of enterprises have registered with Chinese customs to engage in foreign trade. Enterprises are allowed to have direct access to international markets and to make prompt responses to the latest changes arising in those markets, allowing their products to be more competitive.

(4) Export promotion and trade facilitation. The Chinese government has always attached great importance to export promotion work. When the planned economy system was being adopted, the Chinese government launched export fairs and other activities to promote exports. As of the time of this writing in 2009, Guangzhou Export Commodity Fair, the world's biggest trade fair, has been held 106 times and has played a considerable role in export promotion. As a result of China's export promotion policies, local governments also have made considerable efforts to promote export. To date the country has had more than 10 export fairs (such as East China Trade Fairs in Shanghai; Zhejiang Trade & Investment Fairs in Ningbo, Urumqi; Trade & Investment Fairs in Xinjiang, among others). After China became a member of the WTO, the Chinese government put increasing importance on export promotion. A Trade Promotion Bureau has been established, which is affiliated with the Ministry of Commerce, to promote foreign trade.

As a part of the effort to ameliorate the investment climate, the customs and commodity inspection and quarantine authorities of the Chinese government have also been devoted to simplifying the customs clearance procedures and increasing the speed of customs clearance. Shanghai has taken the lead in reforming the customs clearance procedures by ushering in a new risk control concept, electronic customs declaration procedures and a more streamlined inspection flow, which have helped increase the speed of customs clearance. Shanghai's procedures were disseminated to the rest of the country to enhance the country's overall customs clearance process. The value of China's processing trade exports now represents half of the country's total export value. This has resulted from the government's consistent efforts to implement methods to enhance the efficiency and management skills in the processing trade.

⁵ For example, on 1 July 2007, the Chinese government began to cancel or lower the export rebate rates of 2,831 products, occupying about 37 per cent of the total products specified in the customs nomenclature.



2.0 Challenges to the Sustainable Development of China's Economy and Foreign Trade

2.1 The Sustainable Development of China's Economy Is Faced with Huge Challenges

In the past 31 years, China's economy has continued to grow at an average rate of about 10 per cent per year and its GDP increased to US\$4.91 trillion by 2009 (compared to US\$364.5 billion in 1978), ranking China third globally. Based on its purchasing power parity, China is ranked second globally behind the United States.

China is facing increasing challenges, however, including imbalances of economic versus social development, imbalances of regional development, imbalances of urban versus rural development, imbalances of economic versus environment and imbalances of domestic versus foreign development.

When it comes to sustainable development of its future economy, China faces increasingly heavy pressure regarding its environment and resources. On the one hand, China suffers a shortage of natural resources; its per capita possession of natural resources is far below the world's average. For example, the per capita levels of arable land and fresh water (the prerequisite natural resources for subsistence) in China are only one-third and one-quarter of the world's averages. For important mineral resources, such as petroleum, natural gas, coal, iron ore, copper and aluminum (among others), the per capita reserves in China are merely 11 per cent, 4.5 per cent, 79 per cent, 42 per cent, 18 per cent and 7.3 per cent, respectively, of the world's averages.⁶

On the other hand, because of the formerly extensive economic growth and backward technological skills, China has not utilized its resources and energy sources in an efficient manner and is now suffering a growing environmental pressure. For instance, the total energy consumption by each ton of ethylene in 2000 was 1,212 kg of standard coal in China, compared to 714 kg in Japan. The energy consumption by each kWh of thermal power was 385 g standard coal in China, compared to 314 g and 376 g in Japan and the United States, respectively. The energy consumption by each ton of steel was 781 kg standard coal in China compared to 646 kg, 721 kg and 735 kg in Japan, the United Kingdom and France, respectively. China's ratio of resources re-utilization is also on the relatively low side. For example, China's total recovery ratio of mineral resources is 30 per cent, 20 per cent lower than the advanced level recorded by other countries. China's overall timber utilization ratio is 60 per cent compared to upwards of 80 per cent for developed countries. China also has a high pollutant discharge rate. For example, the carbon dioxide discharge volume per unit of China's GDP (fixed price of US PPP⁷ in 1995) is 0.62 kg, compared to much lower levels in developed countries. And the organic sewage discharge volume per unit of China's GDP is 0.5 kg, about two to three times that of other countries.⁸ Although the efficiency of usage of natural resources and energy has rapidly increased under the effort of the Chinese government, there is still a big gap in comparison with the advanced economies.

International factors have played a double role in China's sustainable development. On the one hand, China imports a huge volume of resources and energy sources from abroad to mitigate domestic shortages. On the other hand, international factors have also generated more harsh challenges for China's resources and environment. Economic globalization and the world's industrial restructuring have led to the relocation into China of industries that consume a huge volume of energy and resources. As a vast number of "Made-in-China" products are launched into the international market, China has also exported a huge quantity of

6 M. Kai, 2004, "Strike up And Follow Through a Scientific Concept of Development and Facilitate a Radical Transformation of The Mode of Economic Growth," W. Mengkui (Ed.), *Sustainable Development of China in An All-sided And Well-coordinated Way*, The People's Press, August.

7 Purchasing power parity.

8 Z. Junkuo et al., 2005, "Transformation of the Mode of Economic Growth and Pursuit of a Path of New Type Industrialization," W. Mengkui (Ed.), *Important Issues Regarding China's Long-term and Mid-term Developments from 2006 to 2020*, China Development Press.



energy sources and resources. For instance, many countries have stopped the production or reduced the production output of coke, but China's coke exports grew to 14.5 million tons in 2006 from 1.08 million tons in 1991. In addition, in 2006 China exported over 25 million tons (net) of coal. Meanwhile, China has also exported a vast quantity of energy sources and resources. In 2006, China's net export volumes of crude steel, un-forged aluminum, and colour televisions and whole sets of bulk parts were 34.34 million tons, 700,000 tons and 104 million sets, respectively. The net export value of China's electromechanical products was US\$121.7 billion. These exports required the consumption of energy sources and resources. For example, a ton of aluminum consumes 15,000 kWh of electricity and a net export volume of 700,000 tons of aluminum is equal to exporting over 10 billion kWh electricity. Therefore, a considerable portion of China's additional consumption of energy sources and resources is a "substitution" for other countries' consumption of energy sources and resources, and contributes to the world's supply of energy sources and resources.⁹ According to the latest report of the British New Economic Foundation, each article made in China and exported to the U.K. caused a waste gas discharge volume one-third greater than that incurred by the same article if it were made in the U.K. In reality, the Occident's overwhelming dependence on China in manufacturing and production work is tantamount to transfer of their environmental pressures onto China's shoulders. Some American researchers have pointed out that 14 per cent of China's waste gas has been incurred by those goods made in China and exported to the U.S.¹⁰ Rough statistics suggest that the volume of "foreign wastes" imported by China has grown to 17.5 million tons in 2000, from 990,000 tons in 1990. These wastes have heavily jeopardized China's environment.¹¹

2.2 Challenges to Development of China's Foreign Trade

2.2.1 China's External Environment Has Been Worsening Due to a Rising Trade Imbalance and Trade Frictions


With the fast development of China's foreign trade, the development of China's trade faces new problems. First, the imbalance in terms of bilateral trade between China and its principal trading partners has been getting worse. Most of China's peripheral economies have recorded a favourable balance of trade with China, while China's favourable balance of trade with its major trading partners (such as the U.S. and E.U.) has been increasing. As per the American statistics, China's favourable balance of trade with the U.S. reached US\$265 billion in 2007. Although it is a result of "triangle trade" among China, other East Asian economies and the U.S., this trade imbalance has become a salient problem affecting the bilateral trade relation.

Second, China has suffered a growing number of trade frictions with its trading partners. According to WTO statistics, from 1995 to 2008 the total number of anti-dumping actions lodged by foreign parties against Chinese parties was 677, 19.8 per cent of the world's total number of anti-dumping actions. In reality, the number of those cases regarding anti-dumping and anti-subsidization against China's exports, and various trade frictions between China and other countries, have increased rapidly. Since 1995, China has remained the world's number one target country against which anti-dumping cases were lodged. The average number of these cases per annum grew from 6.5 in the 1980s to 31.8 in the first half of the 1990s, and to 37.6 in the latter 1990s (1996–2000). In addition, the average number of cases per annum has exceeded 50 since China became a member of the WTO. In 2005 and 2006, 27.9 per cent and 35.2 per cent, respectively, of anti-dumping cases in the world were lodged against China, indicating a marked increase. In 2006, 25 countries and territories initiated 86 investigations involving China, which featured "anti-dumping, anti-subsidization,

9 M. Kai, 2007, "Transformation of the Mode of Economic Growth for Better and Quicker Development—A Speech on 2007 China Development Summit Forum," 18 March.

10 The latest report of a British Research Organ, 2007, "Western Countries Reply on China-made Products and Relocate Their Waste Gases into China in a Disguised Way," published in Singaporean newspaper Lianhe Zaobao, 8 October, http://zaobao.com/zg/zg071008_506_1.html.

11 L. Juli, 2006, "Influence Wielded by International Trade on China's Environmental Protection and Countermeasures," Business Times, Issue 22.



safeguard measures and special safeguard measures.” The number of investigations grew by 37 per cent on a year-over-year basis, involving a total of US\$2.05 billion, which was almost equal to the sum recorded in 2005. Among others, there were 63 anti-dumping actions, involving US\$1.42 billion; two anti-subsidization actions, involving US\$120 million; 16 actions regarding safeguard measures, involving a total sum of US\$440 million; and five investigations into special safeguard measures, involving US\$60 million. The anti-dumping actions lodged by the E.U. against China-made leather shoes involving US\$730 million have affected the employment of 70,000 persons in China. On top of that, some developing countries have followed the lead of developed countries to take various types of trade safeguard measures against China’s exports. Up to 71 per cent of all actions against China (for anti-dumping, anti-subsidization, safeguard measures and special safeguard measures) in 2006 were lodged by such developing countries as India and Turkey.¹² The global financial crises greatly triggered extra incentives of usage of safeguard measures. According to the data of the Ministry of Commerce of China, during the first eight months of 2009, there were 79 safeguard cases against Chinese export by 17 countries/regions, affecting US\$10 billion; these increased by 16.2 per cent and 121.2 per cent, respectively, during the same period last year.¹³ In addition, the adverse influence wielded by trade frictions has spread into other domains. For example, some countries have exercised pressure on China’s foreign exchange policy and spawned different versions of a “China Threat Theory.”

China has encountered these trade frictions for three reasons:

- The competition between Chinese enterprises and their foreign counterparts has grown increasingly intense due to the fast growth of China’s total export volume and value;
- The protocol surrounding China’s accession into the WTO contained provisions disadvantageous to China, such as “non-market economy” and “specific safeguard measures;” and
- In the global industrial value chain, China remains in the labour-intensive link; its exports have relatively low value added and are priced at lower levels.

Third, China is facing increasing sentimental pressure from the international communities. China’s emergence as a global power has been brought, and will continue to bring, complicated reaction from the rest of the world. The sentimental reactions, including the so-called China Threat, Responsible Stakeholder, causes China to face a more complicated and difficult external environment.

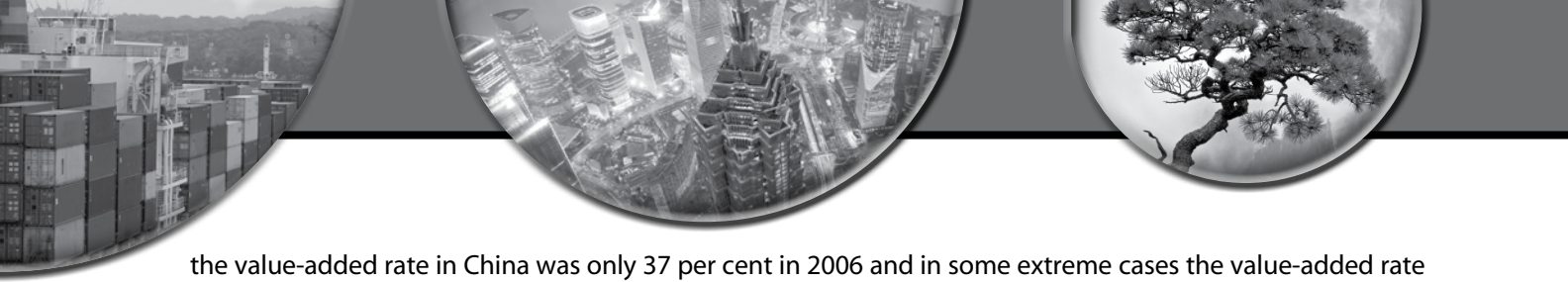
Finally, the global warming issue will also place very big pressure on China to upgrade its industrial structure, technologies and trade mix.

2.2.2 Exports Have Low Value Added and Upgrading Will Face Many Challenges

Although up to 31 per cent of China’s exports are new and high technology products, it does not mean that China’s exports have relatively high value added. Due to the formation of a global production value chain, China managed to move out of the “final assembling” link, with relatively low value added, by attracting foreign investments, and entered into the international “division of labour” network. Such a strategy has created tens of millions of job opportunities for Chinese workers and allowed China to redirect its labour force to produce finished products for export into the international market, earning a precious foreign exchange. Lacking intellectual property rights (IPRs) and world class brands, however, this strategy bears a shortcoming—China’s exports possess rather low value added. Citing the processing trade as an example,

12 Press Office of the Ministry of Commerce of China (MOFCOM), Year-end Special Report, “China Copes Proactively with Trade Frictions in an Imperturbable Manner.”

13 Fair Trade Bureau of MOFCOM indicates safeguard measures affects 10 billion USD export in the first 8 months, <http://gpj.mofcom.gov.cn/aarticle/subject/mymcyd/subjectdd/200909/20090906504018.html>.



the value-added rate in China was only 37 per cent in 2006 and in some extreme cases the value-added rate of exports was below 10 per cent.¹⁴

The ultimate solution for reduction of trade frictions is to upgrade the structure of exports. Therefore, this is an important task under China's reform policy; however, performance of the task suffers from many restrictions, especially IPR restrictions.

First, technical barriers to trade (TBT) have heavily restricted China's exports. By relying on their sophisticated technologies, developed countries have continued to heighten their technical barriers. In recent years, the E.U. has put into force various programs including Energy-using Products; Restriction of Certain Hazardous Substances; Waste Electrical and Electronic Equipment; and Registration, Evaluation and Authorization of Chemicals, among others. These programs have heavily affected the production costs and trade opportunities of other countries (especially developing countries), although they were implemented to save energy and protect the environment. Additionally, Japan promulgated a "Positive List System," which sets down rigorous technical standards to restrict the import of agricultural products and constitutes substantive technical barriers. Developed countries have intentionally set out to protect their home markets by use of such technical barriers as standards, authentication and procedures, which have been a new impediment against developing countries' export endeavours. According to the WTO, the number of TBTs and Sanitary and Phytosanitary Measures (SPSs) reported by its members has grown to 990 and 1,155, respectively, in 2006, and from 571 and 612, respectively, in 2002, an annual growth rate of 21.7 per cent and 24.9 per cent, respectively. According to the findings of some surveys by the Chinese Ministry of Commerce, in 2005 15.13 per cent of exporting enterprises in China were affected by TBT/SPS taken by foreign countries. Among the 22 major product categories, 18 have suffered direct losses due to foreign countries' implementation of TBT, valued at US\$69.1 billion and representing 9.07 per cent of China's total export value for 2005. In addition, Chinese enterprises spent US\$21.7 billion more in production costs to cope with TBT taken by foreign countries, which amounted to about 2.85 per cent of China's total export value in 2005. In addition, loss of export trade opportunities due to TBT by foreign countries against Chinese enterprises have amounted to US\$147 billion, about 19.29 per cent of the country's total export value in 2005.¹⁵

Second, China's upgrading of its exports has resulted in restrictions by enterprises in developed countries and IPRs. Multinationals are holding more than 85 per cent of the world's patents. They utilize their IPRs to seek economic benefits and also restrict their competitors. WTO's Agreement on Trade-Related Intellectual Property Rights has clarified the responsibilities of member nations for protection of IPRs in the international trade realm. Furthermore, the emerging trend of patent standardization¹⁶ has put enterprises within developing countries in a severe plight. As more and more products China exports feature increasingly sophisticated technologies, their producers and manufacturers have become increasingly aware of the restrictions wielded by IPRs. For example, regarding DVD players that China exports, the patent royalties paid by Chinese DVD player manufacturers to multinationals have exceeded one-third of the price of their DVD players. Therefore, Chinese manufacturers tend not to use their own brand names on the DVD players they export. In addition, China's exports are also restricted by those IPR laws formulated by its trading partners. For example, China receives the largest number of "super 301 clause" investigations and the "337" investigations initiated by the United States.

14 Reportedly, a Chinese-made Logitech mouse is sold for US\$40 in the U.S. However, the value added for this mouse in China's assembling link is only US\$3. "As China surges on, it also proves a buttress to American strength—Beijing feeds a Giant Appetite in U.S. for low-cost goods and borrowed capital," A. Higgins, Wall Street Journal, 30 January 2004.

15 Principle of the Department of WTO Affairs under the Ministry of Commerce answers questions raised by news reporters, "Report 2005 upon A Survey into The Influence Wielded by Foreign Technical Trade Measures upon China's Foreign Trade," <http://www.mofcom.gov.cn/aarticle/a/200612/20061204136582.html>.

16 Patent standardization means patents with private rights becoming international or national standards.



2.2.3 The Degree of China's Dependence on External Resources and Energy Sources Has Been Rising Rapidly

China suffers a shortage in terms of per capita possession of resources and does not have sufficient reserves of major mineral resources and thus must rely on the world market. For example, after 1993 when China became a petroleum net importer, the volume of petroleum imported by China has climbed each year. Crude oil imported by China increased from 59.7 billion tons to 199 million tons from 2000 to 2009, with import dependence of 24.8 per cent to 51.3 per cent of its petroleum consumption.¹⁷ It is estimated that by 2020, China's volume of petroleum consumption will be 450 to 540 million tons, the world's largest petroleum importer. By 2020, China's dependence on imported petroleum is likely to come close to 60 per cent of its consumption.¹⁸ Such an excessive dependence on overseas resources will, without doubt, result in a resources security problem. To cope with such a possibility, China needs to increase its strategic reserves of resources, step up its efforts in investments abroad, and construct safe transportation channels, among others.

The vehement fluctuations of resource prices in the world market have impacted China. China has become a major importer of some important resources; however, China's say, with respect to the pricing of these resources in the world market, has not been augmented as a consequence of its huge demands for these resources. Because many Chinese companies have not signed long-term purchasing agreements and failed to make full use of the futures market, most Chinese importers have to accept the international spot market prices and suffer a huge impact wielded by the sharp price fluctuations. From 2002 to 2006, the world market saw the prices for crude oil, natural gas, coal and metals rise by about 160 per cent, 130 per cent, 100 per cent and 130 per cent, respectively. From 2002 to 2006, Chinese importers had to pay about US\$60.7 billion more each year, owing to the price increases for seven energy sources (crude oil, refined oil products, iron ore, aluminum oxide, copper mine, natural rubber and logs).

3.0 Strategy of Sustainable Foreign Trade

Faced with increasingly inadequate energy sources and resources, and also an increasingly heavy pressure upon the country's natural environment, the Chinese government has become keenly aware of the necessity of transforming the mode of China's economic development. In recent years, the Chinese government put forward a Scientific Concept of Development under which it is necessary to plan out the relations among economy, society, population, resources and environment as a whole; construct a resource-saving, environment-friendly and innovative country; and allow the country to develop in a well-coordinated, sustainable way. Under guidance by the Scientific Concept of Development, it is required to transform the growth mode of foreign trade and implement a strategy of sustainable foreign trade.

3.1 Relationship between International Trade and Sustainable Development

At the Development and Environment Conference held in Stockholm in 1972, for the first time the environment became a global concern. Since then, this issue has drawn more and more attention from the global community. In 1987, the World Commission for Environment and Development (WCED) put forward the study report "Our Common Future," in which the concept of "sustainable development" was officially proposed and defined as "a capability to not only meet the needs of contemporary people, without damage upon satisfaction of the needs of their offspring... but also meet the demand of contemporary people for development, on the premise of causing no damage on the life system on the earth" (WCED, 1987). The

17 Oil Import Dependence Surges Alert Line, China Daily, 29 March 2010, <http://www.chinadaily.com.cn/hqj/zxqxb/2010-03-29/86611.html>.

18 F. Fei, 2003, "Basic Conception of The National Strategy of Energy Sources," DRC Working paper.



Montreal Protocol was concluded in 1987 and the Basel Convention in 1989. At the UN Conference on Environment and Development (namely the Rio Conference) held in 1992, the UN Framework Convention on Climate Change, the Convention on Biological Diversity, the Statement of Forest Principles, and the Rio Political Declaration were concluded. In 1997, the Kyoto Protocol was concluded. In September 2002, the World Summit Conference on Sustainable Development was held in Johannesburg, South Africa. The Copenhagen Climate Change Conference was held in December 2009. In brief, the international community has made constant efforts to improve environmental protection.

The relationship between international trade and environment is rather complicated and has become an important research domain in recent years and in which domestic and foreign scholars have conducted a lot of research. On the one hand, international trade has a certain adverse bearing on the environment. Enterprises in developed countries relocate their pollution-incurring facilities to developing countries where environmental standards are not as strict, have their products made in those developing countries and sell them back in their home countries. As a result, developing countries have seen a greater increase in environmental pollution. International trade gives a boost to expansion of the production scale and pushes the production scale close to, or even beyond, the bearing capacity of the environment, which puts increased pressure on the environment. Developed countries export some wastes and production remnants to developing countries.

On the other hand, international trade can also improve the environment. Trade development is conducive to the enhancement of the level of economic development. In a period of time when incomes remain at a relatively low level, an increase in income levels may be disadvantageous to the environment. However, when incomes reach a certain level, citizens will gain a better awareness of the environment and also possess stronger abilities to protect the environment, as Kuznets Curve has described. International trade is conducive to disseminating advanced technologies and equipment, enhancing the utilization efficiency of resources and energy sources on the whole, thus lessening the pressure on the environment. As for the overall influence wielded by trade upon the environment, different case studies have resulted in different conclusions.¹⁹ Statistically, for most industries, the ongoing international trade has had a relatively small influence on environment directly. This is mainly because only a small number of environment-sensitive products are deemed objects of trade; however, these products are gradually increasing in number. Moreover, in certain circumstances, these products will generate a visible direct influence on the environment.²⁰

To the contrary, environmental regulations have generated a far greater influence toward international trade. It is worth noting that many countries have begun to utilize environmental regulations intentionally to protect their home markets. Main implementation means of green trade barriers include:

- Green tariffs and market access – developed countries often, in the name of environmental protection, impose import surcharges on imported commodities that affect the ecological balance and pollute the environment, restrict or prohibit the import of these commodities or exercise trade sanctions.
- Green health quarantine system – to prevent people, plants and animals from pollutants, toxins, microorganisms and additives, many countries, to different extents, have set down their respective health quarantine indicators.
- Green packaging system – green packages refer to those packages that do no harm to the ecological environment and human health, cause no pollution of the environment, can be cycled and reused and

19 X. Shichun, 2006, "Status Quo and Perspective of Study into Issues of Trade and Environment," International Trade Issue, July.

20 L. Boxi, 2002, "Intramural Conflicts and Fusion between Environment and International Trade," May 17.



can boost sustainable development. Therefore, green packaging is popular in most developed countries.

- Green technical standards – strict compulsory technological standards are formulated to restrict the import of foreign commodities.
- Green environment mark – alternatively termed “environment mark” or “eco-mark,” this appears as a graph on products or packages. It indicates that the product not only meets a quality standard, but also satisfies environmental protection requirements for its production, use, consumption and disposal, without doing any harm to the ecological environment or human health. An exporting enterprise must file an application and gain an approval prior to receipt of a “green pass” (namely the “green environment mark”).

3.2 China’s Strategy of Sustainable Trade

3.2.1 Overall Train of Thought for the Strategy of Sustainable Development of Foreign Trade

China’s economy and trade development have both embraced a new strategy. In the future, China has to adjust its economic development strategy according to its Scientific Concept of Development. The key words of the new guidance for future development include: people first, innovation, balanced and sustainable development, and social harmony, among others. China will shift into an intensive development mode from its former extensive development mode.

Correspondingly, the trade strategy also needs to shift from export-oriented to a sustainable strategy. The strategy of sustainable foreign trade constitutes an important component of the strategy of well-coordinated and sustainable economic development, and also complements the latter. On the one hand, the implementation of the strategy of sustainable foreign trade helps realize sustainable economic development. On the other hand, the strategy of sustainable foreign trade relies on the transformation of the mode of economic development and also depends on the upgrading of China’s industrial mix.

The three pillars for sustainable trade strategy are economic sustainability, social sustainability and environmental sustainability.

As the tide of economic globalization sweeps over more parts of the Earth and with the formation of a production value chain in the world, different countries have taken different positions in the international “division of labour” scene. As a developing country, China has, in the past three decades, succeeded in involving itself in the world’s production network by means of attracting foreign investments and developing processing trade. But China has always remained on a low side in the world’s production value chain. The key to implementing the strategy of sustainable foreign trade is to enhance China’s position in the international “division of labour” scene, from labour intensive activities to technology intensive and information intensive activities.

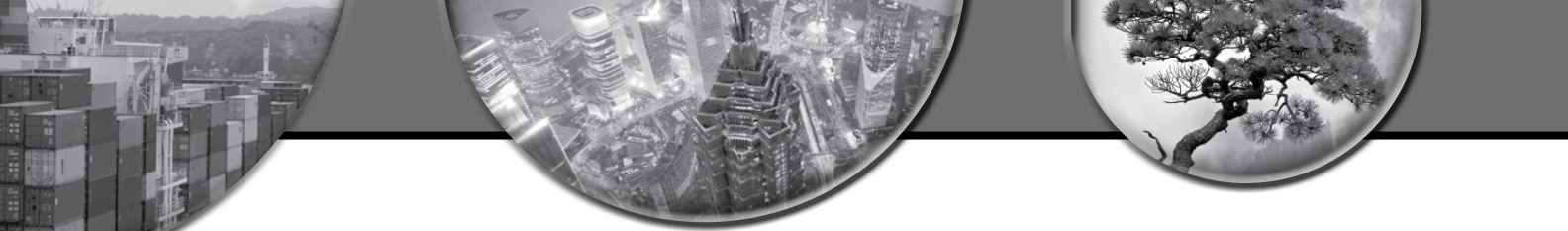
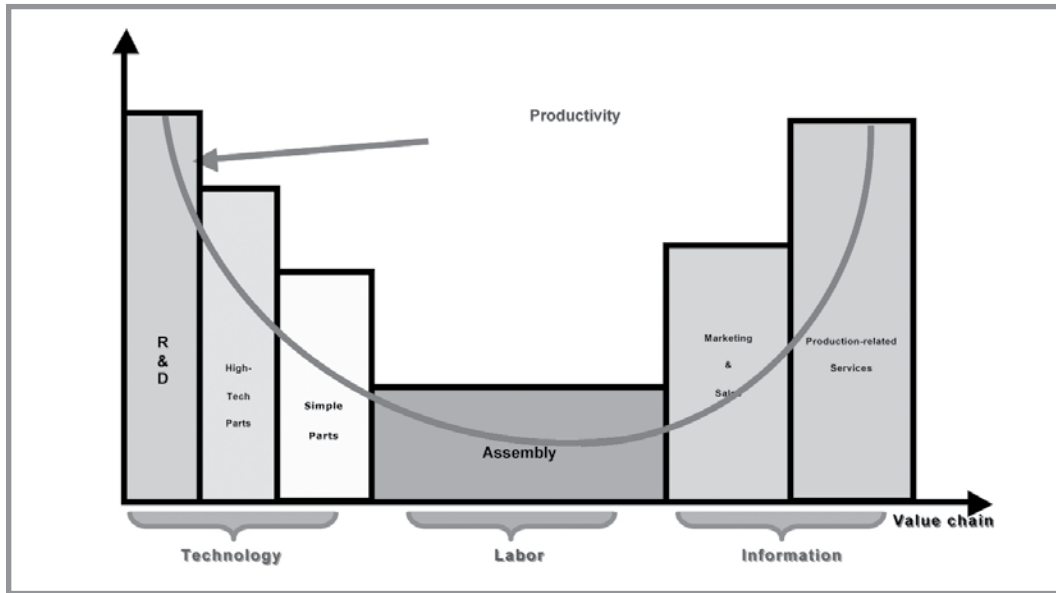


Figure 1: The global industrial value chain and enhancement of China's position in the global "division of labour" scene.




To reach the goal of economic sustainability, China will:

- increase export value added by means of innovation;
- prolong the service value-added link of export products;
- enhance international competitiveness of service sectors and develop trade in service;
- increase China's own IPRs, world-class brands and international marketing networks by means of China's transnational corporations; and
- play an active role in multilateral and regional systems to create a better external environment.

Trade development also has very deep social implications in China. China's exports are mainly labour intensive products. Several tens of millions migrant labourers work in the export sector, with incomes among the lowest in China. Therefore, exports have played important roles in the construction of social harmony, in terms of creating non-agricultural jobs, increasing income for migrant workers and reducing income inequality. To realize social sustainability, the sustainable trade strategy needs to:

- continue development of labour intensive exports;
- increase the productivity of the export sector for labour intensive products, which will increase the wage level of workers;
- enhance protection of labour rights;
- extend the production value chain of the export sector to inland areas to promote development; and
- enhance international competitiveness of inland manufacturing sectors.



To save energy, reduce resource consumption and protect the environment, the changes needed include:

- adjust the industrial mix, by means of developing those industries that consume less energy and are more environment-friendly, including development of the service sectors and energy-saving and environment-friendly industries;
- rely on the advancement of technologies, adopt more sophisticated technologies, reduce energy and material consumption and mitigate the pressure on the environment;
- enhance the level of managerial skills;
- consummate the institution systems, policies and mechanisms;
- establish an environmental friendly culture; and
- make full use of the roles of non-government organizations and consumers.

For these latter six changes, international trade can play a contributing role to different extents. Therefore, implementation of a strategy of sustainable foreign trade is required.

To reach the goal of environmental sustainability, the strategy of sustainable foreign trade is intended, under guidance by the theory of sustainable development, to:

- constantly optimize the import and export mix of those commodities whose production and manufacture are strongly based on the availability of environmental resources;
- reduce the export volumes of those products guzzling energy or incurring heavy pollution or being resource-based;
- increase the import volumes of resource-based commodities, environment-friendly technologies and equipment; and
- prevent those environment-sensitive products from being imported into China, as well as reforming the regulations, pricing and management for sustainable development.

3.2.2 Focal Tasks under the Strategy of Sustainable Foreign Trade

(1) Upgrading manufacture sectors. The task is to increase the technological values of export products, which means prolonging the value-added link of export products in China and also enhancing the value added of technologies. To realize this objective, on the one hand, it is necessary to continually encourage foreign invested enterprises to relocate more of their research and development facilities (together with more sophisticated technologies in their possession) into China and enhance the spilling-over effects in China. On the other hand, domestic enterprises must be encouraged to make full use of the opportunities arising as a consequence of economic globalization, carry out technical innovation activities worldwide, and support and boost the export of those commodities with their own IPRs.

(2) Prolonging the service and service value-added link of export products. At the moment, the value chain of products from processing trade in China have converged on the labour intensive



assembling link and have a too-short service value-added link. The final selling prices of China's exported commodities are often a few times or even over 10 times the freight on board prices. To prolong the service value-added chain of export products, it is necessary to do the following:

- create a better investment climate, attracting multinationals to relocate their regional headquarters to China and carry out managerial activities with high value added in China;
- open the service industry to the outside on a larger scale and enhance the level of service skills; and
- assist domestic enterprises in establishing world-class brands and international marketing networks and sharing the value added out of the service link.

(3) Enhancing international competitiveness of service sectors. In sharp contrast to the rapidly increasing competitiveness of trade in goods and the lingering favourable balance of trade, China's trade in service has lagged behind. In reality, China's trade in service has registered a long-term adverse balance. In 2009, China ranked fifth in the world for export value of trade in service, which totalled US\$128.7 billion (3.9 per cent of the world market); China ranked fourth in the world for import value, which totalled US\$157.5 billion (5.1 per cent of the world market), and China's trade deficit in service amounted to US\$28.8 billion. To increase the export value of trade in service it is necessary to:


- attach overwhelming importance to the development of trade in service and provide a better legal and policy-related environment for the development of trade in service;
- open the trade in service to the outside on a larger scale and usher in advanced service modes, management practices and talents; and
- seize significant opportunities arising from the offshore service outsourcing and confer generous support to export through service outsourcing.

(4) Improving the structure of those import and export commodities. The first task is to reduce the export volumes of those products guzzling energy, incurring heavy pollution or being resource-based. In 2006, China's total export value of those products guzzling energy, incurring heavy pollution or being resource-based was US\$88.2 billion, causing the country to suffer a severe shortage of energy sources and a worse environmental pollution plight.²¹ Since 2005, the Chinese government has adopted several policies and measures (including reduction or cancellation of export VAT rebates, imposition of export taxes, prohibition of processing trade and reduction of the total export volume) and reduced the export volumes of those products guzzling energy, incurring heavy pollution or being resource-based. In the future, the Chinese government needs to step up its efforts in implementing the aforesaid policies and measures.

Second, efforts must be made to:

- ensure the supply of energy sources and resources from abroad;
- increase the investments in overseas exploration and development of energy sources and resources;

21 W. Shouwen, 2007, "Transformation of The Growth Mode of Foreign Trade, and Facilitation of Trade Development in a Balanced Way," *International Trade*, Issue 7.

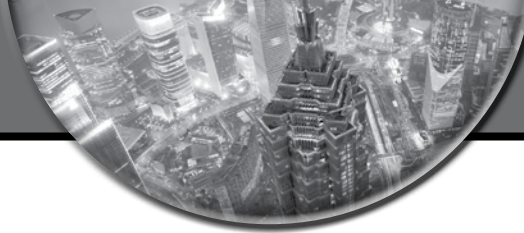
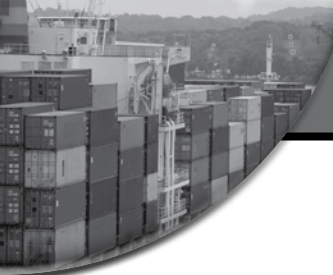
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- improve the economic, trading, political and diplomatic relations between China and countries exporting energy sources and resources;
 - sign long-term supply agreements with these countries to ensure the supply of energy sources and resources;
 - reduce the impact upon China incurred by fluctuations of spot market prices; and
 - construct safe international transportation channels.

Third, it is advisable to increase the import volumes of advanced technologies and equipment, particularly those environment-friendly technologies and equipment and to increase the utilization efficiency of energy sources and resources.

Fourth, it is necessary to strictly restrict the import of environment-sensitive commodities (such as production and domestic wastes and waste-type resources, among others) and restrict the import of those consumer goods that are not beneficial to resources and the natural environment (such as automobiles with a high emission capacity).

(5) Consummating the system and mechanism for the strategy of sustainable trade. First, it is necessary to take an active part in multilateral and regional negotiations on trade rules and to maintain a freer, more stable and transparent multilateral trade system. Second, it is advisable to consummate the environmental laws and regulations, as well as the enforcement of these laws and regulations, and to mobilize production and manufacturing enterprises to take control of their respective environmental costs. Third, efforts must be made to facilitate the rationalization of prices for energy sources, resources and land, and increase the resource taxes. Fourth, it is essential to radically cancel the VAT rebating to export of those products guzzling energy or incurring heavy pollution or being resource-based and to study the possibility of imposing environment taxes on exports. Fifth, it is also suggested to consummate those management systems overseeing import of environment-sensitive products including environment taxes on imports, prohibition of exports, inspection and quarantine, environmental standards, environmental certification, and environmental mark. Sixth, it is required to step up the efforts regarding protection of IPRs.

(6) Fostering up Chinese multinationals. Fostering up a galaxy of Chinese multinationals is a means of enhancing China's position in the international "division of labour" scene and of increasing the number of China's own IPRs, world-class brands and international marketing networks. China has entered a new stage of investing abroad and must learn from the proven experience of other countries in this respect, taking into account its own circumstances and encouraging and supporting the emergence of its own multinationals.



3

China's Electrical Power Sector, Environmental Protection and Sustainable Trade

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1.0 Introduction

One of the goals of China's 11th Five-Year Plan is to transform the growth pattern of the country's foreign trade, moving from extensive growth to intensive growth. This will involve a movement up the value chain, away from labour-intensive production toward increasing added value. To some extent this transformation will happen naturally as China develops, but it can be hastened by deliberate policies of investing in increased capacity for innovation, focusing on education, research and development.

The transformation also involves a movement away from energy- and pollution-intensive production methods. This kind of change is less likely to happen naturally and will depend critically on the creation of an enabling policy environment. The situation calls for an appropriate mix of tools, using the best of command-and-control, market-based and non-regulatory instruments in a manner that is suited to the Chinese context.

Fortunately China has the rich experience of other countries to draw on; Organisation for Economic Co-operation and Development (OECD) countries have in effect conducted experiments for decades with environmental regulatory and non-regulatory instruments, and the lessons learned from those experiments will allow China to avoid other countries' mistakes and capitalize on their successes.

In this paper we analyze international experiences with instruments for environmental performance and those instruments' relevance to a sustainable Chinese trade strategy, using the electricity sector as a case study.¹ We first explore the linkages between a sustainable trade strategy for China and regulatory initiatives in the electricity sector, and ask what the empirical and theoretical evidence tells us about the impacts of such initiatives on competitiveness. We then describe the current situation in China with respect to the electrical power sector and the legal and regulatory framework that governs it. Next, we survey some of the international experience with various policy tools for achieving goals such as energy security, energy efficiency and environmental protection. Finally, we conclude with policy options relevant to the Chinese experience.

2.0 Linking the Electricity Sector to Sustainability

The electricity sector in China has a number of important linkages to sustainability in general, and in particular to a sustainable trade strategy for the country. It is, in the first place, critically important because of its environmental impacts. Globally, energy production and use is responsible for over 60 per cent of all greenhouse gas (GHG) emissions. Within China, generation of electricity is a significant contributor to pollution and environmental degradation. We estimate below that China's thermal energy production results in the annual emission of 15.4 million tonnes of sulphur dioxide (one of the principal causes of acid rain) and 2.8 billion tonnes of carbon dioxide (almost half of China's total carbon dioxide emissions). In the production of both pollutants, China is now a global leader (though on a per capita basis its emissions are far below those of developed countries). Guan, Peters, Weber and Hubacek (2009) estimate that fully half of China's increase in carbon dioxide emissions between 2002 and 2005 was tied to its exports, and most of those emissions derive from the power used to produce those goods.

Electricity also underpins China's industrial sector; industrial users in 2006 accounted for 74.3 per cent of total electricity consumption. This significant reliance presents both threats and opportunities. The threats come from the prospect that any costly policies and measures adopted for the electricity sector

¹ In the Chinese government's classification of economic activities, the power sector refers to the industries that produce and supply electric power and heating. It includes the power production, power supply, and heat production and supply subsectors. This paper focuses on the electric power subsectors only.



will likely have negative impacts on large segments of the economy, at least initially. Unlike sectors that engage in a large amount of international trade or have close substitutes, the electricity sector will be able to pass through most of any cost increase to its customers (Reinaud, 2008). The opportunities are linked to policies or measures that can deliver electricity more cheaply, whether through energy efficiency, improved transmission efficiencies or other measures, and can lower costs for electricity-using firms and increase competitiveness.

A large body of work tries to estimate the competitiveness impacts of national environmental regulation. The intuitive view, supported by theory, predicts that regulation imposes costs that are reflected through reduced investment, industrial relocation and increased trade imbalances. An opposing view, championed by Porter and van der Linde (1995), argues that regulation forces firms to become more efficient and, thus more competitive, particularly as compared to firms in unregulated jurisdictions. The landmark survey of empirical evidence on the question was carried out by Jaffe, Peterson, Portney and Stavins (1995, p. 157), who found that “overall, there is relatively little evidence to support the hypothesis that environmental regulations have had a large adverse effect on competitiveness, however that elusive term is defined.” A number of other analysts reached similar conclusions.²

Other determining factors include proximity to markets, availability of natural resource inputs, labour costs, quality of human resources, political risks, macroeconomic stability, adequate legal regimes (including intellectual property rights, contract law, investment law and an independent judiciary), infrastructure (communications, energy, transportation) and other considerations. The verdict seemed to be that costs of complying with environmental regulations were simply too small relative to these other factors to have much competitiveness impact.

More recent studies, however, have criticized the early work on fundamental methodological grounds. Several exhaustive surveys³ of the research detail the various problems with that body of work, including:


- Because most studies used cross-sectional data rather than panel data, they were unable to control for characteristics specific to particular sectors and countries—differences that might have explanatory power for the different investment and location decisions (called the problem of unobserved heterogeneity). Such characteristics might include, for example, a link between dirty industries and natural resource use (meaning a reluctance to move away from those resources⁴) or a sector’s high transport costs (meaning manufacturing can’t move too far away from markets⁵), and would result in underestimated pollution-haven effects for those sectors.
- A related problem is that many studies aggregated industry figures to calculate overall responsiveness to environmental policies. To the extent this is done, it masks the presence of strong pollution-haven effects in particularly vulnerable sectors.
- Most studies assumed that environmental policy was exogenously determined. But if there is some way in which abatement costs are linked to environmental policy (that is, policy makers set tougher standards for big polluters and more lenient standards for insignificant ones), then if there is a pollution-haven effect, it will be to some extent offset by these linkages and will be underestimated (the so-called problem of endogeneity).

2 See, for example, Low and Yeats (1992), Tobey (1990), McConnell and Schwab (1990), Lucas, Wheeler and Hettige (1992), Birdsall and Wheeler (1993), Eskeland and Harrison (1997).

3 See, in particular, Brunnermeier and Levinson (2004), Copeland and Taylor (2004), Levinson and Taylor (2004).

4 Such an effect is found in Ederington, Levinson and Minier (2003).

5 The cement sector is an obvious example.



A rich body of work in the last 10 years or so has corrected for these problems in various ways and has consistently found a statistically significant pollution-haven or competitiveness effect.⁶ The bottom line seems to be that while on average there is no significant effect, some sectors can be strongly impacted. These tend to be sectors with high energy costs and highly polluting firms, such as aluminum smelting or iron and steel production.

Confirmation for these findings comes from another line of research, which seeks to identify the competitiveness impacts of climate policies specifically—policies that mimic the types of regulations this paper considers, since they would raise the cost of thermal-generated electricity. These studies are useful in the context of this paper because they typically seek to identify both direct costs of the regulations and indirect costs, which are attributable only to increases in the cost of electricity.

Most of this work focuses on the competitiveness impacts of the European Union Emission Trading System (EU ETS), introduced in January 2005. These studies indicate that only some sectors and subsectors within European industry are susceptible to any significant loss of competitiveness (Reinaud, 2008; Hourcade, Demailly, Neuhoff and Sato, 2007; Bruyn, Nelissen, Korteland, Davidson, Faber and van de Vreede, 2008). These include lime, cement and clinker kilns; primary aluminum smelters; integrated steel mills and electric arc furnace ovens; and certain chemicals, and costs for those among them that are the worst hit can increase by as much as 8 per cent. Studies from Australia (CISA, 2008) and the United States (Morgenstern, Aldy, Herrstadt, Ho and Pizer, 2007; Aldy and Pizer, 2009) point to a similar set of sectors and subsectors, and to similar impacts.

But indirect costs are typically much lower than total costs, and these are the ones that are most relevant if we are interested in the impacts of electrical sector regulation. Hourcade et al. (2007), modelling policies that they assumed would mean an electricity price increase of 10 euros per megawatt-hour, found that in the United Kingdom only four sectors had potential indirect impacts that equalled more than 4 per cent of gross value added: aluminum (9 per cent), other inorganic basic chemicals (5.7 per cent), fertilizers and nitrogen (5.3 per cent), and industrial gases (4.3 per cent). These sectors accounted for less than 0.2 per cent of the United Kingdom's GDP. In the end, these results suggest that broad competitiveness impacts as a result of electrical sector regulation are probably not likely, and that significant impacts would be limited to a few highly energy-intensive sectors.

On the other hand, a number of environmental policies for the energy sector exist that would not be costly. Energy efficiency of production and transmission, for example, typically end up having negative costs, with short payback times and positive returns on investment. These sorts of policies would increase the competitiveness of downstream industries that rely on electrical power.

Even for the sorts of regulations that are costly, stringent regulation in the electricity sector has a number of significant potential benefits. The so-called co-benefits of decreasing China's reliance on coal, for example, are enormous, and include significant potential public health benefits from clean air, increased energy security and an improved balance of payments. Stringent regulation in the area of energy also leads to increased exports of environmental goods in the clean energy sector as firms innovate in response to new, tighter rules, and then export the products of their innovation (Constantini and Crespi, 2008). This is widely touted as evidence in support of the Porter hypothesis: strict regulation breeds greater efficiency and innovation, which actually results in an improved competitive position for regulated firms.

Finally, efforts to steer China down a low-carbon energy path could pay off for China's exports more

⁶ For surveys of this body of work see Brunnermeier and Levinson (2004), Copeland and Taylor (2004), Levinson and Taylor (2004), Taylor (2004), SQW Ltd. (2006).



broadly. In both the European Union and the United States, there are efforts to legislate the use of trade measures that would discriminate at the border on the basis of embedded carbon (Wooders, Reinaud and Cosby 2009), and any policies that lowered China's emissions from manufacturing processes would provide a shield against targeting by such measures. Such policies would also provide ammunition to academics and others who argue that China's performance on climate change and other forms of pollution is in fact proactive and powerful (Zhang, 2008). In the end, this would impact on the so-called Brand China, and may thereby benefit China's exports and facilitate outward investment.

The links that connect energy policy, and electricity in particular, to a sustainable trade policy are clear, if complex. As described above, they include both risks and opportunities. The electricity sector is thus a useful case to consider, as it demonstrates that trade policy in a globalized world also involves policies that are not directly related to trade. In constructing a sustainable trade strategy for China, policy makers cannot avoid the need to broaden their focus to include areas like energy policy, which have a clear impact on the final effectiveness of any such strategy.

3.0 The Present Situation in China

This section will describe the current status of China's electrical power sector. It will first discuss the scale and efficiency of the various elements of the industry, and will then look at the environmental impacts of current electrical power sector activities. Finally, it will describe the existing legal and regulatory framework for the governance of the electrical power sector and the types of policy instruments currently used.


3.1 Scale and Efficiency of China's Electrical Power Sector

By the end of 2007 the installed capacity of China's power industry had reached 713 gigawatts, up 14.4 per cent from 2006. Over the past five years China's installed capacity has increased by 71,000 megawatts per year, with an annual growth of 25 per cent, a miracle of power development both in China and around the world. China's per capita installed capacity also increased, from 0.3 kilowatt in 2002 to 0.54 kilowatt in 2007, an increase of 80 per cent, and up to 11 times more than the 0.05 kilowatts China produced per capita in 1980, when the reform in the power industry began.

China's installed power capacity has ranked second in the world since 1996, just behind the United States. In 2006 the United States' installed capacity amounted to 1,076 gigawatts, and per capita installed capacity reached 3.6 kilowatts. Thus, the per capita installed capacity of the United States is nearly seven times that of China. In 2006 Japan's installed capacity amounted to 26 gigawatts, and per capita installed capacity reached 2 kilowatts, up to almost 4 times that of China. South Korea's installed capacity was approximately 65 gigawatts, and per capita installed capacity reached 1.33 kilowatts, up to 2.4 times that of China.

Installed hydropower capacity in China has reached 145 gigawatts, up 11.5 per cent over 2006 (see Table 1). Seven power-generating units of the Three Gorges Power Station were put into operation in 2007, with power-generation capacity of up to 14.8 gigawatts. In recent years construction has begun at many hydroelectric projects, such as Longtan, Xiaowan, Goupitan, Pubugou, Jinping, Laxiwa, Xiangjiaba and Xiluodu, some of which are already operating. The Xiluodu Power Station was opened in the Jinsha River Valley on November 8, 2007.

China's thermal power capacity was 554 gigawatts in 2007, up 14.6 per cent over 2006, but the growth



rate had dropped by 9 per cent. This significant slowdown should, over time, improve what has in the past been an excessive trend of continuously growing installed thermal power capacity, and so we expect a more optimized power structure to appear gradually in the near future.

In 2007 China's installed nuclear power capacity reached 8.9 gigawatts when the two 1-gigawatt nuclear power generating units at the Tianwan Nuclear Power Station were put into operation.

The same year, China's wind power capacity made breakout progress, and other new forms of energy production grew steadily as well. The total nationwide installed wind power capacity reached 4 gigawatts, an increase of 94.4 per cent over the previous year. The new capacity added in 2007 was almost equivalent to the total sum in all previous years.

In terms of power production and supply, China grew very quickly in 2007 (see Table 2). China's power production reached 3.2 million gigawatt-hours, up 14.9 per cent over the previous year; of this, hydropower accounted for 434,000 gigawatt-hours, an increase of 15.41 per cent; thermal power produced 2.7 million gigawatt-hours, an increase of 14.62 per cent; and nuclear power accounted for 62,000 gigawatt-hours, an increase of 16.26 per cent. In the past five years, China's power production grew from 1.654 million gigawatt-hours in 2002 to 3.256 million in 2007, with a mean annual growth rate of 19 per cent. Over the same period, per capita power production increased from 1,474 kilowatt-hours to 2,449 kilowatt-hours, a total increase of 975 kilowatt-hours, representing a mean annual increase of approximately 200 kilowatt-hours.

A significant gap exists between China and other countries with respect to per capita power production. For example, the United States' power production in 2006 was 4.065 million gigawatt-hours, or 13,550 kilowatt-hours per person, 5.5 times the 2007 per capita production of China.⁷ Japan's 2006 total power production was 1.077 million gigawatt-hours, or 8,451 kilowatt-hours per person, 3.5 times that of China. South Korea produced 391,000 gigawatt-hours in 2006, or 7,995 kilowatt-hours per person, 3.3 times China's production.

China's power consumption per unit of GDP is higher than that of more-developed countries. In 2006 China produced 2.834 million gigawatt-hours of power, and its GDP reached 20.9 trillion yuan, equivalent to US\$2.7 trillion, making the country's power consumption up to 10,508 kilowatt-hours per US\$10,000 of GDP. But the United States' total power production in 2006 was 4.070 million gigawatt-hours, and the country's GDP reached US\$13.2 trillion, resulting in power consumption of up to 3,078 kilowatt-hours per US\$10,000. Thus, China's power consumption based on GDP is 3.4 times that of the United States. It is also 4.79 times that of Japan and 2.07 times that of South Korea, respectively, showing a bigger gap with the developed countries. Some of this gap is undoubtedly due to China's economic structure, which has a much smaller service sector than most developed economies. But in any case, China still has a long way to go in power development and conservation.

⁷ Data from 2007 were not available for other countries besides China; therefore, here and below we compare 2007 data from China to 2006 data from other countries.

Table 3.1: China's power production and installed capacity in 2007.

	Total		Type of power as % of total	
	Power production, TWh	Installed capacity, GW	Power production	Installed capacity
Total	3208.7	713.3	100	100
Hydroelectric	434.3	145.0	13.5	20.3
Thermal	2701.3	554.0	84.2	77.7
Nuclear	62.1	8.9	1.9	1.2
Wind	11.0 ⁸	4.0	< 1	< 1
Others		1.4		< 1

Source: Statistics database, Chinese Economic Information Network. Numbers may not sum precisely due to rounding errors.

As Table 3.1 shows, thermal power production holds the lion's share of China's power structure, both of installed capacity and power production. In 2007 thermal power accounted for 77.7 per cent of China's 713 gigawatt installed capacity, and thermal power constitutes an even bigger proportion, up to 84.2 per cent of power production. In fact, such high dependency on thermal power is one of most important features of China's power industry. Thermal power has remained at over 70 per cent of China's installed power capacity since the 1950s and has even topped 80 per cent in certain years. Thermal power has remained at around 80 per cent of China's total power production since the 1990s and has even risen slightly (Table 3.2). The worldwide average for coal-fired power production is 38 per cent, accounting for 31.7 per cent of production in the United States (excluding oil and natural gas), 63 per cent in Japan (including oil and natural gas), and 62 per cent in South Korea (including oil and natural gas). Thus, the share of China's power supply that comes from coal is twice the world average.⁹

China's abundant hydropower resources could theoretically generate 690 gigawatts. Since 1949 the Chinese government has always attached great importance to comprehensive development and utilization of hydropower, and China has constructed many world-class, superscale hydropower stations, such as the Gezhouba Hydropower Station, Ertan Hydropower Station, Three Gorges Hydropower Station and Longtan Hydropower Station in the southwestern region and Longyangxia and Liujiaxia hydropower stations in the northwestern region. By the end of 2007 China's installed hydropower capacity reached 145 gigawatts, the highest in the world. Hydropower accounted for 20.4 per cent of China's total installed power capacity, 2 per cent above the world average of 19 per cent in 2006. Hydropower is a new force among China's renewable energy resources, and it also represents China's power advantage. For instance, the installed hydropower (excluding pumped storage¹⁰) of the United States—the world's largest power consumer—amounted to only 77.4 gigawatts in 2006, half that of China; hydropower in the United States accounted only for 7.9 per cent of its installed power capacity, 12 per cent lower than in China.

⁸ In the available Chinese power production statistics, wind is grouped together with "other."

⁹ China's thermal power production is mainly achieved through coal-fired production. For instance, 1,187.6 million tonnes of coal was used for thermal power generation in 2006, amounting to 50.37 per cent of China's total coal supply in that year; only 13.4 million tonnes of oil was used for power generation, amounting to only 3.6 per cent of China's oil supply (China Statistical Yearbook 2007, Chapter VII).

¹⁰ A method of storing hydropower by pumping water against gravity and releasing it later.

Table 3.2: China's power balance sheet (in 100 million kWh).

	1990	1995	2000	2004	2005	2006	2007
Total production (includes other types of power, such as wind, not specifically listed)	6,212.0	1,0077.3	13,556.0	22,033.1	25,002.6	28,657.3	32815.5
Hydropower	1,267.2	1,905.8	2,224.1	3,535.4	3,970.2	4,357.9	4,852.6
Thermal power	4,944.8	8,043.2	11,141.9	17,955.9	20,473.4	23,696.0	27,229.3
Nuclear power	0.0	128.3	167.4	504.7	530.9	548.4	621.3
Power imports (+)	19.3	6.4	15.5	34.0	50.1	53.9	42.5
Power exports (-)	0.9	60.3	98.8	94.8	111.9	122.7	145.7
Total power supply	6,230.4	1,0023.4	13,472.7	21,972.3	24,940.8	28,588.4	32,712.4
Total power consumption	6,230.4	1,0023.4	13,471.4	21,971.4	24,940.4	28,588.0	32,711.8
End consumption	5,795.8	9,278.9	12,534.7	20,550.8	23,233.9	2,6729.1	30650.1
Industry	4,438.7	6,915.3	8,716.9	14,833.7	16,775.2	19,388.9	22,569.1
Power transmission and distribution loss	434.6	744.5	936.7	1,420.6	1,706.5	1,858.8	2,061.7
Power consumption by sector (including transmission and distribution loss):							
Agriculture, forestry, animal husbandry, fisheries and water conservation	426.8	582.4	673.0	808.9	876.4	947.0	979.0
Mining	4,873.3	7,659.8	9,653.6	16,254.3	18,481.7	21,247.7	24,630.8
Construction	65.0	159.6	154.8	222.1	233.9	271.1	
Transportation, warehousing and postal industries	105.9	182.3	281.2	449.6	430.3	467.4	309.0
Wholesale, retail, accommodation and food service sectors	76.2	199.5	393.6	735.4	752.3	847.3	531.9
Others	202.4	234.2	643.2	1,036.6	1,340.9	1,555.9	929.8
Personal consumption	480.8	1,005.6	1,672.0	2,464.5	2,824.8	3,251.6	17,08.6
							3622.7

Source: China Statistical Yearbook 2008, table 6.6. Numbers may not sum precisely due to rounding errors.

China's nuclear power construction began in the 1980s. The Qinshan Nuclear Power Station, in Zhejiang Province, is the first nuclear power station designed and constructed by China. A 288-megawatt pressurized water reactor unit was installed in the first phase. The Daya Bay nuclear power station, commissioned in 1994, was the first pressurized water reactor nuclear power station in China, which was entirely imported, with two reactors, each with an installed capacity of 984 megawatts. At the end of 2007 China's installed capacity of nuclear power reached 8.85 gigawatts, accounting for 1.2 per cent of total installed power capacity. As of 2006, 442 nuclear power stations were operating worldwide, with a total installed capacity of 370 gigawatts, accounting for 16 per cent of the world's total installed power capacity. Thus, the proportion of China's installed power capacity that comes from nuclear power is 15 percentage points lower than the world average.

To optimize the power structure, realize energy savings and emission reductions, save fossil energy resources and increase the power supply, China formulated the Renewable Energy Law in 2005, aimed at encouraging market players to invest actively in non-fossil energy resources such as wind, solar, hydropower, bioenergy



and wave power. China also promulgated a special price policy and established a wind power price subsidy fund to support the development of wind power. In recent years China's wind power has made rapid progress. Under the 11th Five-Year Plan, China's installed wind power capacity will reach 5 gigawatts, thirty large (100 megawatts and above) wind power projects will be completed, and several 1-gigawatt wind power bases will be constructed in provinces such as Inner Mongolia, Hebei, Jiangsu and Gansu. This goal is likely to be realized two years ahead of schedule.

Influenced by the threat of global climate change, various countries, especially the developed countries, started an upsurge of new energy exploitation and construction in order to minimize the effects of fossil energy on the atmosphere and optimize the energy structure. For example, during 2005 and 2006 the installed capacity of wind power in the United States increased at a rate of 30 per cent annually; at the end of 2006 the installed wind power capacity in the United States reached 16.8 gigawatts, accounting for 1.7 per cent of the country's total installed capacity. Some reports also indicate that more than 5 gigawatts of wind power were put into operation in 2007 in the United States. Zou (2008) have estimated that by the end of 2009, the United States will surpass Germany to become the largest wind power producer in the world, and the price of wind power will decline from its 1990s price of US\$0.38 per kilowatt-hour to between US\$0.04 and US\$0.06, in tandem with the large-scale industrialization of wind power in the United States.

As far as power transmission, at end of 2007 transmission lines carrying 220 kilovolts and above reached 327,000 kilometres in China, the capacity of China's substations reached 1,144 million kilovolt-amperes, transregional power transmission increased from 20,700 gigawatt-hours in 2002 to 120,700 gigawatt-hours in 2007, and interprovincial power exchange grew from 80,400 gigawatt-hours in 2002 to 144,500 gigawatt-hours in 2006. Those changes show that the power grid has been optimized to some extent. The power grid has grown at a rate of nearly 10 per cent annually since end of the 10th Five-Year Plan, and investment in power grid construction reached 245.1 billion yuan in 2007, an increase of 20.7 per cent over the previous year.

China's power industry is excessively reliant on coal. High coal demand and the vast land area of China, which stretches more than 2,000 kilometres from north to south, makes coal transportation and supply a particular challenge for China's power supply. For instance, the train from Yangquan, Shanxi Province, takes two to three days to arrive at the coastal areas in Guangdong Province. The capacity of both road and rail transport has become saturated. If China does not accelerate the process of adjusting its power structure, instead building up more coal-fired power projects in the southeastern coastal regions, coal transportation will meet great difficulty in the event of serious natural disasters. Events such as the January 2008 coal shortage, caused by heavy snowfall, will likely reoccur. The strong coal demand will also create tension in the coal supply. China consumed 1.143 billion tonnes of coal for power generation in 2006 and 1.282 billion tonnes in 2007, an increase of 139 million tonnes, or 12 per cent. In the same two years, China's coal production grew more than 8 per cent, and in 2007 China's raw coal yield increased only by 143 million tonnes. The increase in coal consumption of 139 million tonnes for power generation was coupled with growing demand for coal for the production of steel, iron, petrochemicals and additional coal exports.

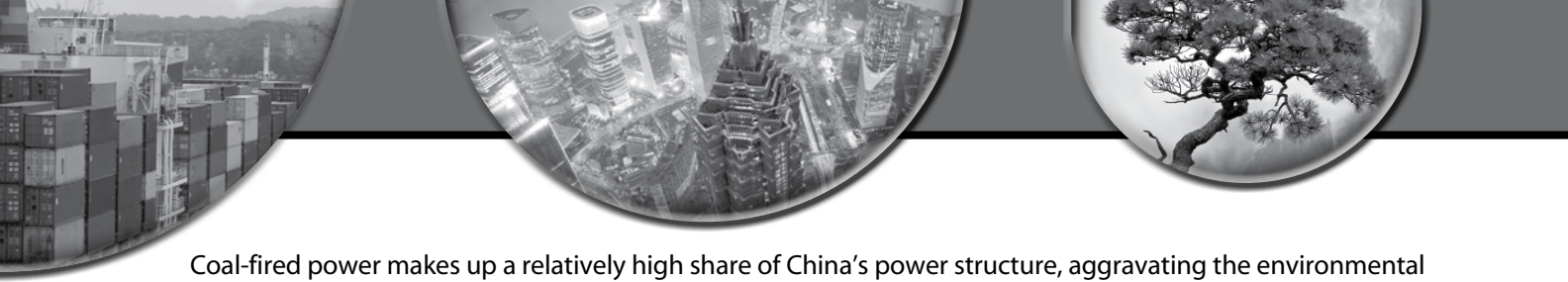
3.2 Effects of the Power Industry on the Environment

The power industry is typically a pollution-intensive industry. It produces a lot of industrial waste gas, waste water and solid waste. In 2006 China's power and heat production and supply industries accounted only for 7.6 per cent of the value of China's industry, but accounted for 59.0 per cent, 44.8 per cent and 0.19 per cent, respectively, of the emissions of sulphur dioxide, industrial soot and industrial dust. It also produced 10.4 per cent of the emissions of industrial waste water and 20.2 per cent of all industrial solid waste (Table 3.3).

Table 3.3: Emissions of industrial airborne pollutants, waste water and solid waste by industry, 2006, as percentages of total for all industry in China.

Industry	Added value	Sulphur dioxide	Soot	Dust	Waste water	Solid waste
Coal mining and dressing	3.94	0.71	1.57	2.44	2.60	13.62
Oil and natural gas exploitation	6.57	0.15	0.13	0.04	0.54	0.08
Ferrous-metal mining and dressing	0.65	0.26	0.22	0.51	0.74	9.63
Non-ferrous-metal mining and dressing	0.74	0.48	0.28	0.28	2.03	12.91
Non-metal minerals mining and dressing	0.42	0.27	0.67	1.12	0.47	0.82
Other minerals mining	0.00	0.01	0.04	0.03	0.04	0.08
Agricultural by-product processing	3.83	0.82	2.08	0.10	4.54	1.02
Food processing	1.61	0.51	0.65	0.03	2.07	0.25
Beverages	1.58	0.57	1.14	0.03	2.69	0.57
Tobacco	2.61	0.07	0.09	0.03	0.14	0.03
Textiles	4.35	1.48	1.60	0.08	9.51	0.48
Clothing, shoes and hats	2.01	0.10	0.14	0.01	0.66	0.05
Leather, furs, down and related products	1.29	0.09	0.13	0.03	0.98	0.04
Timber processing, including wood, bamboo, rattan, palm and grass	0.75	0.23	0.48	0.21	0.25	0.09
Furniture	0.55	0.01	0.05	0.01	0.04	0.02
Paper and paper products	1.52	2.10	2.70	0.17	18.00	1.12
Printing and reproduction of media	0.61	0.01	0.03	0.00	0.06	0.01
Cultural, educational and sports products	0.51	0.00	0.01	0.06	0.04	0.00
Oil processing, coking and nuclear fuel processing	2.54	3.24	4.75	2.52	3.38	1.25
Chemical materials and chemical manufacturing	5.93	5.46	6.59	2.42	16.15	7.15
Pharmaceutical manufacturing	1.99	0.36	0.58	0.03	2.07	0.18
Chemical fibre manufacturing	0.66	0.65	0.59	0.03	2.38	0.26
Rubber manufacturing	0.79	0.23	0.23	0.01	0.29	0.07
Plastics manufacturing	1.83	0.10	0.09	0.00	0.16	0.03
Non-metal mineral products manufacturing	4.01	9.14	15.80	70.16	2.07	2.97
Ferrous-metal smelting and pressing	7.69	7.32	9.38	15.74	7.53	20.52
Non-ferrous-metal smelting and pressing	3.51	3.40	1.94	1.95	1.57	3.90
Metal products manufacturing	2.44	0.20	0.28	0.17	1.08	0.16
Universal equipment manufacturing	4.17	0.26	0.36	0.51	0.60	0.14
Special equipment manufacturing	2.52	0.11	0.23	0.03	0.55	0.10

Source: China Statistical Yearbook 2007, chapters 12 and 14.



Coal-fired power makes up a relatively high share of China's power structure, aggravating the environmental impact of the power industry in China. Worldwide in 2006, coal-fired power accounted for 41 per cent of installed power capacity, hydropower for 19 per cent, nuclear for 16 per cent, natural gas for 15 per cent, oil for 16 per cent and others for 1 per cent. The installed capacity of coal-fired power in China, however, has always remained over 70 per cent since 1949, and reached 78 per cent in 2006, almost twice the global average of 41 per cent (International Energy Agency [IEA], 2007). Correspondingly, China's nuclear power, natural gas power and utilization of new energy resources are far below the world averages.

Coal-fired power generation has significant environmental impacts. First, coal-fired power generation requires a large amount of water and generates much waste water. We estimate that water for the power industry, especially for thermal power, accounts for 40 per cent of China's industrial water use. In 2006, 10.4 per cent of China's industrial wastewater emissions originated from the power industry.

Second among the environmental impacts of coal is the fact that extensive coal mining itself causes environmental pollution. Coal consumption for electrical generation in China reaches over one billion tonnes annually, about 50 per cent of China's total coal supply. Some of the serious environmental problems caused by coal mining include destruction of farmland and local ecosystems and damage to underground water and land resources. Coal mining is also one of the more pollution-intensive industries in China (Table 3.3).

Third, power production from coal causes severe air pollution. If calculated by China's previous thermal power sulphur dioxide emission level of 5.7 grams per kilowatt-hour and carbon dioxide emission level of 1,050 grams per kilowatt-hour, China's thermal power production in 2007 emitted about 15.4 million tonnes of sulphur dioxide and 2.8 billion tonnes of carbon dioxide. China now is first in the world in emissions of both sulphur dioxide and carbon dioxide, both greenhouse gases. Our data show that coal-fired power production is the largest contributor. Power generation from coal emits 28 per cent more carbon dioxide than oil and 69 per cent more than natural gas to produce the same amount of power.

Furthermore, sulphur dioxide from coal combustion is the largest contributor to acid rain, and more than one-third of China's land area is already acidified. Sulphur dioxide and carbon dioxide pollution also have high economic costs and markedly endanger public health.

Compounding the situation, highly energy-consuming and polluting small units make up a high proportion of China's coal production and supply. Over the last five years, thermal power units with capacity below 100 megawatts still constituted 25 to 30 per cent of China's installed thermal power capacity (Table 3.4). Even in 2007 the capacity of such small generating units still reached 104 gigawatts, accounting for 18.6 per cent of thermal power capacity. These poorly equipped, small thermal power units have lower production efficiency and create serious pollution and waste.

Table 3.4: Size distribution of China's installed capacity of thermal power units, 2002–2006.

	2002	2003	2004	2005	2006
<i>100 MW and over:</i>					
Number of units	855	931	1026	1174	1393
Installed capacity (megawatts)	190.8	208.8	236.2	278.0	358.7
Proportion of thermal power capacity (%)	71.84	72.06	72.69	72.37	74.11
<i>200,000 kilowatts and over:</i>					
Number of units	519	554	612	708	880
Installed capacity (megawatts)	152.0	164.1	186.4	221.2	295.4
Proportion of thermal power capacity (%)	57.34	56.64	57.38	57.59	61.03
<i>300,000 kilowatts and over:</i>					
Number of units	314	342	394	480	635
Installed capacity (10,000 kilowatts)	110.7	121.2	142.2	174.9	244.4
Proportion of thermal power capacity (%)	41.69	41.82	43.76	45.53	50.44

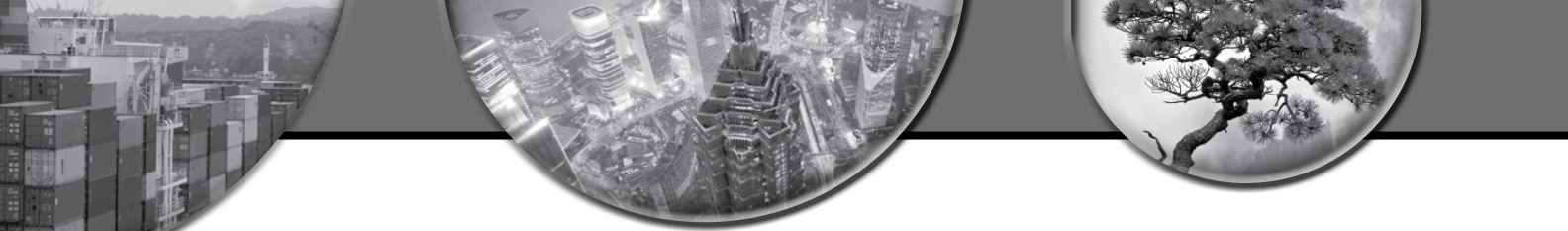
Source: SERC (2007).

Compared with large power-generation units, small thermal power units are highly inefficient. For example, 600-megawatt supercritical units consume only 299 grams of standard coal to produce one kilowatt-hour of electricity, but 50-megawatt units consume as much as 450 grams of coal to produce the same amount. In other words, small generating units consume more than 50 per cent more coal than big modern generating units to produce the same amount of power. Of the over 1.3 billion tonnes of coal consumed by China's power industry in 2007, small generation units (100 megawatts or below) used about 0.4 billion tonnes.

Small generating units are also more polluting than large ones. In 2006 the power industry emitted over 14 million tonnes of sulphur dioxide, accounting for over half of total emissions, of which thermal power units of 100 megawatts and below were responsible for 5.4 million tonnes. In other words, small power units produced about 39 per cent of the sector's sulphur dioxide emissions while producing less than 26 per cent of its power. Emissions from small thermal power units also include numerous nitrogen oxide compounds, soot, dust and solid waste.

In short, the annual coal consumption for China's small thermal power units, which can generate 104 gigawatts, is approximately 110 million tonnes more than that of big units of the same generating capacity, resulting in additional emissions of 220 million tonnes of carbon dioxide every year. Thus, it's urgently required that China shut down small thermal power units, promote a clean approach to development of the power industry and improve the country's ability to respond to climate change.

Because coal-fired power is still a mainstay of the Chinese power supply and cannot reach zero emissions, the environmental impact of China's power industry will continue to increase. More seriously, a big gap still exists between China and developed countries with respect to the efficiency of the power industry. More pollution will occur if China's energy resources are not fully utilized. For instance, China's coal consumption for power generation is 50 to 60 grams per kilowatt-hour higher than the highest efficiency level in the rest of the world, meaning that China unnecessarily consumes about 100 million extra tonnes of standard coal for power generation every year. Power transmission loss in China is 2.0 per cent to 2.5 per cent higher than that of internationally advanced power companies, resulting in an additional power loss of 45,000 gigawatt-hours per year, an amount roughly equivalent to the annual power consumption of a province in central China. The mean water consumption of thermal power plants is 40 to 50 per cent higher than in the world's advanced thermal power plants, resulting in additional consumption of 1.5 billion cubic metres of water per year.




China's rapid economic development presents the likelihood of even greater societal demand for power. Through energy conservation and emission reductions, China's coal consumption per kilowatt-hour produced could decline along with emissions of sulphur dioxide. However, since China's total coal consumption is still growing substantially, emissions and other environmental pressures from the entire society's coal use will further increase. The momentum needed to reduce China's overall pollution, or even to maintain it at current levels, has yet to be achieved.

3.3 Legal Framework for Environmental Protection in China's Power Sector

The existing legal framework for environmental protection in China's power industry comprises the following fourteen laws:

1. Environmental Protection Law of the People's Republic of China
2. Law of the People's Republic of China on the Prevention and Control of Atmospheric Pollution
3. Law of the People's Republic of China on the Prevention and Control of Water Pollution
4. Marine Environment Protection Law of the People's Republic of China
5. Law of the People's Republic of China on Prevention and Control of Pollution from Environmental Noise
6. Law of the People's Republic of China on Prevention of Environmental Pollution Caused by Solid Waste
7. Law of the People's Republic of China on Prevention and Control of Radioactive Pollution
8. Law of the People's Republic of China on Water and Soil Conservation
9. Law of the People's Republic of China on Environmental Impact Assessment
10. Cleaner Production Promotion Law of the People's Republic of China
11. Law of the People's Republic of China on Energy Conservation
12. Renewable Energy Law of the People's Republic of China
13. Power Law of the People's Republic of China
14. Energy Law of the People's Republic of China

The basic idea and framework of China's environmental protection policies is that the polluter pays to pollute. Within a certain range (within the permissible range of environmental capacity), the government permits firms to pollute freely. However, the polluters must pay for any emissions over this limit. The government collects the pollutant discharge fees and uses the revenues for environmental protection and research. In recent years China has tightened its environmental protection laws and standards. For



example, no matter how much air pollution polluters emit, they must pay for it, while in the past the polluters paid nothing if they produced air or water pollution below the permissible level.

The implementation of China's laws and regulations requires the government to formulate the environmental quality standards and discharge standards, formulate the discharge fee packages for different types and amounts of pollutants, and collect and use the discharge fees.

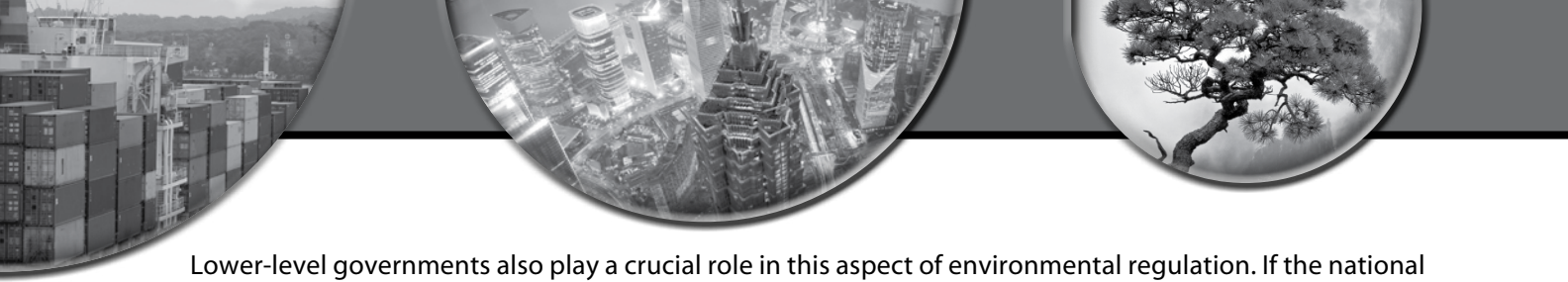
The environmental protection authority of the State Council is the Ministry of Environmental Protection, which plays a key role in formulating China's environmental quality and emission standards. Under the Environmental Protection Law, this ministry is responsible for formulating the state's environmental quality standards; setting the national pollutant discharge standards according to the environmental quality standards and the economic and technical conditions of the country; and establishing a supervision system, formulating supervision criteria and building up a supervision network to enhance environmental supervision and management in collaboration with relevant departments and organizations.

To implement the national environmental protection laws, the State Council also formulated the Administrative Regulations on the Collection and Use of Pollutant Discharge Fees. The latest version was amended and adopted on July 1, 2003, by Decree No. 369 of the State Council of the People's Republic of China. Article 12 of the regulations requires polluters to pay pollutant discharge fees in accordance with the following provisions:

1. Under the Law on the Prevention and Control of Atmospheric Pollution and the Marine Environment Protection Law, fees for polluting the air and ocean are based on the types and quantities of pollutants.
2. Under the Law on the Prevention and Control of Water Pollution, fees for water pollution are based on the types and quantities of pollutants, but are doubled if the pollution exceeds state or local discharge standards.
3. Under the Law on Prevention of Environmental Pollution Caused by Solid Waste, fees for industrial solid waste are based on the types and quantities of pollutants if no storage or disposal facilities and sites are built for the waste or if the storage or disposal facilities and sites for industrial solid waste don't comply with environmental protection standards. Fees for hazardous waste discharge are based on the types and quantity of pollutants if the land-filling of hazardous waste doesn't comply with the relevant state regulations.
4. Under the Law on Prevention and Control of Pollution from Environmental Noise, discharge fees are paid according to the noise level if the pollution from environmental noise exceeds the national environmental noise standards.

These discharge fees don't relieve the polluters of their responsibility to prevent and control pollution or to pay compensation for pollution damages, or from any of the other responsibilities they have under the various laws and administrative regulations.

Under Article 11 of these regulations, the State Council's pricing departments, financial departments, and environmental protection and economic trade authorities formulate the national discharge fees according to industrial pollution prevention and control requirements and the economic and technical realities of the polluters. Revision of the discharge fees occurs through an advance notice system.



Lower-level governments also play a crucial role in this aspect of environmental regulation. If the national standards do not specify fees, the governments of provinces, autonomous regions and municipalities that are directly under the central government may formulate local levy standards for discharge fees and report to the State Council's pricing and financial departments and environmental protection and economic trade authorities for filing.

Under Article 12 of the regulations, the national environmental protection authorities are responsible for determining and publicizing the allowable types and quantities of pollutants and the discharge fees.

Article 18 specifies that the discharge fees must be included in the budget and incorporated into special environmental protection funds. The fees are mainly used for loan granting or loan interest discounts for prevention and control of key pollution resources; regional pollution prevention and control; development, demonstration and application of new pollution prevention and control technologies and techniques; and any other pollution prevention and control projects stipulated by the State Council.

The State Council's financial departments may prepare more detailed implementation methods after soliciting the opinions of the State Council's environmental protection authorities and other concerned departments.

The environmental protection laws allow the governments of provinces, autonomous regions and municipalities directly under the central government to formulate local environmental quality standards for issues not covered under the federal environmental quality standards. Provincial and municipal governments may also formulate local pollutant discharge standards for pollutants not covered by the national pollutant discharge standards or formulate stricter local pollutant discharge standards for pollutants that are covered by the national pollutant discharge standards. These standards must then be reported to the State Council's environmental protection authority for filing. These governments may also issue regular environmental communiqués jointly with the national environment departments.

China's environmental protection laws are mainly implemented by two approaches. First, as a national economic sector, and as the major producer of air pollution, water pollution, radioactive pollution, solid waste, environmental noise, marine pollution and more, the power industry is expected to implement the relevant environmental protection laws and regulations of China.

Second, the Chinese government formulates special environmental laws for the energy and power sectors. For instance, under Section 2 of Article 30 of the Law on Energy Conservation, which covers industrial energy conservation, the State Council's energy conservation and other relevant departments formulate technology policies to promote energy savings at the firm level within major energy-consuming industries such as power, steel and iron, non-ferrous metals, building materials, oil processing, chemicals and coal. Through Article 31, the state encourages industrial enterprises to adopt highly efficient and energy-saving motors, boilers, furnaces, fans and pumps, and to employ co-generation technology, residual heating and pressure utilization, clean coal technology and advanced energy monitoring and control technologies. Under Article 32, enterprises supplying power to the grid are also required to buy power from clean and efficient co-generation units, residual heating and pressure-generating units and other compatible generating units, with the price subject to state regulations. Article 32 is implemented under the regulations of the State Council's relevant departments on energy conservation and power-generation scheduling management. Article 33 prohibits the construction of coal-fired power generation units, oil generation units and coal-fired thermoelectric units.

Article 5 of the Electricity Law requires companies that construct, produce, supply and utilize power to

protect the environment, adopt new technology, reduce harmful emissions and prevent the pollution and other hazards. The state encourages and supports the use of renewable energy resources and clean energy generation.

Environmental protection in the power industry is mainly carried out through the State Electricity Regulation Commission. The power industry **association** is responsible for developing management methods and implementation details that are in accordance with the environmental protection laws.

3.4 Policy Instruments for Environmental Protection in China's Power Sector

The environmental protection policy instruments frequently used in China's power sector include administrative measures, command and control measures, and economic tools. These policy measures are reflected in recent energy conservation and emission reduction actions.

At the end of 2001 China's State Environmental Protection Administration initiated the national 10th Five-Year Plan for Environmental Protection to address the grim situation of environmental protection in China. The plan proposed energy-conservation and emission-reduction goals specifying that by 2005 sulphur dioxide emissions from the power industry would be reduced by 10 to 20 per cent from 2000 levels and the average coal consumption of coal-fired power plants would drop to 15 to 20 grams per kilowatt-hour below 2000 levels.

Unfortunately, this goal was not achieved. Sulphur dioxide emissions increased by 27.8 per cent over 2000 levels, and chemical oxygen demand declined by only 2.1 per cent, far below the goal of a 10 per cent **reduction**. In the 11th Five-Year Plan, the state requires that by 2010, energy consumption per unit of GDP will be reduced by 20 per cent from 2005 levels and emissions of major pollutants will drop by 10 per cent.

Table 3.5: Key indicators of economic and social development for the 11th Five-Year Plan in the category "Population, Resources and Environment."

Indicator	2005	2010 (projected)	Average annual growth (%)	Cumulative 5-year change (%)
Total population (billions)	1.31	1.36	<0.8	
Energy consumption per unit of GDP				-20
Water consumption per unit of industrial added value				-30
Efficient utilization coefficient of agricultural irrigation water	0.45	0.50		11
Comprehensive utilization rate of industrial solid wastes (%)	55.8	60		8
Total farmland (100 million hectares)	1.22	1.2	-0.3	
Reduction of total emissions of major pollutants (sulphur dioxide and chemical oxygen demand)				10
Forest cover (%)	18.2	20		10

Note: GDP used in calculations was based on constant 2005 prices.

To achieve the objectives of energy conservation and emission reduction, China's environmental protection policy instruments comprise the following four types:

1. *Administrative*. Such policy instruments are characterized by incorporation of the objectives of energy



conservation and emission reduction into the everyday working systems of government bodies and officials. For instance, these policies devolve these objectives onto governments and government officials at various levels, determines the local governments' specific objectives and responsibilities for energy conservation and emission reduction, and call for establishment and improvement of statistics and an assessment and examination system for energy conservation and emission reduction. The results of implementation of these objectives are linked to the appointment and promotion of government officials and the leaders of state-owned businesses.

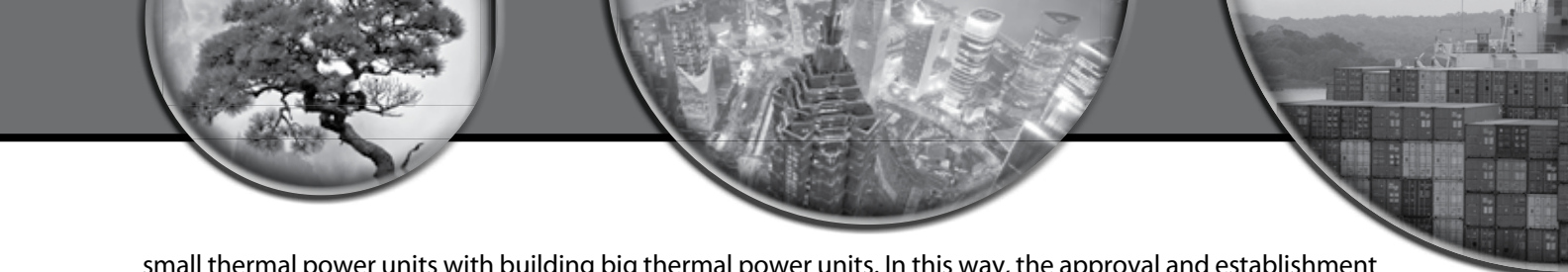
2. *Command and control.* China has enhanced its Energy Conservation Law and introduced the Renewable Energy Law and Energy Law to help achieve the objectives of energy conservation and emission reduction. Some technical standards and regulations have also been adjusted based on these laws.
3. *Economic.* These policy instruments cover three categories. The first is industrial policy. The Chinese government formulates industrial policies for energy-intensive sectors such as steel and electrolytic aluminum industries in order to substantially lift entry barriers in terms of energy efficiency and to speed up the elimination of small steel-making and thermal power units that have out-of-date production capabilities. The second category is research and development. China strengthens the financial support for the development and utilization of energy-saving technologies as well as improvement of relevant management systems. The third is economic measures; for example, China has established an emission trading market.
4. *Voluntary.* China takes resource-saving as a basic national policy and also a key element of energy policy in this new era. The country has also stepped up efforts to popularize energy conservation and emission reduction and to raise public awareness of and skills in energy conservation so as to create an energy-saving atmosphere in the entire society.

These administrative policy tools have distinct Chinese characteristics. The next part of this section will focus on how to implement these policy instruments based on the example of energy conservation and emission reduction in the power industry.

In order to achieve the objectives of energy conservation and emission reductions during the period of the 11th Five-Year Plan, the Chinese government has undertaken a very important initiative: industrial restructuring. The restructuring of the power industry aims to shut down and phase out highly polluting, highly energy-consuming small thermal power plants and develop vigorously renewable energy resources.

As mentioned above, thermal power units below 100 megawatts are the source of the most serious pollution and highest energy consumption in the power industry. In 2007 the State Council proposed the closure of 50 gigawatts of thermal power units during the period of the 11th Five-Year Plan, replacing them with the installed capacity of larger and more energy-saving superscale or ultra-superscale thermal power units. This means that 12 gigawatts to 13 gigawatts will be closed down annually. In 2007, the first year of this "big up/small down" strategy, the State Council put forward a conservative objective of closing down 10 gigawatts of capacity, the equivalent of a thousand 100-megawatt units. The council enacted many strong administrative policy measures to accomplish this end.

First, the top leaders paid close attention and the parties concerned reached a consensus. Premier Wen Jiabao announced the objectives and measures of energy conservation and emission reduction, while the State Development and Reform Commission (SDRC)—the most powerful body in the State Council—was responsible for implementation of policies to meet these objectives. The commission set up a special big up/small down office for coordinating the work, and then published licensing measures that linked closing down



small thermal power units with building big thermal power units. In this way, the approval and establishment of new big thermal power units under the control of the commission was linked to the elimination of backward small thermal power units (Guofa, 2007). This has alleviated the pressure on local government officials and business leaders, which were previously responsible for deciding whether to close down thermal power units. It also brought the power of the (SDRC) into full play: no new projects are established until the closure objectives have been finished. Furthermore, these administrative policy measures or instruments were put into place at the same time as the directors and vice-directors of the commission were personally assuming responsibility.

Second, the specific big up/small down indicators or targets were assigned to various provinces, cities or leading enterprises. For instance, the central power-generation groups played an active role in shutting down small thermal power units in 2007. Among the closed units, facilities with a total capacity of 8.8 gigawatts were closed by five central power-generation groups that held a total capacity of up to about 40 per cent of the country's energy supply. These closures accounted for 61.1 per cent of the total capacity closed down in 2007. The remaining 38.9 per cent of capacity, totalling 5.6 gigawatts, was closed by other enterprises whose total capacity was nearly 60 per cent of the country's energy supply.

Third, those indicators or targets are used to evaluate the performance of government officials. Environmental protection indicators or targets are the keys to the promotion of government officials and leaders of state-run businesses.

To achieve the objectives of energy conservation and emission reduction, including setting up big units and shutting down small units, China has used many economic policy tools as well, of which we provide three examples. First, the government cancels preferential electricity-pricing treatments for highly energy-consuming enterprises, which raises their operating costs and spurs them to take energy-conservation and emission-reduction measures. In 2007 the (SDRC) released a notice suspending the national electricity price preferential treatment for electrolytic aluminum, ferroalloy and chlor-alkali enterprises and forcing local governments to immediately stop local electricity-price preferential measures for high-energy-consuming enterprises (SDRC, 2007b).

Second, the government also raises the sale price of power from thermal power plants that have been retrofitted for desulfurization. This could encourage thermal power plants to transform to protect the environment, but it also indirectly raises the cost of plants without desulfurization retrofitting. Under Article 4 of the (SDRC)'s management methods for the desulfurization price of coal-fired power generation units and the operation of desulfurization facilities, currently in trial implementation (SDRC, 2007a), the desulfurization retrofitting of existing coal-fired units is to be completed in accordance with the document *SO₂ Pollution Control of Existing Coal-Fired Power Plants* during the 11th Five-Year Plan, released by the commission and the State Environmental Protection Agency. The price of power from facilities that have installed desulfurization equipment will be marked up by 0.015 yuan per kilowatt-hour over the existing price. For the provinces, autonomous regions and municipalities where the average sulphur content in coal is higher than 2 per cent or lower than 0.5 per cent, desulfurization price-markup standards can be formulated separately; the provincial pricing departments may propose packages and submit them to the SDRC for review and approval.

Finally, the government reduces the price of power from small thermal power plants in order to shrink the footprint of these enterprises by making them less profitable. The 2007 Notice of SDRC on *Reducing the Power Sell Price of Small Thermal Power Units and Accelerating Shut-down of Small Thermal Power Units* (SDRC, 2007c) encourages small thermal power units to transfer their power production quotas to efficient generating units. This regulation encourages small thermal power units closed in advance or on schedule




to transfer their power production quotas to big generating units at a price that is not greater than the sell price prior to any price reduction. No price reduction is implemented for small thermal power units that have transferred their power production quotas and promised to close down. The pricing departments of the provinces, autonomous regions and municipalities work jointly with the concerned departments to formulate the methods for power producers to transfer their power production quotas from smaller to bigger units. These types of quota transfers get priority treatment. Under the provisions described in Guofa (2007), the facilities that receive price reductions include conventional thermal power with single capacity below 50 megawatts, those with a lifespan over 20 years and with single capacity below 100 megawatts, or those nearing the end of their service life and with single capacity below 200 megawatts.

In terms of command-and-control policy instruments, the energy-conservation and emission-reduction concept is gradually reflected in the new amendments of laws and technical rules, as described in Section 3.3.

In addition to the policies promoting the “big up/small down” transition, China has endeavoured to strongly support the development, exploitation and promotion of environmentally friendly electric power technology through science and technology policies and industrial policies aimed at vigorously boosting the development of renewable energy and optimizing the structure of the power industry. For example, China’s strong science and technology policy support led to a breakthrough in the development of supercritical and ultra-supercritical big thermal power units. The development of ultra-supercritical technology was listed in the national 863 Program’s key project plan for 2002 and the national major technical equipment development plan for 2003. To date, China has started construction on four 1-gigawatt ultra-supercritical projects totalling 10 generating units. The ultra-supercritical units are 10 per cent more efficient than the subcritical units currently used and 6 to 8 per cent more efficient than supercritical units, with coal consumption per kilowatt-hour down to 275 grams. Additionally, good results were achieved through the promotion and application of limestone/lime-gypsum wet flue-gas desulfurization technology, research on technology for dust-removing bags and equipment for large coal-fired power plants, domestic research on flue-gas desulfurization circulating pumps, and pilot research on and application of circulating fluidized bed boilers.

China has also built the world’s largest hydropower project, the Three Gorges power station, along with the world’s highest compacted concrete dam at 216.5 metres, the Longtan Dam. These major breakthroughs place China in the world’s top rank for high-dam construction technology, flood-discharge and energy-dissipation technology, large underground tunnel group construction technology, high-slope and foundation-processing technology, and giant metal structure fabrication and installation technology.

Furthermore, China has rapidly improved its capabilities for design and construction of nuclear power through absorption of foreign technology and independent development. China is now capable of independently designing and manufacturing 600-megawatt pressurized-water-reactor nuclear power stations and has experience in the construction, operation and management of several nuclear power stations. All 11 nuclear power units under operation or construction in China are built with second-generation nuclear power technology. China is making full use of its accumulated nuclear power know-how and experience, and is fully absorbing internationally advanced technology and experience while speeding up its own pace of independently designing and constructing 1-gigawatt large nuclear power units and upgrading to third-generation nuclear power. On August 18, 2007, China’s largest nuclear power project, the main facility of the Hongyanhe Nuclear Power Plant, was kicked off. The station’s four 1-gigawatt nuclear power units comprehensively adopted China’s own CPR-1000 nuclear power technology. With the use of the upgraded, second-generation technology, CNP1000 was particularly outstanding in terms of economic efficiency, marking a very important breakthrough in construction of nuclear power stations in China. The high-temperature gas-cooled reactor test nuclear power station that has already been constructed, and the fast



reactor test nuclear power station that is under construction, as well as numerous research and development works on integrated nuclear steam systems and closed-type nuclear fuel-recycling systems, have strongly facilitated China's move toward fourth-generation nuclear power utilization systems. The results from China's research in thermonuclear fusion and its active international cooperation are also encouraging.

China has already achieved indigenization of megawatt-class wind power generating units, and with the support of the national 863 Program, China is researching disc-type solar thermal power systems. In terms of research and development of photovoltaic technology, China has launched research into crystal silicon batteries, amorphous silicon film batteries, cadmium telluride, copper indium selenide and polycrystalline silicon film batteries, as well as other relevant materials. With the development of the material technology, photovoltaic power generation efficiency will improve substantially and is expected to reach 25 per cent in 2020, with the cost down to 8 yuan per watt-peak.

Finally, China is studying and employing 1,000-kilovolt AC ultrahigh-voltage and ± 800 -kilovolt DC ultrahigh-voltage power-transmission technologies. A 750-kilovolt power-transmission pilot project put into operation in September 2005 in the northwestern region has the highest operating voltage of any AC power transmission project in China, laying a firm basis for developing megavolt ultrahigh-voltage technology. China has drafted specifications for megavolt power-transmission equipment, while power-transmission manufacturers and research institutions have paved the way for development of independent megavolt power-transmission equipment. An ultrahigh-voltage pilot base is under construction. China also has the capability for independent design, manufacturing, construction and operation of ultrahigh-voltage DC power-transmission projects.

Given the long distances and large scales involved in power transmission, China continues to strengthen the application of power-system calculation and analysis theory, power-grid stability control and world-class practical power-transmission technology, as well as conduct research on projects such as management and equipment upgrading with the purpose of improving the power grid's transmission capability.

Through years of effort, China's power industry has made great achievements in energy conservation and greatly reduced emissions of dust, sulphur dioxide, nitrogen oxide and waste water from thermal power plants (SERC, 2007).

Since 2002 China's power-generating firms have continuously strengthened their dust emission controls, and the number of electric dust removers used in thermal power-generating units increases year by year, with continuous growth of efficiency. The mean nationwide dust-removing efficiency of 6,000-kilowatt-and-above coal-fired power plants has increased from 98 per cent to 98.5 per cent. Among the coal-fired units newly put into production, the mean efficiency of dust removers is over 99 per cent, and most of the units are designed according to the current universal dust emission threshold of 50 milligrams or less per cubic metre. Meanwhile, dust-removing technology has made a historical breakthrough, and a series of coal-fired power plants has been equipped with dust-collector bags. The biggest dust-collector bags in China, made to equip 300-megawatt units, have been put into commercial operation. The extensive commissioning of highly efficient dust-removing equipment has strongly driven the control of dust and smoke from thermal power plants. From 2002 to 2006, China's thermal power capacity increased by 82.3 per cent, and generating capacity increased by 74.3 per cent, while dust emission increased by only 14.2 per cent. Since 2004 emission growth slowed down markedly, growing much more slowly than the electricity industry.

Since 2002, power enterprises have also increased their efforts to control sulphur dioxide emissions. The power industry made major progress in controlling sulphur dioxide emissions by burning low-sulphur coal, closing down small thermal power units, implementing energy conservation and consumption reduction



measures, and promoting flue-gas desulfurization. In particular, since 2006 construction of flue-gas desulfurization facilities for thermal power plants has sped up markedly. By the end of that year the capacity of the flue-gas desulfurization units at China's thermal power plants exceeded 150 gigawatts, accounting for about 33 per cent of the total capacity of coal-fired units, an increase of nearly 30 times that in 2000. This surpassed the proportional capacity of the United States in 2005 (31.5 per cent), but then the growth trend declined markedly, far below the speed of power development. The sector's performance on sulphur dioxide emissions dropped noticeably, coming closer to the performance of the American coal-fired units in 2005 (5.14 grams per kilowatt-hour).

Since 2002 new large coal-fired units simultaneously employed a low-nitrogen-oxide combustion method and built gas-denitrification devices in environmentally sensitive areas. A number of existing thermal power plants were equipped with low-nitrogen-oxide burners as part of a technical transformation. As of the end of 2006, a few 300- and 600-megawatt gas-denitrification devices, totalling about 6.6 gigawatts, were put into commercial operation; as many as 39 one-gigawatt gas-denitrification devices were in the design or construction phases. Many of these units employed or intended to adopt selective catalytic reduction denitrification technology, bringing denitrification efficiency up to 50 to 85 per cent.

As for control of wastewater discharge from thermal power plants, more efforts have recently been made to implement water savings in new units and put direct air-cooling technology into commercial operation. About 30 thermal power plants use urban recycled water and desalinated sea water as their freshwater sources; in conjunction with technical transformation, 20 thermal power plants now employ industrial wastewater zero-discharge technology; thermal power plants' freshwater consumption and wastewater discharge for ash-flushing have dropped substantially; and the reuse rate of waste water across China is up to 70 per cent. Although the total wastewater discharge volume of thermal power plants increases with installed capacity and power production, the volume of wastewater discharge per unit of power generated is dropping year by year.

Great achievements have been made in energy conservation, as well. For a long time the power industry adhered to a guideline of paying equal attention to development and conservation. Under the national laws, regulations and policies, better resource-saving criteria, standards and management systems have been established for the power industry, and resource conservation is considered key to planning, construction, production and operation of power stations.

Coal consumption per unit of power production dropped from 383 grams per kilowatt-hour in 2002 to 366 grams per kilowatt-hour in 2006, down 4.4 per cent, or 17 grams per kilowatt-hour, with a mean annual drop of 4.25 grams per kilowatt-hour. This saved 36.4 million tonnes of standard coal. During the same period, power-transmission losses dropped from 7.5 per cent to 7.1 per cent, down by 0.4 percentage points, or 5.3 per cent.

The energy-saving and emission-reduction policy instruments are now shifting gradually from administrative measures to a market-oriented approach. In the past, China's environmental protection efforts in the power industry were mainly dominated by the central government utilizing administrative methods. In the long run, this approach isn't the best choice, and an economic approach is more suitable.



4.0 Best Practices, Current Trends and Lessons from International Experience

This section provides a short review of international best practices relating to economic, regulatory and policy mechanisms that promote efficiency and low-carbon growth in the electricity generation and supply sector, in particular those mechanisms that encourage the switch to fossil fuel generation technologies with lower carbon emissions (for example, clean coal, carbon capture and storage (CCS), and integrated gasification combined cycle) and those that support investment in renewable energy alternatives. While end-user energy efficiency and demand-side management approaches are obviously important, this section will not assess these policy areas except for improvement in transmission and distribution efficiency.

We first present a typology of potential instruments and discuss the purpose, structure and application of these instruments. Based on a literature review, we then identify international best practices in the application of these instruments, before analyzing their relevance to the electricity sector in China and their potential relevance to and application in other sectors.

4.1 Typology of Relevant Efficiency and Low-Carbon Policies and Measures in the Electricity Sector

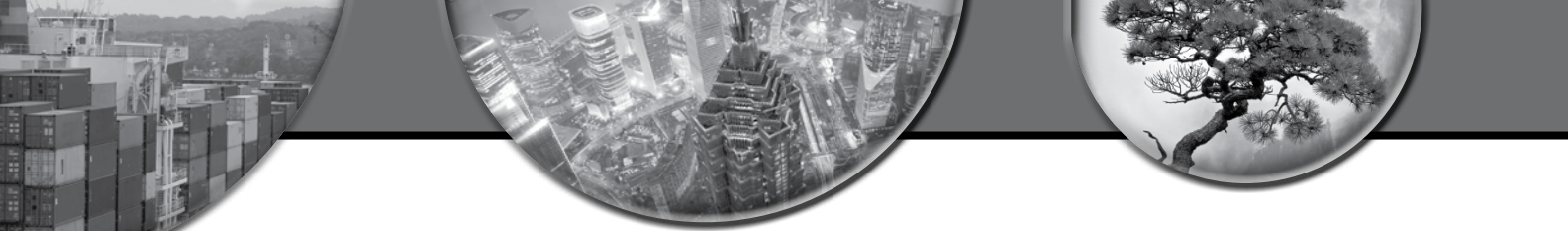
The global energy supply will continue to be dominated by fossil fuels for several decades. Reduction of the resultant GHG emissions will require a transition to zero- and low-carbon technologies. This can happen over time as business opportunities and co-benefits are identified. However, more rapid deployment of zero- and low-carbon technologies will require energy sector reform and policy intervention. This intervention has to take into account a number of issues, such as security of supply, removal of structural advantages for fossil fuels, minimizing related environmental impacts and achieving sustainable development goals.

A range of policies are already in place to encourage efficiency and the development and deployment of low-carbon power-generation technologies in both OECD countries and non-OECD countries such as China. Many industrialized countries have introduced—and later increased—grant-support schemes for producing electricity, heat and transport fuels based on low-carbon or renewable energy resources and for installing more energy-efficient power-generation plants.

As noted above in Section 3.4, most climate policies relating to energy supply fall into three categories (Metz et al., 2007):

1. Economic instruments (such as subsidies, taxes, tax exemptions and tax credits).
2. Regulatory instruments (such as mandated targets and minimum performance standards).
3. Policy processes (such as voluntary agreements and consultation, information schemes, and research and development support for emerging technologies).

While no single policy instrument can deliver the full range of desired economic and environmental outcomes, such instruments can be used in combination to achieve environmental goals in a flexible manner. The choice and combination of policies is driven by a range of considerations, including cost, environmental effectiveness, political and economic co-benefits (such as security of supply or export potential), available technologies, financial resources and public acceptance.



Policy instruments and processes can be used to address different sectors and aspects of the energy supply system in order to reduce GHG intensity. These sectors and aspects fall into four primary areas:

1. Improving the operating efficiency of fossil fuel power plants.
2. Changing the use of fuels used in electricity production to lower-carbon alternatives.
3. Supporting development and deployment of low-carbon renewable energy technologies.
4. Encouraging carbon capture and sequestration from carbon-intensive power generation.

Table 4.1 provides a typology of how different policy mechanisms are used for the power generation sector.

Table 4.1: Typology of policies and measures for a low-carbon energy supply.

	Economic instruments	Regulatory instruments	Policy processes		
			Voluntary agreements	Information	Technology R&D
Improvement of energy efficiency	Energy taxes Lower energy subsidies Carbon taxes Fiscal incentives Tradable emissions permits	Minimum standards for power plants Best available technology	Voluntary commitments to improving efficiency	Information and education campaigns	Funding to improve efficiency of cleaner fossil fuel generation
Switching to lower-carbon fuels	GHG permits Fiscal incentives Tradable emissions permits	Power plant fuel portfolio standards	Voluntary commitments to fuel switching	Information and education campaigns	Funding to improve efficiency of low-carbon generation technologies
Encouraging renewable alternatives	Capital grants Feed-in tariffs ¹¹ Quota obligations and permit trading GHG taxes Tradable emission permits	Targets Supportive tariffs Grid access support	Voluntary commitments to install renewable capacity	Green electricity validation Information campaigns	Funding to improve efficiency of renewable generation technologies
Carbon sequestration	GHG taxes Tradable emission permits	Emission restrictions for major point emitters	Voluntary agreements to use CCS	Information campaigns	

Source: adapted from Metz et al. (2007).

¹¹ See Section 4.2.1.5 for a definition.



4.2 International Best Practices in Efficient and Low-Carbon Electricity Policy

International governments have engaged in a range of energy-sector supply reforms over recent years to meet environmental and economic challenges. These include reforming subsidies, establishing credible regulatory frameworks, developing policy environments and creating market-based approaches such as emission trading. This section describes examples of the policy interventions described in Table 3.1, and identifies economic and environmental outcomes associated with their best practice. The policy approaches explored in each case should be considered in the context of local market conditions, the structure of the national energy sector, patterns of energy use, institutional characteristics and changing circumstances.

4.2.1 Economic Instruments

Economic instruments are policy mechanisms that encourage behavioural change through the use of financial incentives and disincentives without forcing market actors through laws to change their activities. They tend to be the favoured approach of policy makers in OECD countries because of their flexibility and attractiveness to market participants. Competitive advantage can be gained by those companies that are best able to respond to and exploit new market conditions engendered by these mechanisms. Below are examples of the main types of economic instruments in use.

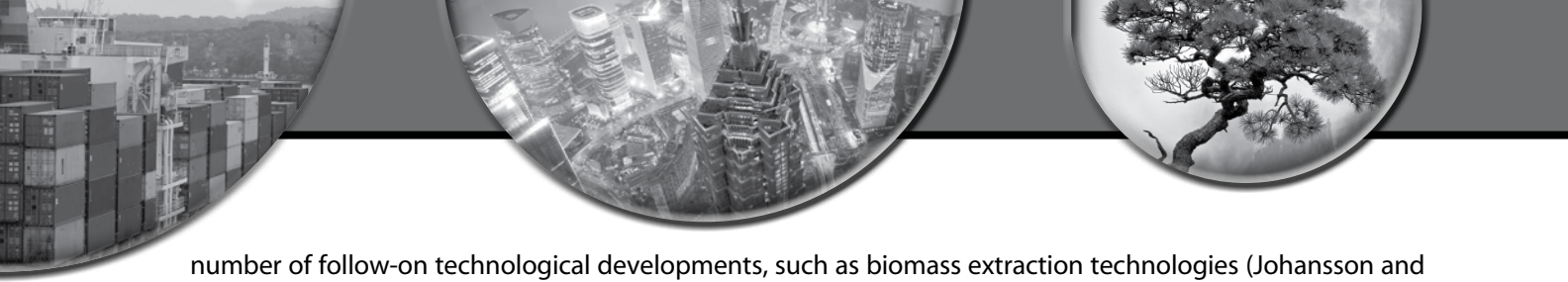
4.2.1.1 Removal of Subsidies for Carbon-Intensive Fuels

A 2008 study by UNEP on the reform of energy subsidies identified that financial support for indigenous energy production remains widespread, primarily to maintain employment and ensure national ownership. Nonetheless, there is a downward trend in subsidies for fossil fuel production, reflecting the steady privatization and liberalization of energy markets. This trend shows a reduction in support for coal production in particular, with many OECD countries switching support from production toward economic restructuring and redeployment of the workforce. The IEA undertook a global review of energy subsidies in 2006, published in *World Energy Outlook*. The report measured the shortfall between the costs of supply and the costs to consumers in the 20 largest non-OECD countries. The study found US\$170 billion in support of fossil fuel production and generation for the countries surveyed, equating to about US\$300 billion globally if the same level of support was assumed across all non-OECD countries (UNEP, 2008a).

An example of successful subsidy reform can be found in Germany, where the coal industry had been supported for more than 50 years, primarily to support electricity production. Total subsidy support reached its peak in 1996 at €6.7 billion, despite declining levels of coal production. Since then, subsidy support had fallen to approximately €2.5 billion by 2007, although this still represented an annual support of €10,000 per employee within the industry. It has been agreed that by 2018, all subsidies to the indigenous German coal industry will be phased out (UNEP, 2008b).

4.2.1.2 Carbon and Energy Taxes

Several countries have successfully introduced carbon-related energy taxes in a bid to improve plant efficiency and reduce emissions. From 1970 to 1990, Sweden invested heavily in research and development related to renewable energy, but without significant deployment of these technologies. It was only with the introduction of carbon taxes in 1991 that the country made substantial progress in switching from cheaper electric and oil-fired boilers for district heating to biomass co-generation. As a result of the taxes, the use of biomass increased by more than 400 per cent during the period from 1990 to 2000. This in itself led to a



number of follow-on technological developments, such as biomass extraction technologies (Johansson and Turkenburg, 2004). Finland, the Netherlands and Norway also introduced carbon taxes in the 1990s.

The United Kingdom has implemented a tax on energy use for large industrial and commercial customers, known as the Climate Change Levy (CCL). The CCL taxes electricity consumption at 0.456 pence per kilowatt-hour. The levy encourages voluntary efficiency improvements by raising the price of electricity, but allows exemptions of up to 80 per cent if participants meet certain efficiency-improvement targets. Renewable electricity is also exempted from the levy. The CCL has been extremely successful in encouraging major energy users to cut their emissions, and it is expected that the instrument will deliver at least five million tonnes of carbon dioxide reductions by 2010.

4.2.1.3 Tradable Emission Permits

Emission trading schemes have developed as a key policy option to reduce carbon intensity in the electricity sector because of the economic efficiency with which they operate. Creating liquid carbon markets can help economies identify and realize economical ways to reduce emissions of GHGs and other energy-related pollutants or to improve efficiency of energy use. Newman, Beg, Corfee-Merlot, McGlynn and Ellis (2002) estimated that emission trading has reduced the cost of meeting Kyoto targets in OECD regions from 0.2 per cent of GDP without trading to 0.1 per cent. The largest tradable permit schemes include the EU ETS and the Kyoto Protocol's Clean Development Mechanism and Joint Implementation mechanism. Other schemes are in development in Australia, New Zealand and the United States.


The EU ETS is the major policy instrument within the European Union for reducing GHG emissions. Although some European member states have introduced unilateral energy and carbon taxes, it was decided in 1999 that a cap-and-trade system would be more economically efficient. More than 10,000 sites are currently included in the scheme, representing approximately half of the total carbon dioxide emissions within the European Union. Electricity and heat production facilities with 20 megawatt capacity or more represent a key target group within the scheme. Svendsen and Vesterdal (2003) argued that the electricity sector was the best suited of all sectors to be covered by the EU ETS, because it was responsible for one-third of the total carbon dioxide emissions in the European Union, many low-cost carbon dioxide emission-reduction opportunities existed within the sector, companies were relatively well-informed of the overall opportunities to reduce carbon dioxide emissions, which would lead to early trading, and the sector was already tightly regulated.

As a result, the power sector has the largest GHG-reduction burden under the EU ETS. Allocations were made at a national level, without any overall sectoral target for EU power-sector emissions. During the second phase, from 2005 to 2008, the power sector has been consistently short on emission allowances and has had to purchase them in the market to cover its emissions. This is primarily due to the allocation process at the national level, where individual governments have assigned short positions to their electricity producers.

A number of issues have arisen related to the participation of the power sector in the EU ETS. The most important of these is the perception of windfall profits by participating power generators that passed along the "costs" (based on market value) of their freely issued allowances to their customers. To counter this, full auctioning of permits to the electricity sector will begin in Phase 3, starting in 2012.

4.2.1.4 Fiscal Measures and Capital Grants

Fiscal measures relate to tax and expenditure policy and have been used extensively to support the development of renewable electricity generation. One example is the Japan Solar Roofs program, launched in 1994, which offered a combination of both tax rebates and concessional finance to residential grid-connected



photovoltaic systems. The scheme was scaled up in 1997, when it was extended to include developers of larger residential housing complexes. The scheme has resulted in Japan becoming the world's largest installer of grid-connected photovoltaic systems and manufacturer of solar photovoltaic panels. Over the eight-year program lifetime, from 1994 to 2002, installed capacity increased at an annual rate in excess of 42 per cent, with more than 420 megawatts in place at the end of the program. During this period, the fiscal support was reduced as costs of production fell, with rebates reaching 12 per cent by the end of the program, down from the initial level of 50 per cent (Metz et al., 2007).

4.2.1.5 Feed-In Tariffs

Feed-in tariffs are a commitment to pay a given price (tariff) for certain types of power provided to the grid; typically they are granted for renewable energy, and they thereby provide long price certainty for renewable-energy producers. They have been widely and successfully deployed throughout Europe to support renewable technologies. The most notable successes have been found in Denmark, Germany and Spain. Governments set a price at which the country's electricity supply companies must purchase all renewable energy delivered to the distribution grid. Price premiums are passed on to consumers in the form of higher electricity bills. Savage (2004) estimates that total support for renewables in the form of feed-in tariffs was in excess of € billion in 2001, primarily in Germany, Italy and Spain. Several developing countries, including China, Brazil and India, have adopted similar policies.

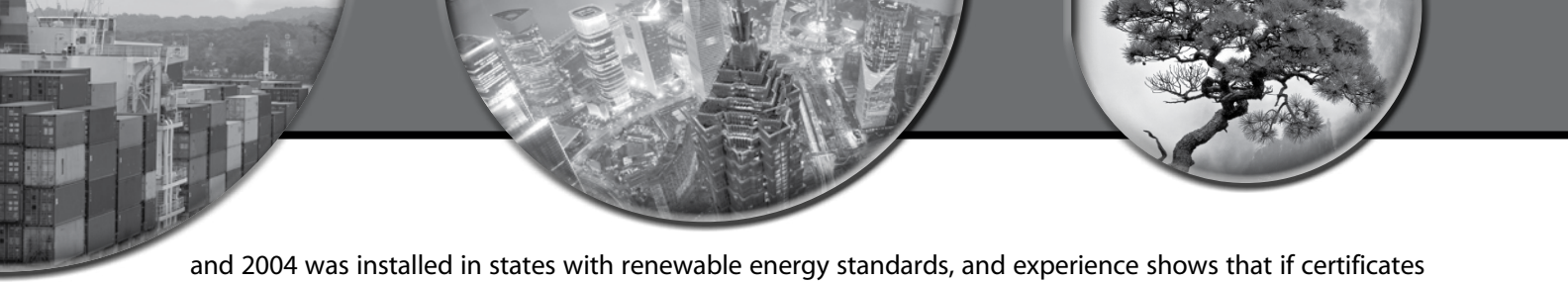
Incentives to support low-carbon electricity are considered more efficient than capital investment grants, as they encourage market deployment while also promoting increases in production efficiency. In terms of delivering installed renewable energy capacity, feed-in tariffs fulfill a similar function as that of quantity-based instruments such as quotas and green certificates (described below). Experience in the European Union indicates that feed-in tariffs have been more successful in bringing forward the deployment of renewables than have obligations, probably as a result of their longer-term certainty and the perceived incentives of guaranteed prices.

Feed-in tariffs were central to the development of the wind power industry in Denmark. This was dropped in favour of a system of tradable permits and renewable obligations in 1999. Investors reacted to this development by slowing investment, and as a result, the rate of increase in renewable capacity has not recovered to its former levels (Johansson and Turkenburg, 2004).

In the 1990s Germany adopted an integrated policy approach for renewable energy that combined both tariff support for renewables and a range of other policy instruments to reduce the risks associated with capital investment. This policy package resulted in the country becoming the world leader in installed wind capacity (recently overtaken by the United States) and second in installed photovoltaic capacity. Spain passed a similar feed-in law in 1994, and in 2008 the country ranked third in installed capacity, behind Germany and the United States (Metz et al., 2007).

4.2.1.6 Quota Obligations (Renewable Energy Standards) with Tradable Certificates

Purchase quotas or obligations set targets for the proportion of electricity (usually percentage based) that electricity retailers should source from a certain fuel type. While these might normally be considered regulatory rather than economic instruments, they are usually implemented with tradable permits, making them hybrid instruments. So if a retailer sources more than required from the privileged sources, it can sell the excess certificates of compliance to other retailers. These instruments have been used in many countries to accelerate the transition to renewable energy systems and to achieve the same outcomes as feed-in tariffs (Martinot, 2005). For example, 75 per cent of the wind capacity installed in the United States between 1998



and 2004 was installed in states with renewable energy standards, and experience shows that if certificates are delivered under long-term agreements, effectiveness and compliance can be high.

This mechanism has been deployed for renewables and combined heat and power in several EU member states. Energy distribution companies must either prove the origin of purchase, pay a penalty or produce the required amount themselves, creating an artificial demand and price premium for renewable generation. If the overall system target cannot be met, prices rise until new market entrants and investors are attracted. Tradable certificates often accompany such schemes. The cost of this subsidy is borne by consumers.

A good example of an obligation is the United Kingdom's Renewables Obligation, which evolved from the United Kingdom's Non-Fossil Fuel Obligation. The Renewables Obligation requires licensed electricity suppliers in the United Kingdom to source an increasing proportion of electricity from renewable sources. This figure was initially set at 3 per cent for the period from 2002 to 2003, and under current political commitments will rise to 10.4 per cent by the period of 2011 to 2012, then by 1 per cent annually for the five years following. The Renewables Obligation creates small additional costs for electricity suppliers, which are then passed through to industries, businesses and domestic consumers as part of their electricity bills. The Renewables Obligation has delivered in excess of 6 gigawatts of renewable generation, with another 18 gigawatts planned. The United Kingdom's energy regulator, Ofgem, has estimated that the Renewables Obligation cost the average British household £7.35 per year in 2007 (approximately £200 million total), and has forecast that this will rise to £11.41 by 2010 to 2011 (Scottish Executive, 2009).

The Renewables Obligation is currently being reformed by the introduction of differentiated support levels based on technology, a process known as banding. This will encourage the development of higher-cost technologies, such as offshore wind and biomass, as power producers have initially met their obligations primarily through investment in lowest-cost onshore wind.

4.2.2 Regulatory Instruments


Regulatory instruments are policy mechanisms that use governments' traditional powers of regulation to change behaviour. They include standard setting and permitting, and rather than relying on economic incentives, they simply dictate what practices are expected of the entities they cover. We describe the main sorts of regulatory instruments relevant to the electricity sector below.

4.2.2.1 Minimum Efficiency Standards and Best Available Technologies

By setting minimum efficiency standards, prohibiting inefficient technologies and implementing best available technology requirements, governments can ensure that new power plants meet improved efficiency standards. Currently, subcritical fossil fuel power plants can achieve efficiency between 36 per cent and 40 per cent. Supercritical designs have efficiencies in the low- to mid-40 per cent range, with new "ultra-supercritical" designs reaching about 48 per cent efficiency. For example, Australia mandates minimum standards for new power plants through its Generation Efficiency Standards program. This program sets thermal efficiency standards for natural gas plants (52 per cent), black coal (42 per cent) and brown coal (31 per cent). It also requires performance reporting for all existing power plants with capacity above 30 megawatts or above 50 gigawatt-hours per annum. The program expects to deliver annual carbon dioxide savings of 4 million tonnes (IEA, 2009).

4.2.2.2 Fuel Portfolio Standards

As described earlier, governments can mandate, through obligations or standards, that power producers



generate electricity from certain types of fuels. This is most commonly applied in the context of renewable portfolio standards, where power producers are required to generate a percentage of their output using low-carbon, renewable technologies. This is common practice in the United States, where most states have implemented such legislation. Portfolio standards can be accompanied by regulation to force electricity distributors to disclose the mix of fuels and related emissions for their power supply. This requires standardization of the classification system for fuel descriptions and prescribed descriptions of what constitutes a green energy source (see Section 4.2.3.2).

4.2.2.3 National Targets

Goals and quantitative targets for low-carbon energy at both national and regional levels increase the size of the markets and provide greater policy stability for project developers. For example, EU leaders reached agreement in principle in March 2007 that 20 per cent of energy should be produced from renewable fuels by 2020 as part of the European Union's drive to cut emissions of carbon dioxide, with a provision to increase this target to 30 per cent if there is global agreement on a strong climate regime to succeed the Kyoto Protocol. This has clear implications for the electricity sector, where the current share of renewables will need to double to more than 30 per cent in order to deliver on this 2020 target. In 2009 Australia implemented a similar target of 20 per cent renewable electricity by 2020. As noted above, China has committed to a goal of generating 15 per cent of power from renewables by 2020. Some concerns exist that such targets will prove to be an expensive way of meeting GHG emission reductions, though they may support the development of renewable manufacturing and installation capacity.

4.2.2.4 Grid Access for Distributed and Remote Low-Carbon Technologies

Interconnection standards refer to the regulations set by states to allow the connection of distributed generation sources to the grid. Different countries and regions have specific procedures that can make this problematic. For example, Spain struggled to deploy solar photovoltaic technologies, despite feed-in tariffs similar to those in Germany's successful program. The absence of grid-connection regulations and national technical standards was the key issue, and once these were put in place in 2001, the program developed to make Spain the leading country in the world, with 2 gigawatts of photovoltaic capacity installed in 2008 alone (Del Rio and Unruh, 2007).

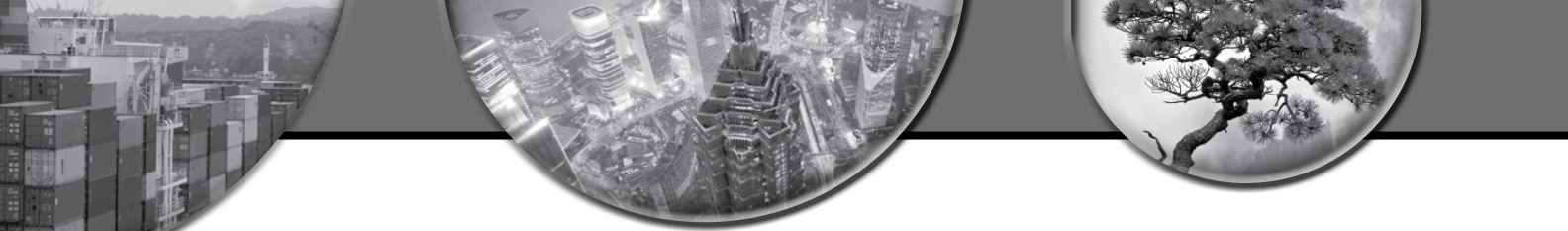
4.2.3 Other Policies and Measures

In addition to regulatory and market-based approaches, governments have a number of other sorts of policies and measures at their disposal when they seek to shape the behaviour of actors in electricity markets. We describe some of the most prevalent below.

4.2.3.1 Voluntary Agreements

A number of countries have set up voluntary agreements within the power sector to reduce emissions. Voluntary agreements are usually between the state and commercial power companies and act as a substitute for or extension of existing environmental laws or policies. Voluntary agreements may differ in the degree of regulatory control and the extent to which the commitment is binding.

In the United States, for example, the power sector participates in the Climate VISION program through the Electric Power Industry Climate Initiative (EPICI) and its Power Partners program, which has been developed in cooperation with the U.S. Department of Energy. The group represents 100 per cent of the power generators in the United States. The aim is to improve emission intensity within the electricity sector by 3 to 5 per cent over



the 2000 to 2002 baseline by 2012, through a number of demand-side management programs, transmission and distribution upgrades, expansion of natural gas, landfill gas recovery and carbon sequestration activities. The program is currently on course to exceed its targets (International Utility Efficiency Partnerships, 2004).

Voluntary agreements may also be extended to other areas, such as renewable energy investment or emission trading. In Korea the Renewable Portfolio Agreement saw six major power suppliers agree to invest US\$1.26 billion during the period from 2006 to 2009. In Japan a voluntary emission trading scheme has been implemented in preference over a mandatory scheme.

4.2.3.2 Information and Education

Public awareness is seen as increasingly important policy component to encourage green electricity development. These schemes provide end consumers with clear information on the fuel mix used to generate power and allow for the option to increase tariffs to fund a higher proportion of low-carbon energy, combining information and choice. These programs include public education aspects, but are also built on industry and government partnerships, particularly for smaller renewable energy developers.


4.2.3.3 Research and Development Investment

The need for further investments in research and development of all low-carbon emission and efficiency technologies is key to decarbonization of the power sector. Most important among these technologies is CCS, which has the potential to mitigate the growth in emissions from coal plants in rapidly industrializing countries such as China. In early 2009 both the United States and the European Union announced significant research and development and demonstration funds for CCS technology. Committed funding in the United States for early-stage deployment is currently US\$4.3 billion, while carbon credits set aside specifically for CCS in the European Union could total over €2 billion by 2014. The European Technology Platform for Zero Emission Fossil Fuel Power Plants has unveiled its report for the rapid development of a network of CCS demonstration plants across Europe (European Technology Platform for Zero Emission Fossil Fuel Power Plants, 2008).

4.3 Application to the Chinese Policy Context

While coal remains the most economical means of responding to rapid increases in domestic energy demand in China, there are nonetheless significant national concerns about the impacts of climate change, both in competitiveness and environmental terms. As described above, China has already advanced the development of policy frameworks to create a more energy-efficient and less carbon-intensive power sector. Measures include a new law introduced in 2006 to promote renewable energy (with a 15 per cent renewable energy standard by 2020), measures to increase the efficiency of new power plants (larger, more efficient units; state-of-the-art technologies) and increase efficiency in existing plants, and plans for the early shutdown of inefficient coal power plants (units less than 50 to 100 megawatts). In 2001 China began the Township Electrification Program, a large-scale fiscal support program for stand-alone rural renewable energy systems. From 2002 to 2004, almost 700 townships received 20 megawatts of village-scale solar photovoltaic and 800 kilowatts of wind. The government provided US\$240 million to subsidize the capital costs of equipment, and about one million rural dwellers were provided with electricity (Metz et al., 2007).

Best practice in the international policy arena would be of direct relevance in a number of other areas. In terms of economic instruments, the introduction of carbon-related energy taxation or an emission trading scheme appears to be a likely option. China's central bank has explored the potential structure for a domestic



emission trading scheme, and both Beijing and Tianjin have expressed interest in setting up carbon-trading platforms. Investment in research and development for improving the environmental and economic efficiency of low-carbon alternatives to coal and for developing CCS technology also provides attractive routes for the Chinese power sector. Cooperation and trial demonstration projects for carbon sequestration are underway in cooperation with the European Union.

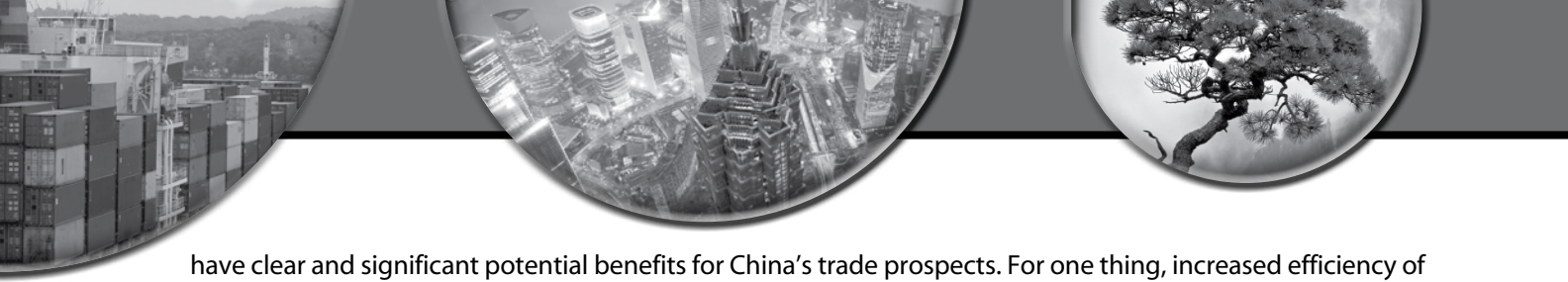
China should also recognize the co-benefits of low-carbon and efficient electricity policy. For example, policy support for clean coal, CCS, and renewable technologies will not only reduce carbon dioxide emissions but also mitigate the future risks of carbon pricing, create valuable opportunities for technology exports and improve energy security by exploiting domestic resources. Non-carbon emissions will, however, increase, as some 30 per cent more coal is required to create the same amount of energy under current CCS technologies, so clearly efficiency and renewables offer more co-benefits, such as technology exports, hedges against carbon pricing and energy security.

5.0 Policy Options for China

China has come a long way in advancing toward a regime of electrical power generation and distribution that is more efficient and lower in carbon emissions. But by international standards it still has far to go; significant potential exists for China to contribute to the goals of energy efficiency, energy security, reduced air pollution and health impacts, and an easy flow of China's manufactured exports to major developed-country markets. Based on the analysis above, several policy options are worth mentioning:

1. *Continue to learn from the experience of others.* Countries around the world are pursuing similar goals, and they provide an excellent laboratory for what does and does not work. China should continue to learn from these experiences and adapt them to the unique realities of the Chinese context. The case-study approach, using new measures in specific regions or cities, seems to be appropriate and should be continued.
2. *Conduct research to identify and quantify costs and benefits.* While it is clear that significant co-benefits might result from a successful strategy of minimizing pollution and pursuing energy efficiency, it is not clear how these benefits measure up to the potential costs of such actions. Do the health benefits of a feed-in tariff, for example, compare favourably to the costs of implementing the measure? This sort of analysis will provide a useful basis for Chinese policy makers as they go forward.
3. *Use a mix of tools.* Traditionally China resorted to command-and-control-type regulatory approaches, but in recent years has begun to experiment with a mix of tools that includes more economic instruments such as taxes, subsidies and market-based measures as well as other policy instruments. This mixed approach, taking the best of various types of tools to deal with China's challenges, is ideal and should be continued. This evolution in regulation is similar to the evolution from a purely market-based economy to a mixed managed economy, and has great potential to produce the desired results.
4. *Price carbon.* One of the key tools that China should consider is a regime to price carbon, such as a cap-and-trade scheme or a carbon tax. Coupled with other regulatory instruments, these have enormous potential to drive innovation and deliver a wide variety of economic and social co-benefits.

In the final analysis, these sorts of changes will not be carried out by makers of trade policy. However, they



have clear and significant potential benefits for China's trade prospects. For one thing, increased efficiency of production and distribution of electricity will increase the productivity and competitive advantage of China's manufacturers that rely on electrical power. As well, such measures will almost certainly insulate Chinese exports from climate-related border measures aimed at levelling the playing field between Chinese and developed-country producers. In the European Union such measures are contemplated in the third phase of the EU ETS, which begins in 2012. In the United States it looks certain that such measures will form part of the U.S. president's effort to address climate change: the American Clean Energy and Security Act of 2009. But any such measures will find it difficult to target China if China can easily show that it is taking strong measures that have the effect of reducing the emissions embodied in China's exports.

Such measures should be adopted for China's own purposes, and not necessarily to fulfill other countries' expectations of Chinese behaviour. They should be implemented as part of a drive to achieve energy policy objectives and to achieve the sorts of social and economic co-benefits described above. But if they are successful, they will also necessarily have the desirable effect of improving China's trade and environmental relations with its major export market countries.




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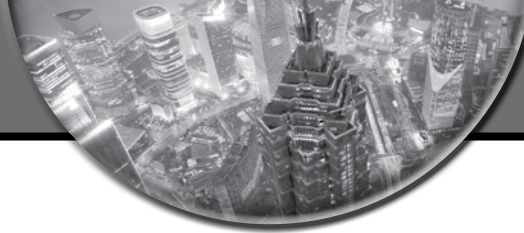
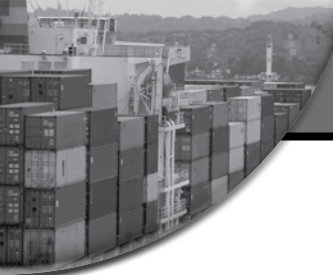
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4

Standards for Sustainable Development: Sustainable China Trade Strategy Project

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1.0 China and the Intersection of Trade, Standards, Environmental Responsibility and Sustainability

China is one of the fastest-growing economies in the world. After several decades of a modest, domestically oriented commercial system and more than 30 years of opening and reform, China has emerged as a major trading force, competitive with all of the major international economic players. As described in this series' Chinese overview paper, *Sustainable China Trade: A Conceptual Framework*, in recent years Chinese industries have received significant investment from international corporations and have become some of the world's primary exporters; trade has become a foundation of the Chinese economy. However, despite these swift strides in economic development, China and its industries have been criticized for their environmental track record. This paper will argue that in today's world of increased societal concern for and awareness of environmental issues, the perception of problems with China's environmental performance has become a liability for the nation's continued economic competitiveness in the international market.

Environmental standards have become one manifestation of these growing societal concerns and have emerged as the focal point of pressures emanating from foreign markets. Indeed, such standards are being implemented as a key mechanism with which to influence environmental performance and product quality around the world, including in China. Within the context of this paper, we use the term "standard" broadly, to include sanitary or phytosanitary standards, foreign technical regulations, and private international standards that have either become de facto conditions of sale because of widespread market demand or have emerged as "best-in-class" designations associated with improved competitive advantage and brand reputation. In all cases, fostering the ability of exporters to meet such demanding foreign standards is the key to China's export success in the large developed country markets and will serve as a prerequisite to building up the threatened "Brand China." It will also likely have the incidental benefits of reducing pollution, improving public health and long-term natural resource sustainability, and increasing production efficiencies in China's export sector.

Conversely, taking no action will likely result in further degradation of China's environmental reputation as well as the natural resources and ecosystem services on which its economy depends. In the long run, it may also result in foreign investment being redirected to more environmentally friendly markets. Thus, this paper argues that improved compliance with such environmental standards is imperative for China's long-term economic and environmental well-being.

The overarching goal of this report is to illustrate not only how non-compliance with foreign standards is an economic liability for Chinese industries but also how compliance can in fact provide a significant business opportunity. It will also demonstrate that governments have a crucial role to play in inducing manufacturers' uptake of regulations and standards by creating consistent domestic environmental regulations, establishing and ensuring functional domestic standards development and conformity-assessment infrastructure, and building the capacity of domestic manufacturers to comply with both foreign regulations and voluntary international standards. Should the Chinese government choose to take such actions, it will be better prepared to perpetuate the country's rapid economic growth while rebuilding its environmental image and greatly improving the quality of life and environmental conditions for its people.

This paper will look at China's current situation with respect to foreign standards and its own domestic systems for meeting them, and will make policy recommendations for improvements. We begin with a brief overview of the economic and environmental status of Chinese industries, emphasizing the role of standards in accentuating the tension between continued economic viability and improved environmental performance. It will also provide a close look, in particular, at some of China's major export sectors, including mechanical and electrical products, textiles and apparel, and agricultural products, describing some of the



key environmental issues facing those industries and what can be done to correct them. Descriptions of standards to which Chinese industries are subject will be supplemented by a general overview of trends in international trade, environmental regulation and consumer expectations, as well as a summary of the findings of academic research on the economic benefits of environmental regulation. The report concludes with policy options geared toward addressing the environmental and economic challenges facing China.

2.0 Sustainability and Standards in China

Global trade is deeply dependent on international standards. Among other functions, international standards help ensure technical compatibility of goods traded across countries. They can also convey information to consumers about product characteristics, quality and performance—and in some cases about the processes by which products were produced. Standards can help commerce within and between countries flow more smoothly. Concern with how standards affect international trade has long been reflected in multilateral trade rules, with the General Agreement on Tariffs and Trade (GATT) containing provisions relevant to technical regulation and standards. The Agreement on Technical Barriers to Trade (TBT Agreement) is one of two key World Trade Organization (WTO) agreements that directly refer to international standards and encourage harmonization based on them, along with the agriculturally focused Agreement on the Application of Sanitary and Phytosanitary Measures (SPS Agreement).

Although the term “standard” is commonly used generically to refer to any official stipulations that guide the characteristics or process and production methods of a product, it has a precise meaning in the context of international trade law. According to the WTO’s TBT Agreement, a standard is defined as a


document approved by a recognized body, that provides, for common and repeated use, rules, guidelines or characteristics for products or related processes and production methods, **with which compliance is not mandatory**. It may also include or deal exclusively with terminology, symbols, packaging, marking or labelling requirements as they apply to a product, process or production method. (Emphasis added.)

Conversely, under TBT terminology a technical regulation is defined as a

document which lays down product characteristics or their related processes and production methods, including the applicable administrative provisions, **with which compliance is mandatory**. It may also include or deal exclusively with terminology, symbols, packaging, marking or labelling requirements as they apply to a product, process or production method. (Emphasis added.)

Technical regulations, also known as regulatory standards, are mandatory stipulations governing production or market access. They are designed to achieve policy objectives such as product safety, quality or environmental protection. Technical regulations can be placed on manufacturers or suppliers by domestic governments or, in the case of Chinese businesses, act as import restrictions set by foreign governments. In other words, a manufacturer could be guided both by domestic regulations (which restrict products produced within the manufacturer’s home country) and by foreign regulations (which restrict products sold in foreign markets). Thus technical regulations gain importance by being a prerequisite for market access, but are generally not designed to create competitive advantage—in fact, the TBT and SPS agreements were created to prevent the latter. Rather, technical regulations utilize a negative reinforcement model that punishes poor performance.

The distinction between voluntary (standards) and mandatory (technical regulations) in the context of the



WTO is simply a function of a government's inclination to move the former into the latter category, either by referencing it in its technical regulations or by adopting it directly into law. One of the key principles promoted through the WTO agreements is "harmonization" of domestic measures with international standards. Specifically, Article 2.4 of the TBT harmonization provisions requires that where international standards exist, central governments should use them as a basis for domestic technical regulations, unless a government can argue that the international standard would not fulfill its country's legitimate policy objectives. Article 4 and Annex 3.F contain similar obligations with respect to standards.

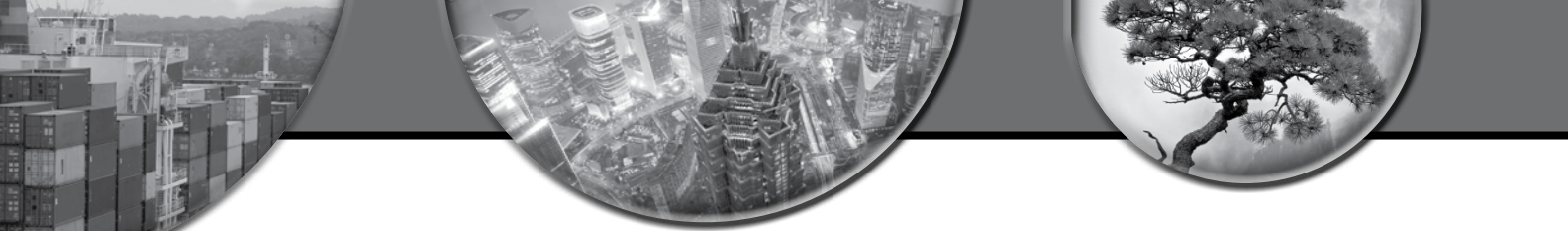
Although theoretically any standard could be considered an "international standard," from the perspective of the WTO, international standards are those developed by a handful of recognized international standardization bodies. Such bodies are treaty-based organizations (where only governments are the primary members), such as the International Telecommunication Union or Codex Alimentarius, or select quasi-private institutions such as the International Organization for Standardization (ISO) or the International Electrotechnical Commission (where members are a mixture of non-governmental organizations and governmental agencies). While lacking official recognition within the context of the WTO system, as discussed in this report, international standards are increasingly being developed through collaborative multistakeholder initiatives consisting of non-governmental organizations, private sector players and other civil society groups.

This report focuses primarily on foreign technical regulations, as they present perhaps the most urgent dilemma for Chinese manufacturers. However, it will also address voluntary private international standards where they are becoming de facto conditions of sale for foreign markets due to the widespread demand for them in these markets. It is because of the high regard given such private standards by consumers in China's key foreign markets that conformity to them may be as critical to China's efforts to improve Brand China as is compliance with compulsory technical regulations. Indeed, this report will illustrate that the distinction between the voluntary and mandatory nature of different international standards is increasingly blurring, as is the conceptual and practical differentiation among private standards, quasi-private standards and technical regulations. Notably excluded from this analysis are standards in the form of individual corporate supply chain requirements or those established within the context of private trading relationships between buyers and sellers.

2.1 Economic Growth and the Environment in China

Over the past two decades a growing tension has emerged between China and its major trading partners regarding China's environmental record. Not coincidentally, this tension has arisen over a period of time when China's economy has transformed from developing mostly domestically distributed goods into the world's second largest exporter. As described in *Sustainable China Trade: A Conceptual Framework*, Chinese industries typically act as intermediate manufacturers that supply inputs to international corporations for assembly into final retail products. This fragment of industrial production is resource and energy intensive, and thus has a high environmental impact, making China's economy relatively more reliant on natural resources than that of many Organisation for Economic Co-operation and Development (OECD) countries. This intermediate-level production is also inherently less profitable, and as a result China has sought to gain a larger foothold in more profitable research and development, marketing and ownership of international brands.

Arguably one of the greatest obstacles in infiltrating this more publicly visible fragment of production is the damaged Brand China, which has been negatively affected by the perception of Chinese industry as environmentally and socially irresponsible—for example, regarding human rights and labour issues (Kasriel, 2008). China's economic growth has brought with it increases in industrial pollution, deforestation, widespread smog in major urban areas, freshwater scarcity and the tainting of major



freshwater systems by industrial effluent (Dean and Lovely, 2008). China increasingly has a reputation as a poor environmental actor in terms of domestic policies, production methods and local impacts. Chinese exports are often associated with poor environmental and labour practices as well as environmental health and product quality concerns. China is widely cited as a case study in the kinds of environmental degradation and human health impacts that can come from unsustainable economic development.

In 2007 China's State Environmental Protection Administration found 48 per cent of major lakes and reservoirs in China to be "heavily polluted" (Dean and Lovely, 2008). Of China's 600 largest cities, 400 suffer from water shortages, and China has about 25 per cent of the world's average water resources per capita. China's air quality is considered to be among the worst in the world, with sulphur dioxide concentrations increasing, a growing number of cities experiencing highly acidic rain, insufficient regulations on volatile organic compounds and other toxic air pollutants, and insufficient enforcement of existing air pollution regulations and permit conditions (OECD, 2006). Only 1 per cent of the over 500 million city dwellers in China breathe air considered safe by European Union standards (Kahn and Yardley, 2008). The amounts of municipal, industrial and hazardous wastes far exceed the nation's ability to safely treat and dispose of them. For instance, almost half of municipal waste is either stored untreated or dumped in an uncontrolled manner (OECD, 2006). Furthermore, even though China's per capita emissions of greenhouse gases remain quite low, China is now the world's leading emitter of greenhouse gases, with emissions increasing 8 per cent between 2007 and 2008, accounting for two-thirds of global emission growth in 2007 (Rosenthal, 2008). China's industries are believed responsible for much of this environmental degradation, and much of the pressure for environmental reform has been placed on them.

Such environmental degradation is now being recognized as an economic liability rather than the root of competitive advantage it may have been in the past. China's State Environmental Protection Administration has argued:

The conflict between environment and development is becoming even more prominent. Relative shortage of resources, a fragile ecological environment and insufficient environmental capacity are becoming critical problems hindering China's development. (Dean and Lovely, 2008)

Furthermore, China's growth over the past 20 years, though impressive, has had a multitude of hidden environmental and economic costs. A 1997 World Bank report estimated that air pollution alone cost roughly 7 per cent of China's GDP in 1995 (Johnson, Feng and Newfarmer, 1998). A variety of studies by Western and Chinese researchers alike have estimated the cost of total ecological damage in China to be anywhere from 5 to 14 per cent of China's GDP (U.S. Embassy Beijing, 2008). A 1999 study at the Georgia Institute of Technology estimated that reduced sunlight caused by air pollution has damaged crop yields in 70 per cent of Chinese farms by anywhere from 5 to 30 per cent (Chameides, 1999). One hundred and eighty thousand hectares of Chinese farmland become salinized every year, depressing productivity by 25 to 75 per cent. Five billion tons of soil erode annually, an amount of organic matter equal to roughly twice the national production of chemical fertilizers (Zhang, 1993). Acid rain falls on roughly one-third of China, creating public health concerns and hurting yield and quality of agricultural production ("Third of China," 2006). Environmental degradation also has numerous indirect impacts on China's economy, many stemming from the costs of a variety of public health concerns caused by water, air and soil pollution (U.S. Embassy Beijing, 2000).



2.2 Pressure on China's Industries to Conform to High Environmental and Quality Standards

China's exporters and domestic producers have faced increasing pressure in recent years over standards that protect the environment, health and safety. In the areas of health and safety, highly publicized recalls of dangerous products have included pet food tainted with melanine (an adulterant that leads to kidney failure), hundreds of different lines of children's toys and clothing containing high levels of lead (a neurotoxin), toothpaste containing diethylene glycol (a toxin), and heparin—an anticoagulant used in surgeries and medical procedures—contaminated with oversulfated chondroitin sulphate. As well as these high-profile cases, which achieved widespread coverage in international media, there have been scores of quieter recalls related to problems with specific Chinese exporters. In April 2007 alone, the following recalls were enacted in the United States, according to U.S. Consumer Product Safety Commission records:¹

- A&A Global Industries issued a recall for about 4 million of its children's Groovy Grabber bracelets, which were painted with paint that contained high levels of lead.
- Aviv Judaica Imports recalled its Chanukah oil candle sets after it was found that they can become engulfed in flames and melt the plastic cups holding the candles in place, allowing hot wax to leak out, which poses fire and burn hazards to consumers.
- Holmes Group recalled about 300,000 of its oil-filled electric heaters after discovering that a poor electrical connection within the Chinese-manufactured heaters could overheat and cause fires.
- Coby Electronics recalled over 13,000 USB/MP3/CD players due to electrical problems that could cause them to overheat and catch fire.
- Infant bouncer seats were recalled by Oeuf after reports of the seats' metal frames breaking.
- Disney Stores recalled its Baby Einstein Caterpillar sleepwear and Baby Einstein Duck sleepwear because of a failure to meet the children's flammability standard, posing a risk of burn injury to children.
- McCormick Distilling recalled 60,000 Tequila Rose Strawberry Cream candle sets after finding that the martini glass containing the gel candle can break while the candle is burning, posing fire and burn hazards to consumers.
- Two Chinese companies intentionally exported contaminated pet food ingredients, killing hundreds of pets that ate the food.²
- Dollar General Merchandising recalled about 400,000 Chinese-manufactured keychains because they contained high levels of lead.
- ObjectSolutions Inc.'s Chinese-made pre-lit palm trees were found to have electrical problems with their lighting systems that could cause fires or electric shocks.

This number of cases is not unusual. In the first six months of 2007 an average of over eight Chinese products

¹ Retrieved from www.cpsc.gov/cpscpub/prerel/prerel.html, except where noted.

² www.iht.com/articles/2007/05/09/business/petfood.php.



per month were recalled in the United States, some involving millions of items. The string of high-profile international recalls and scandals has focused the spotlight on China's domestic institutions for propounding and enforcing standards. As part of the government's efforts to address the problem, and in the wake of unprecedented domestic scandals over melamine-contaminated milk products for babies and contaminated leukemia drugs, the former head of China's State Food and Drug Administration was tried on corruption charges in July 2007, found guilty and sentenced to death.

In the area of environmental standards, the problem is different. While there are cases of individual manufacturers flouting environmental regulations, these specific cases are not so well-known internationally. The bigger problem is a perception of low environmental standards in general for China's manufacturers. The OECD environmental review conducted in 2007 revealed a wide array of domestic environmental problems, often stemming from an inability to fully enforce standards and regulations that currently exist.³ These problems include high energy intensity of production, associated pollution by sulphur oxides and nitrogen oxides and the resulting acid rain, poor urban air quality, highly polluted major waterways and coastal waters, and a growing problem of hazardous waste storage and accumulation (OECD, 2007). As well, the magnitude of the Chinese economy makes any global pollution more newsworthy. Although its per capita emissions are low by international standards (at 3.9 tonnes per capita of carbon dioxide emissions in 2004, versus 20.6 for the United States), China is now the world's leading emitter of greenhouse gases. These sorts of statistics are also well-known internationally, and can too easily become ammunition for protectionists in foreign markets who want to shield their industries against competition from Chinese imports.

A case in point is the inclusion in a number of pieces of proposed U.S. legislation of border measures that aim to protect U.S. producers from competition from countries where action on climate change is not comparable to U.S. efforts. The proposed requirements would force importers to purchase carbon offsets to "level the playing field" between U.S. and foreign producers. Such measures have been included in a number of bills submitted to the U.S. Congress, including the Bingaman-Specter Low Carbon Economy Act of 2007 (S. 1766), the Lieberman-Warner Climate Security Act of 2007 (S. 2191) and the Dingell-Boucher draft legislation released in October 2008. They are also a fundamental part of the climate and energy bill passed by the U.S. House of Representatives in 2009 (the American Clean Energy and Security Act of 2009). As Cosbey (2008) argues, no U.S. cap-and-trade scheme will be implemented without the use of such trade measures. China would be one of the major targets of such measures; Houser, Bradley, Childs, Werksman and Heilmayr (2008, p. 45) refer to U.S. policy makers' "concern about carbon-intensive imports from China."

In the case of both environmental concerns and health and safety concerns, it is necessary to put the problems in perspective. Only a miniscule percentage of China's total exports have been affected by recalls, and to date no trade measures have actually been enacted that punish China's exports on the basis of environmental problems caused by production methods, though such measures are likely in the future, as noted above. The bigger problem in both cases may be the impact on consumers' willingness to purchase a broad range of Chinese-made products.

News reports based on relatively few cases can greatly magnify these sorts of impacts. High-profile cases in recent years have resulted in growing consumer concern, demonstrated most clearly in the recent support in U.S. and European markets for a "China-free" label (Kasriel, 2008; Han, 2007). A poll by MSNBC showed that 77 per cent of almost 10,000 people polled supported a "China-free" label. A 2007 Reuters/Zogby poll showed that 78 per cent of Americans worry about the safety of Chinese imported goods, while 25 per cent have stopped buying Chinese goods altogether and 23 per cent no longer buy Chinese toys. A separate Angus Reid poll showed that 62 per cent of Canadians would consider a temporary ban of Chinese imports in order to encourage more responsible product standards (Kasriel, 2008). Some Asian consumers have also become

³ For an analysis of enforcement problems, see McElwee (2008).



averse to Chinese products; certain Korean companies traditionally sourcing from China have now opted for homegrown goods or goods from “trustworthy” countries such as Australia, despite significantly increased prices, due to the heightened consumer demand for safe food products (Han, 2007). The simultaneous occurrence of increasing global consumer environmental awareness and concern regarding the quality of China’s products has led to the diminishment of Brand China, creating a significant dilemma for China: can it remain economically competitive without demonstrably improving its environmental performance?

3.0 Description of the Present Situation in China

The concept of sustainable development was first put forward in *Our Common Future*, published by the UN World Commission on Environment and Development in 1987, which defined the phrase as “development that meets the needs of the present without compromising the ability of future generations to meet their own needs.” Based on this definition, the 2004 UN report *Agenda 21* further discussed the relationship between trade and sustainable development. The report concluded that a trading system consistent with the goals of sustainable development is of benefit to all trading partners.

Chinese president Hu Jintao’s (2007) report to the 17th National Congress of the Communist Party of China lists the following goals: to bring Chinese civilization into harmony with the environment and to form industry structures, growth patterns and modes of consumption that protect the environment and promote energy efficiency. In keeping with these goals, and with the research into the relationship between trade and sustainable development put forward in *Agenda 21*, this paper examines the application of the sustainable development concept to trade and breaks down the different traits of sustainable trade: sustainable development of trade should not only be reflected in the total volume of foreign trade growth and improvement of foreign trade structure and quality but also in the conservation of resources and the environment, a reduced population growth rate and increased social harmony. Specifically, in order to keep foreign trade sustainable, the government should maintain the country’s ecosystems and the sustainability of natural resources through a series of trade policies and promote the expansion of foreign economic activity that will improve both social and ecological benefits. The essence of achieving sustainable development is to make the interests of foreign trade and economic growth contingent upon protecting the environment and conserving resources. But when we use this standard to analyze the characteristics of China’s import and export commodities, we can conclude that China’s traditional foreign trade development model is inconsistent with the requirements of sustainable trade.

3.1 Traits of Exports Not Suitable for Sustainable Development

The competitive advantages of China’s exports largely depend on natural resource and cheap labour, as well as the different degrees of favour negotiated by provincial governments under foreign trade policies. The quantity of major high-energy-consumption exports grew rapidly in recent years (see Figure 3.1).

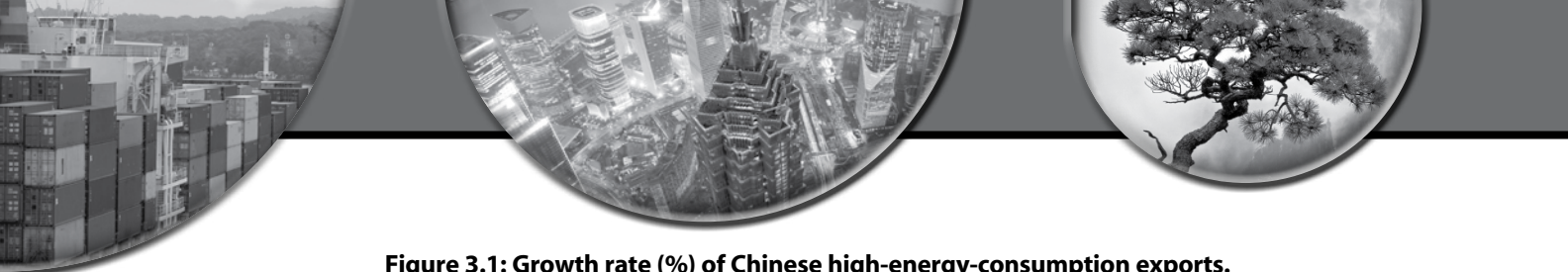
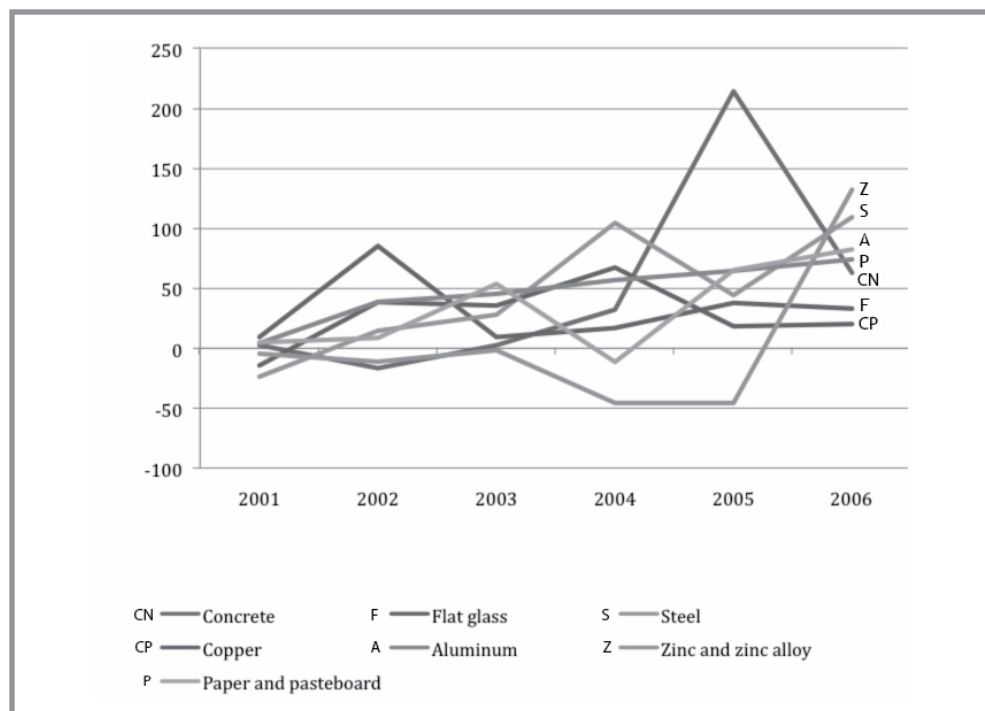


Figure 3.1: Growth rate (%) of Chinese high-energy-consumption exports.



Source: China Energy Statistical Yearbook 2006, 2007.

As shown in Figure 3.1, from 2001 to 2006 exports of concrete, aluminum, paper and pasteboard grew rapidly. The 2005 growth rates above 50 per cent, and particularly the growth rate of over 200 per cent for concrete, are particularly notable; in 2006 the growth of primary high-energy-consumption exports increased stably—only concrete exports decreased, and all others had growth rates above 20 per cent. Exports of zinc and zinc alloys dropped in 2004 and 2005, but in 2006 grew 132 per cent. These high-energy-consumption exports destroy soil, air and natural resources, so these exports are not suitable for trade that meets the demands of sustainable development.

Rapid growth of high-energy-consumption exports directly caused the current high proportion of Chinese exports not suitable for sustainable development: at present, labour-intensive export products—mainly agricultural products, foodstuffs, textiles, plastic products and toys—still make up a larger proportion of China’s exports. These exports have lower technology and rely primarily on cheap land, resources and labour, whose exploitation is bad for China’s environment. This means that the Chinese traditional competitive trade advantage is weakening today.

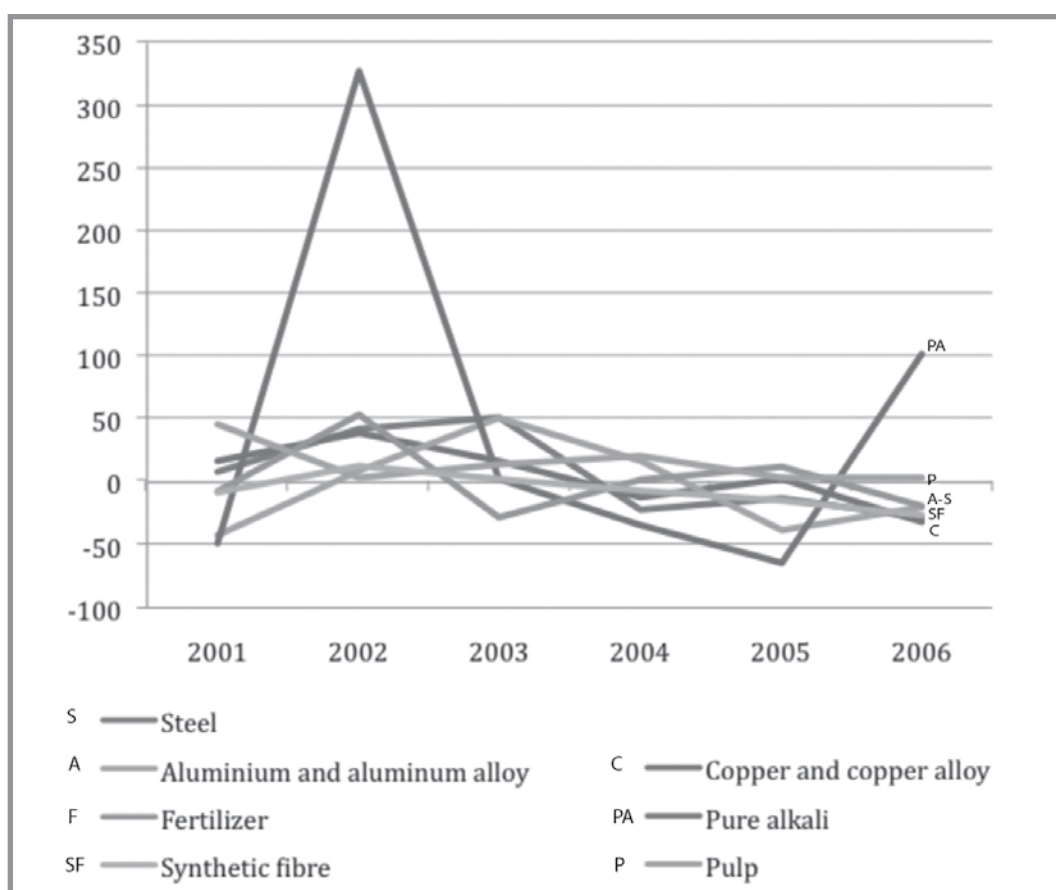
China’s technology-intensive export products are divided into two types. The first comprises exports for which only simple processing and assembly are completed in China. Production of these products, such as machinery and transport equipment, electronic components and circuit boards, still relies on a cheap labour force and has a negative impact on the environment. Therefore, in terms of the distribution of trade benefits, such technology-intensive products are actually a kind of labour-intensive product, whose production in China is focused on processing and assembly. At present, most of China’s exports of technology-intensive products belong to this type. The other types of technology-intensive export products are products requiring complicated processing and high-tech products that carry intellectual property rights. Such products have high technology, high added value, and less influence on resources and the environment. However, they make up a much lower proportion of China’s total exports.

The trade in services in China is relatively backward compared to trade of goods. Trade in services has the traits of lower energy consumption, higher technological content and high added value, so focus on the development of the services trade will help China convert its current trade pattern to one that is consistent with sustainable development and is less reliant on resources and environmental degradation.

3.2 Traits of Imports Not Suitable for Sustainable Development

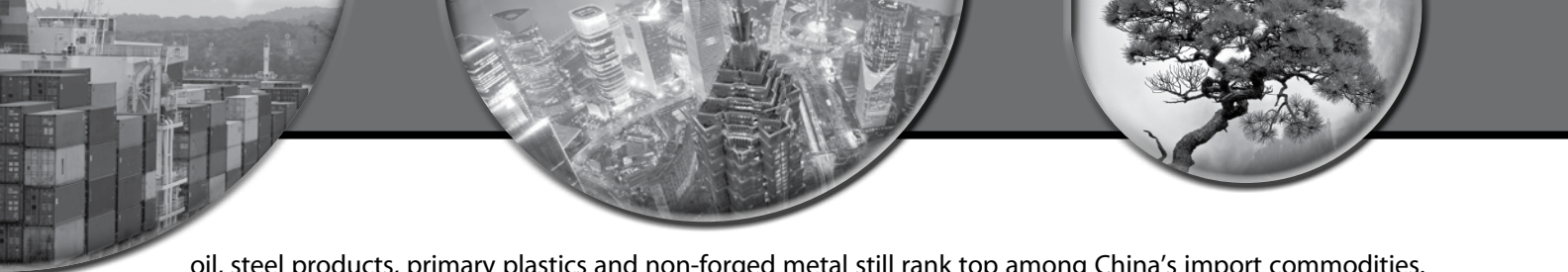
China's imports of primary products mainly include steel, wool, copper and chemical raw materials. The growth of imports of primary products showed a downward trend from 2001 to 2006 (see Figure 3.2), but the quantity of fossil fuel, lubricating oil and other raw material imports increased steadily each year. Industrial imports mainly include machinery and transport equipment, textiles, rubber products, chemical products, automobiles, aircraft, electronic equipment and computers, and other technology-intensive products. Because the processing of primary products and the manufacture or consumption of industrial products all consume a large amount of energy, these products severely pollute the environment.

Figure 3.2: Growth rate (%) of primary high-energy-consumption imports.



Source: China Energy Statistical Yearbook 2006, 2007.

Figure 3.2 shows that the growth of imports of high-energy-consumption products such as steel products, copper and copper alloys, soda ash, fertilizer and paper pulp slowed between 2001 and 2006. But according to customs statistics, agricultural products such as cereals and cereal powder, rubber, paper pulp, minerals, crude



oil, steel products, primary plastics and non-forged metal still rank top among China's import commodities. These are semi-finished products that need further processing or production, have high energy consumption and are highly polluting. The environments of Chinese coastal regions such as Guangdong Province have been heavily damaged because of the country's export-oriented import model wherein many of China's imports turn into exports after processing. In order to reduce the overreliance of imports on resources and the environment, it is important for China to change its traditional trade model and the structure of imported goods controlled by export-oriented processing enterprises. So the demand for sustainable development also puts forward new challenges to China's import structure.

The above analysis shows that China's import and export commodities have the characteristics of high energy consumption and high pollution. This static, resource-based comparative advantage of foreign trade development does not meet the requirement of sustainable trade. In recent years, especially when domestic labour costs began to rise, the Chinese government has begun to recognize the importance of protecting resources and the environment, as well as of adding environmental costs to export production costs.

3.3 Further Analysis of Major Export Products

Mechanical and electrical products and textiles have kept the top two spots in China's export ranking for a long time, and China exports large quantities of agricultural products. These three sectors are also the targets of the largest proportion of the restraints from foreign TBTs. For example, in 2005 exports of agricultural products, food, machinery, and textiles and clothing were subject to more than 80 per cent of the restraints from TBT (General Administration of Quality Supervision, Inspection and Quarantine of the People's Republic of China [AQSIQ], 2006).⁴ This section investigates these three sectors to demonstrate the main problems China faces in overcoming foreign TBT.

3.3.1 Mechanical and Electrical Products

Mechanical and electrical products have ranked first among all of China's export commodities for 14 years running and are an important driving force for the sustained growth of China's exports. China's share of mechanical and electrical products in the world export total rose from 3.4 per cent during the 9th Five-Year Plan (1996 through 2000) to 8.5 per cent during the 10th Five-Year Plan (2001 through 2005). China has become the fourth-largest exporter of mechanical and electrical products in the world, following Germany, the United States and Japan.

While maintaining a rapid total growth, China's exports of mechanical and electrical products have shown a marked improvement in structure. The export of high-tech mechanical and electrical products increased from US\$35.03 billion in 2000 to over US\$200 billion in 2005 and US\$347.83 billion in 2007, for an average annual growth rate of 43.5 per cent—accounting for over 50 per cent of total exports of mechanical and electrical products.

In spite of the rapid growth of China's exports of mechanical and electrical products, some issues remain, such as insufficient investment in research and development and weak innovation capability, lack of independent intellectual property and core technology, underdevelopment of high-tech and high-value-added products, and increasing trade frictions. Therefore, China's government needs to take measures to further enhance the international competitiveness of export enterprises, optimize the export structure and improve the current export order—wherein companies within China follow no consistent competitive rules, so often can only compete on price.

⁴ Agriculture and food products: 42 per cent, machine products: 21.7 per cent, textile and clothing products: 21.5 per cent.



3.3.2 Textiles

After China's entrance into the WTO, its exports of textiles and clothing grew from US\$53.44 billion in 2001 to US\$175.62 billion in 2007, an increase of more than 300 per cent. In 2007 China's exports of textiles and clothing chalked up a year-over-year increase of 19.11 per cent, accounting for 14.42 per cent of total exports. The value of textile exports was US\$60.5 billion, up 15.86 per cent, and that of clothing was US\$115.07 billion, up 20.89 per cent. Most of the exported textiles and clothing go to the United States and Japan or are exported via Hong Kong.

At present, four negative factors affect China's exports of textiles and clothing. First, the appreciation of the yuan will further weaken China's price advantage; second, the industry is affected by the Chinese government's downward adjustment of rebates from export taxes; third, starting in 2005, some special clauses in China's WTO commitments began restricting China's exports of textiles and clothing; and fourth, resources and environmental issues have become a constraint on the development of China's textile industry.

3.3.3 Agricultural Products

In 2004 China's trade in agricultural products accounted for 3.2 per cent of the world total, ranking the country fifth among the leading traders in agricultural products. But the country's trade deficit for agricultural products was as high as US\$4.64 billion. China's export of agricultural products grew considerably in 2006, reducing the deficit to US\$4.08 billion in 2007.

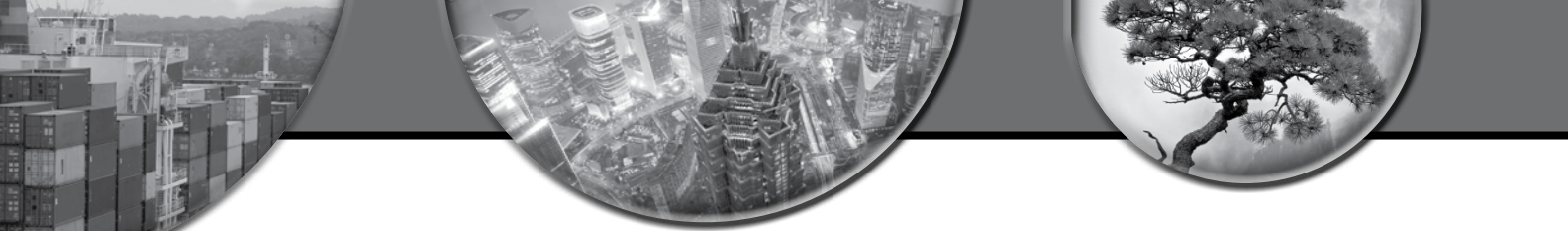
At present, China's agricultural trade deficit is shrinking, and all the major export regions show growth trends that are satisfactory from the Chinese perspective. China's trade of agricultural products relies mainly on the eastern coastal areas. Exports from the six largest export regions, including Shandong, Guangdong, Zhejiang, Fujian, Liaoning and Jiangsu, account for around 70 per cent of the national total, with Shandong remaining at the top. Asia is still the largest export market for China's agricultural products, followed by Europe and North America. With the implementation of policies and measures for the development of modern agriculture, China will further enhance the international competitiveness, quality and safety of its agricultural products.

3.4 Current Foreign Technical Regulations and Standards Facing China

This section gives an overview of the foreign environmental technical regulations most applicable to Chinese industries. It also mentions a few international standards that have, in essence, become conditions of doing business in key foreign markets. It focuses exclusively on import regulations from the European Union, the United States and Japan—China's largest export destinations, as described above. Although some of these standards have been in place for decades, most of them are relatively recent, and the number and scope of such standards seems to be expanding quickly. For the most part, foreign environmental technical regulations focus on the quality and characteristics of products rather than their production methods.

3.4.1 Environmental Import Regulations in the European Union

The Restriction of Hazardous Substances Directive, adopted by the members of the European Union in July 2006, is a regulation affecting all goods sold in Europe, including imports. The directive eliminates the use of certain toxic materials, such as lead, mercury, polychlorinated biphenyls (PCBs) and so on (www.rohs.gov.uk). It will force Chinese electronics manufacturers to use environmentally friendly materials if they hope to gain access to European markets.



Although the subject is still under fierce debate in the WTO, the European Union has attempted to ban the import of genetically modified organisms (Crowley, 2008). This could become a significant concern for China, which is already a major grower of genetically modified crops and is planning a US\$3.5 billion research and development initiative on genetically modified organisms (Stone, 2008).

European Union import regulations also affect products that contain greenhouse gases such as chlorofluorocarbons (CFCs) or hydrochlorofluorocarbons (HCFCs), various other ozone-depleting substances, asbestos and detergents (Hong Kong Trade Development Council, 2008; European Union, 2008). The European Union is considering implementing a tariff system that would force companies exporting to Europe to buy emission credits, essentially paying for any greenhouse gas emissions in excess of EU standards ("EU ponders carbon," 2008). This proposal is quite progressive and controversial due to its regulation of imports based on their emissions rather than product characteristics, and it may conflict with GATT obligations.

The European Union has also recently created the Registration, Evaluation and Authorization of Chemicals program, a comprehensive regulatory regime for chemicals that includes regulatory control over imports and their chemical contents. Although the program is more focused on the process of accepting and documenting chemicals, it has significant evaluation and authorization components that will restrict manufacturers from exporting products that contain substances of very high concern into the European Union and will require substantial documentation of imported goods and their chemical contents (Chemicals Policy Initiative, 2008).

3.4.2 Environmental Import Regulations in the United States


In recent years the United States has generally been less active than the European Union in terms of environmental import regulations. At the same time, the United States has mirrored the European Union through a variety of restrictions on chemicals and other characteristics of products allowed for import. The most prominent piece of U.S. legislation regulating imports as a result of environmental concerns remains the Toxic Substances Control Act of 1976. The act works primarily to create an inventory of chemicals used within the United States, catalogue any new chemicals introduced and assess the potential danger of those chemicals to public health and the environment. However, the act also includes specific regulations on PCBs, asbestos, lead paint and various other substances (U.S. Environmental Protection Agency [EPA], 2008c). Despite these restrictions and regulations of chemical imports, the Toxic Substances Control Act is perhaps less stringent than parallel regulation in Europe. The Federal Insecticide, Fungicide, and Rodenticide Act regulates imports of pesticides, requiring exporters to comply with applicable U.S. pesticide legislation and register with the U.S. Environmental Protection Agency (EPA, 2008b).⁵ In addition, the United States has restrictions on a variety of ozone-depleting substances, including CFCs, halons, methyl bromide and HCFCs, in line with its commitments under the Montreal Protocol on ozone-layer protection (EPA, 2008a).

3.4.3 Environmental Import Regulations in Japan

Recent Japanese environmental technical regulations have also proven to be economically damaging for China, particularly those regarding food sanitation assessment (Fackler, 2007). The most prominent of these measures, the Food Sanitation Act,⁶ has made Japan the world leader in the inspection of domestic and imported food products, and has greatly restricted what China can export to Japan. The Food Sanitation Act is less focused on the restriction of specific chemicals than on the stringency of the inspection process. Japan has reported that roughly a third of the 1,515 food samples rejected for import came from China (Fackler, 2007). Due to a recent food scare mitigated by the Food Sanitation Act, the value of Chinese exports to Japan

⁵ For a detailed description of the Federal Insecticide, Fungicide, and Rodenticide Act, see <http://epa.gov/regulations/laws/fifra.html>.

⁶ For a description of the Food Sanitation Act, see www.jetro.go.jp/en/reports/regulations/pdf/food-e.pdf.



in the first two months of 2008 was down over 10 per cent from the previous year (Shutao, 2008). Japan has also enacted the Electrical Appliance and Material Safety Law, regulating the safety of products from the electronics industry, including the safety of the materials used to make those products.⁷ Japan has a variety of other import regulations on fertilizers, feed, pesticides, paints, plastics and rubber products (Japan External Trade Organization, 2008).

3.4.4 Agricultural Technical Regulations

Many agriculture-related foreign environmental import regulations fall under the WTO's SPS Agreement. The SPS Agreement stipulates that countries can adopt environmental import restrictions relating to human, animal or plant life or health (SPS measures), as long as those technical regulations are based on science and do not act as unnecessary restrictions to trade (World Trade Organization, n.d.). The SPS Agreement allows technical regulations on any agricultural products that might affect consumer health or contaminate the importing nation's environment. The SPS Agreement does not cover measures that affect environmental conditions or human, animal or plant health in the exporting countries. Such measures would be covered by the GATT, which imposes a number of hurdles for importing countries to overcome if they want to restrict production practices that cause pollution in China.

China is generally considered to have low SPS standards for domestic producers (and goods imported into China); however, its industries must also comply with the typically much higher SPS standards of the countries to which they're exporting. Thus foreign SPS measures are particularly relevant to China's agricultural industry. Minimal SPS compliance domestically has become a major limiter to the competitiveness of China's agriculture sector, which is now undergoing a major overhaul of its standards regime in order to enable businesses to be in a better position to meet foreign standards (Dong and Jensen, 2004).

3.4.5 Private and Quasi-Private International Standards That are Emerging as Conditions of Sale in Foreign Markets

International standards are not only developed by governments and quasi-public institutions to help harmonize technical regulations among nations and break down barriers to trade, they are also increasingly being developed by civil society groups and multistakeholder coalitions to promote good corporate environmental or social practice. Despite their voluntary origin, some of these private international standards have become de facto conditions of sale in some markets. Other standards that are relatively new to the market are trending in that direction. Although, for the most part, voluntary international standards have not been widely implemented in China, there are currently a handful of standards that are either undergoing rapid uptake in China or that Chinese manufacturers are under increasing pressure to implement. These standards can be divided into three broad groups: environmental standards, social standards and sector-specific standards.

3.4.5.1 Environmental Standards

ISO 14000 Environmental Management Standards

The cornerstone of the ISO 14000 series is the environmental management system standard ISO 14001. ISO 14001 has been widely adopted in a variety of industries and countries around the world and has become the dominant environmental management system worldwide. Focusing exclusively on the Plan-Do-Check-Act cycle, also known as the continuous improvement or Deming cycle, ISO14001 carries with it no specific

⁷ For a detailed description of the Electrical Appliance and Material Safety Act, see www.meti.go.jp/english/policy/denan/procedure/guide01.htm#c05-2.



quantitative environmental performance requirements. However, environmental management systems allow corporations to identify environmental liabilities and locate areas in which efficiency is needed or improvement possible; therefore, such systems will encourage the development of better environmental practices. ISO14001 has permeated international corporate practice to such an extent that it is now often seen as a general expectation for trade in certain sectors (Li, 2008). Because of this, it was among the first standards to be implemented across many industries in China.

In the last decade, the rate of ISO 14000 certification in China has increased dramatically. In 1999, 100 organizations in China were ISO 14001 certified; in 2001, 1,000 were certified; in 2005 China had 10,000 certified organizations; and by November 2007 the number had reached 30,489. In 2006 China ranked second globally in its number of organizations that were ISO 14001 certified, with roughly 12 per cent of total global certifications. ISO 14001 is now utilized heavily in a variety of industries and across a broad geographic area. This quick spread throughout China has been voluntary and market driven, demonstrating the standard's substantial economic benefits. ISO 14001 is now so widespread that it is considered a de facto condition of sale in many Chinese industries (Li, 2008).


ISO 9000 Quality Management Systems

An older cousin of the ISO 14000 series is the ISO 9000 series, which is devoted to quality management and assurance, prescribing how quality assurance processes occur and how these processes are documented and adhered to. Waste minimization is a significant component in quality management systems, forming an indirect link to environmental performance. Pressure for ISO 9000 certification in certain industries, such as the automotive, aerospace, chemical and building materials sectors, has been prevalent since the 1990s. A survey by Quality Systems Update recently showed that more than 83 per cent of certified companies polled reported a higher perceived product quality, and 70 per cent reported gaining competitive advantage. A different study, conducted by Dowling College of Long Island, New York, found that 41 per cent of companies using ISO 9000 reported an increase in their European market share. Despite ISO 9000's apparent contributions to product quality and competitive advantage, ISO 9000 compliance is not largely considered mandatory in many markets, though it is a requirement for some regulated products in the European Union (Hutchens, 1999).

Hazard Analysis and Critical Control Point (HACCP)

HACCP is a food safety system that has become the universally accepted method for food safety assurance. HACCP is built around the concept of assuring food safety through the systematic management of processes and production methods rather than limited end-product testing. Like ISO 9000 and 14000, HACCP is a *system* rather than a regulation; compliance provides a way to prevent food hazards but does not contain any quantitative requirements.

Developed in the 1960s for the U.S. space program, HACCP expanded to apply to common food production systems and was widely used voluntarily by industry by the 1970s. Since then it has been endorsed by several international organizations, including the UN Food and Agricultural Organization and the World Health Organization (Goodrich, 2005). The Codex Alimentarius Commission, a prominent international standard-setting body whose standards are the reference point for food safety requirements in international trade, has incorporated HACCP guidelines into all relevant codes on food and hygiene (World Health Organization, 2007). ISO 22000, another international standard for food quality management, also utilizes HACCP (Intertek, 2008). The U.S. Department of Agriculture has established HACCP regulations in meat and poultry processing plants. The U.S. Food and Drug Administration requires that the canned food, seafood and juice industries follow HACCP, and plans to extend the requirement throughout the food industry (U.S. Food and Drug



Administration, 2001). Furthermore, in 2006 the European Union made HACCP compliance a requirement for all facets of food production (Partington, 2006).

HACCP is critical to China, where the expectation for compliance with food safety systems is quite high due to recent contamination scares. By May 2004, 4,600 Chinese food processing and manufacturing enterprises (roughly 29 per cent of China's total) were HACCP certified. In a survey of 27 HACCP-certified Chinese food enterprises, the respondents concluded that the greatest incentives for HACCP implementation were access to new markets, increased product quality and increased market share (Bai, Cheng-lin, Yin-sheng, Shu-kuan and Shun-long, 2007). Therefore, not only has HACCP certification become a condition of sale in China's major export markets, but compliance has been shown to be economically advantageous for Chinese manufacturers.

3.4.5.2 Social Standards

Social Accountability 8000

Social Accountability 8000 (SA8000), one of the world's first labour-oriented private standards, was developed by Social Accountability International in the 1990s and is currently being implemented across China as Chinese manufacturers come under increasing pressure from international trading partners to address labour conditions. However, despite growing use in China, it has not yet caught on to the same degree as it has in Western nations. As of September 2008, 225 facilities in China were SA8000 certified (Rochelle Zaid, Accreditation Director, SAI, personal communication, September 24, 2008). Unlike other, similar standards, SA8000 certifies individual facilities rather than companies as a whole. The SA8000 standard is based on the conventions of the International Labour Organization, and therefore includes provisions covering child labour, forced labour, health and safety, freedom of association and the right to collective bargaining, discrimination, disciplinary practices, working hours and compensation (Crijns, 2004). It is not specific to any industry.

ETI Base Code

The Ethical Trading Initiative (ETI), originally formed in the United Kingdom, is a collection of international corporations, NGOs and trade union organizations that promotes worker's rights and deals with other labour concerns. The ETI Base Code lays out the core principles that members must comply with. It emphasizes good social practice along members' supply chains and focuses on freedom of association, overtime, regular employment, health and safety, housing and discrimination. China accounts for 24 per cent of ETI assessments worldwide, with a total of over 1,300 ETI assessments in 2002 alone (Barrientos and Smith, 2006). This number is rising quickly throughout China, especially since the dissolution of the Multi-Fibre Agreement in 2005. Despite the high number of ETI-compliant companies in China, China is considered to have particularly high rates of non-compliance among official ETI members (Barrientos and Howell, 2006). Although SA8000 and ETI have a wide area of overlap in their standards, they differ primarily in that SA8000 accredits individual facilities, whereas ETI is a company-based standard that mostly works with international corporations and the various components along their supply chains.

ISO 26000

ISO Social Responsibility (ISO 26000), under development, is another social responsibility standard that may apply to China. ISO has a level of visibility in the global community far surpassing Social Accountability International or the Ethical Trading Initiative; therefore, ISO 26000 will almost certainly gain widespread credibility and international recognition on a scale unattainable by other standards. Unlike SA8000 and the



ETI Base Code, ISO 26000 is not a set of strict specifications, but rather a collection of qualitative guidelines to help private and public entities better understand and reach good social practice (International Organization for Standardization, 2006). Because of this, ISO 26000 likely will not by itself be a strong driver for assessment of conformity to social responsibility standards. However, it could significantly increase corporations' interest in assessing and understanding their social practices. As an ISO standard, ISO 26000 will be implemented by a vast variety of major corporations worldwide and will therefore become relevant for a significant portion of Chinese industries.

3.4.5.3 Sector-Specific Standards

Agriculture Standards


GlobalGAP is a private sector body that sets voluntary standards for the certification of "good agricultural practices" (GAP) for agricultural products around the globe. The GlobalGAP standard is primarily designed to reassure consumers about how food is produced on the farm, by minimizing the detrimental environmental impacts of farming operations, reducing the use of chemical inputs and ensuring a responsible approach to worker health and safety as well as animal welfare (GlobalGAP, n.d.). GlobalGAP is perhaps the most prominent comprehensive international standard for agricultural activities and is currently being widely implemented across China, largely as one path through which to comply with the aforementioned sanitary and phytosanitary measures of China's export targets.

Textile Standards

The Oeko-Tex Standard 100, an environmental textile certification scheme originating in Europe and specifically focusing on the environmental impacts of the textile and apparel industry, was first established in China in 1999. As of June 2006 Oeko-Tex had 695 certified companies in China alone. The Oeko-Tex Standard 100 deals mostly with toxic effluents such as carcinogenic dyestuffs, pesticides, PCBs, heavy metals and formaldehyde. Though Oeko-Tex was widely adopted in the textile and apparel industry, many manufacturers who subscribed to the standard were not satisfied with its impact on competitive advantage, mostly because of the large number of similar standards on the international market and the lack of recognition of Oeko-Tex in the international market (Wang, n.d.).

The uptake of Oeko-Tex Standard 100 within Chinese industry pushed the Chinese government to develop its own parallel environmentally oriented textile standard, called HJBZ 30-2000, in 2000. Although HJBZ 30-2000 used Oeko-Tex Standard 100 as a reference, it was an ineffective alternate because of faulty testing and inspection processes and a lack of appropriate testing methodology. As of 2006 only 95 companies nationwide had HJBZ 30-2000 certification, primarily because the standard lacked credibility among overseas buyers—largely due to its less-stringent requirements and lack of accountability measures (Wang, n.d.).

China Social Compliance 9000 for the Textile and Apparel Industry (CSC9000T), established in 2005 by the China National Textile & Apparel Council, is a standard for social responsibility in China's textile and apparel industry that includes both management system requirements and specific regulations. Ostensibly the CSC9000T was created by the Chinese government in order to repair the industry's reputation and thereby increase its competitiveness in the global market (China National Textile & Apparel Council, 2005). However, the standard also served as a way for China to regain control of its own workers' rights, which have been heavily influenced by international standards. The CSC9000T has been criticized on several fronts, including the standard's origins in the Chinese government and the lack of provisions for freedom of association among workers, living wage allowances, or prohibitions against discrimination based on



political affiliation or sexual orientation. As of August 2005 the CSC9000T had 170 Chinese participants but only one major investor from outside of China or Hong Kong (Domoney, n.d.). Thus, despite aggressive promotion from the Chinese government, HJBZ 30-2000 and CSC9000T have not gained traction among foreign corporations, due to a lack of stringency and the resulting lack of credibility in international markets.

Mechanical and Electronics Standards

The Electronics Industry Code of Conduct is an international standard for performance expectations in labour, health and safety, environmental practices, ethics and management systems in the information and communications technology industry (FIAS & Business for Social Responsibility, 2007). The Electronics Industry Code of Conduct was developed by HP, IBM, Dell and others; members now include the majority of major international players in the information and communications technology industry, such as Apple, Microsoft, Adobe, Intel and Cisco (Harder and Commike, 2007). Certification is company-based and applies across members' supply chains. The program is still in its nascent stages; however, it is likely to play a prominent role among standards for the information and communications technology industry in China. The value of certification in increasing competitive advantage has already been demonstrated, and therefore the incentive to comply with the standards is increasing quickly. However, concerns currently exist about the extent and effectiveness of the auditing process and whether certified companies are adhering strictly to the system's provisions (FIAS & Business for Social Responsibility, 2007).

Forestry Standards

The Forest Stewardship Council is an independent multistakeholder initiative focused on designing and ensuring conformity with standards for responsible forest management. Forest Stewardship Council standards promote equitable use and sharing of benefits derived from the forest, reduction of the environmental impact of logging activities as well as maintenance of the ecological functions and integrity of the forest, recognition of and respect for indigenous peoples' rights, maintenance or enhancement of the long-term social and economic well-being of forest workers and local communities, respect for worker's rights in compliance with International Labour Organisation conventions, and appropriate and continuously updated management plans (Forest Stewardship Council [FSC], n.d.b). The Forest Stewardship Council has become the most prominent standard-setting body for the forestry sector in the world, with offices in more than 46 countries (FSC, n.d.a). In 2006 the council launched an initiative in China that marked the first formal steps toward the development of a forest certification scheme within the country (World Wildlife Fund, 2006). Since then, uptake of the council's standards in China has grown dramatically, increasing from just over 50 certificates in 2003 to roughly 130 in 2005 to well over 300 in 2007. By June 2007 FSC had certified more than 700,000 hectares of forest in China (FSC, 2007).

3.4.6 Description of Problems in the Key Sectors

China, as the world's largest developing country, faces a difficult situation in that foreign TBTs have become a big obstacle for foreign trade development after the country's entry into the WTO. According to a survey released by the Chinese Ministry of Commerce, in 2005 about 25.1 per cent of export enterprises in China were affected by foreign TBTs; the direct damage to the country's export economy was US\$28.8 billion.^{8,9} The total value of shipments affected was above US\$8.15 billion, including US\$2.22 billion worth of products that did not meet energy-efficiency and recycling requirements and US\$1.23 billion in

⁸ The calculation of "direct damage" mainly includes cancelled orders and costs of rectifying non-compliance

⁹ Based on a survey of 2,996 export enterprises in 31 provinces, municipalities and cities under the direct jurisdiction of the central government published by the General Administration of Quality Supervision, Inspection and Quarantine of the People's Republic of China (2006).



products that did not meet government-imposed standards for protecting the environment protection and safeguarding health and safety. These two types of requirements are the restrictions that most affect China's exports. In 2006 the direct damage was US\$35.92 billion, accounting for 3.71 per cent of the total value of exports in 2006. About 31.4 per cent of export enterprises were affected by TBTs to different degrees, an increase of 6.3 per cent over the previous year (AQSIQ, n.d.).¹⁰

As China's top three export markets, the European Union, the United States and Japan are the countries with the most TBT-causing measures in the world, and they are also the countries that most restrict China. Different industries in China are affected by these countries' TBTs to different degrees. According to the report *Foreign TBT Measures that Influence China's Foreign Trade in 2005*, released by the Chinese Ministry of Commerce, farm and food products were affected the most seriously by Japan and the European Union, light industry and textiles mainly by the United States and the European Union, and mechanical and electrical products by the European Union.

According to the Chinese Ministry of Commerce's survey, mechanical and electrical products and textiles and agricultural products were most affected by foreign TBT measures. The added cost of mechanical and electrical products increased the most, the direct damage to textiles was serious, and almost all kinds of farm and food products were affected by foreign TBT measures.

The Added Cost of Mechanical and Electrical Products Increased the Most

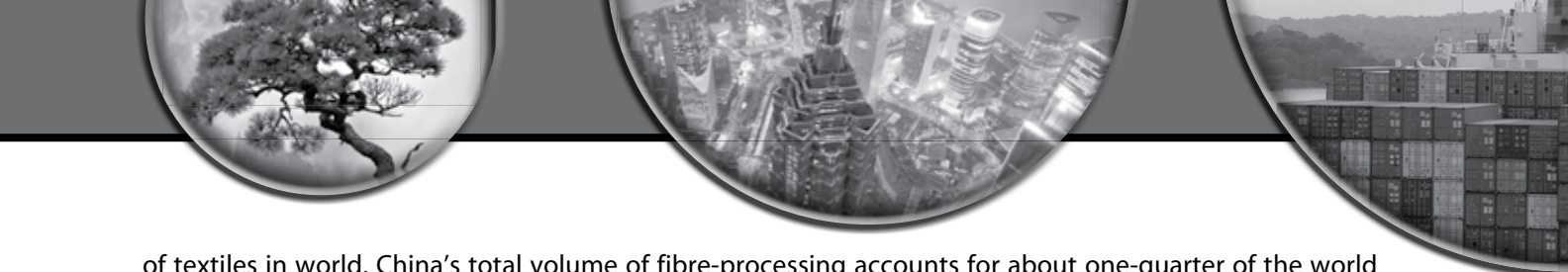
The mechanical and electrical industry is the largest export industry in China. In 2006 exports from this sector were US\$549.42 billion, accounting for 56.7 per cent of total export volume. However, compared with developed countries, mechanical and electrical export products from China are mainly low-tech products, lack added value and are often blocked by TBT measures. The cost of export increases quickly. Figures released in 2007 by the Chinese General Administration of Quality Supervision, Inspection and Quarantine (AQSIQ, www.aqsiq.gov.cn) showed that the direct damage to the mechanical and electrical industry from foreign TBT measures was US\$8.7 billion in 2006, accounting for 24.2 per cent of the total direct damage in the same year and ranking the sector first among Chinese industries.

For example, the Waste Electrical and Electronic Equipment Directive and the Restriction of Hazardous Substances Directive are the European Union's provisions pertaining to electronic equipment that have most seriously affected China's electronic export products. According to 2006 data from the Chinese Ministry of Commerce, the value of the electronic exports affected by these provisions was US\$31.7 billion, US\$50 billion and US\$60 billion in 2003, 2004 and 2005, respectively. The two provisions not only increased the cost of China's mechanical and electrical products entering the EU market but also led to the loss of the market. Especially for high-tech industries such as the mechanical and electrical industries, the added cost of exporting to the European Union is much higher. China has spent a considerable amount on technology improvement since the European Union enacted the two directives. This caused increases in costs. Statistically, the costs of complying with Category 16 of the customs regulations (which covers imports of mechanical instruments, electronic equipment and spare parts, TV image equipment and so on) increased the most, accounting for 44.1 per cent of the total increased cost.

The Direct Damage to Textiles Was Serious

Textile exports play an important role in China's foreign trade. The total export volume for textiles has ranked at the top of China's export products for many years. China is still the largest producer and exporter

¹⁰ Based on an AQSIQ survey of 2,570 export enterprises in 31 provinces, municipalities and cities under the direct jurisdiction of the central government.



of textiles in world. China's total volume of fibre-processing accounts for about one-quarter of the world total volume, and that of clothing accounts for one-eighth. However, with the expiry of WTO textile agreement on January 1, 2005, textile quotas were cancelled. Foreign countries, especially developed countries, began to protect their markets through setting stricter and stricter TBT measures. All signs indicate that TBT measures have become the major barrier affecting China's textile exports.

From the comprehensive data and statistics provided by the Chinese Ministry of Commerce, the direct damage to the textile industry was US\$1.17 billion in 2002, and the direct damage in 2005 was US\$29.87 billion, accounting for 43.2 per cent of total direct damage to China's exporting industries that year. Moreover, provisions for environmental textile labels, especially the new Registration, Evaluation, Authorisation and Restriction of Chemical Substances regulation that took effect in the European Union in 2007, affected China's textile exports. This is because during the producing and processing of textiles, almost all the procedures are related to chemicals—especially printing, dyeing and curing—and will create hazardous substances throughout the process. If a chemical used to produce exported clothing is not registered and permitted by the European Union, that clothing would be forbidden for sale in Europe. We can estimate that after the implementation of the new regulation, about 70 per cent of Chinese clothing exports have been affected because of these chemical processes.

Agricultural Products Were Widely Influenced

As the world pays more attention to the rights of consumers to protect their lives and health, foreign countries, especially developed countries, have begun to use stricter TBT measures on agricultural products in order to control residual pesticides and ensure product quality. This presents much higher demands for the packaging, labelling and allowable residues for agricultural products. All of these measures have placed unprecedented limitations on China's exports of agricultural products.

According to research by the Chinese Ministry of Commerce, agricultural products were influenced most widely by TBT measures in 2005 (Ministry of Commerce of the People's Republic of China, n.d). Although the absolute value wasn't high, the value of the direct loss to the agricultural sector—calculated based on the value of cancelled offers and additional costs related to the cancellations—was equivalent to 26.7 per cent of the value of that sector's total exports in 2005. The ministry estimates that when these direct losses are combined with the value of potential additional contracts that were lost because of TBT measures—a form of loss the ministry calls "opportunity loss"—the total damage in 2005 reached 96.6 per cent of the actual value of the sector's exports. In 2006, 90 per cent of China's agricultural and food export industries in China were affected by TBT measures, causing direct losses of US\$14 billion.

It is useful to provide some specific examples of typical cases. Beginning in January 2002, the European Union comprehensively forbade the importation of Chinese animal-derived products because of residues of chloromycetin and other pesticides that could not meet the EU standards, except for ocean-caught fish that were exported directly to Europe. This prevented more than US\$1 billion in exports from shipping from China to the European Union. Although the injunction on animal-derived products had been partially dismissed by the European Union in August 2004, the ban on poultry products wasn't lifted until September 2005. Outside the European Union, the implementation of a "positive list system" in Japan in 2006 also increased the threshold for exports of China's agricultural products. Japan is the largest market for China's agricultural exports, taking 32 per cent of the country's exports. The implementation of the positive list system affects one-third of China's agricultural exports, including eel, stem vegetables and honey, for which pesticide residues exceed the limits. As a third and final example, ISPM 15, a common regulation covering the wood packaging of import products, is followed all over the world. ISPM 15 requires that wood packing have no bark and be heat- or vacuum-treated according strict standards, requirements that



also restrict the packaging for Chinese agricultural products.

After the country's entrance to the WTO, Chinese export enterprises began to react to foreign TBT measures to different degrees. Most export enterprises know that the key way to overcome foreign TBTs is to improve technology and management as well as international competitive ability. According to a survey by the Ministry of Commerce in 2005, in order to overcome foreign TBT, 71.8 per cent of enterprises try to improve technology and meet the standards of international or import countries; 63.4 per cent try to strive for authentication by international authorities and exporting countries. In addition, export enterprises also make use of many other ways of overcoming foreign TBT, such as bilateral negotiation; the WTO dispute settlement system; participation in the amendment of national and international or importing countries' standards.

Although Chinese export firms have the basic skills needed to overcome foreign TBT, their ability is still limited because of their own low product and research technology level, the need for improvement in the services delivered by government and social organizations, and the high requirements posed by international standards. The main problems are listed in Table 3.1.

Table 3.1: Chinese exports firms' main barriers to overcoming technical barriers to trade.

Problem	Proportion of export firms affected (%)
Lack of funds, difficulties altering technology and gaining international authentication	50.7
Unavailability of information about whether competitors' regulations have changed	43.7
Lack of transparent procedures; when firms are treated inequitably, they don't know which department to ask for help	41.5
Lack of technological assistance; when firms are faced with the high requirements of international standards, they cannot get technological assistance from certain departments	40.8
Large gap between the technology possessed and the technology level needed to meet the technical requirements of trading partners	31.7

Source: Ministry of Commerce of the People's Republic of China (n.d).

From Table 3.1 we can see that lack of funding is the biggest difficulty for export firms. This leads to a low level of production technology and low product standards because of the lower level of economic development compared with that in developed countries and the absence of a mechanism that can inspire firms to add inputs to technology and product innovation. Inability to acquire timely information is the second most important difficulty, because international standards change quickly and requirements are continually increasing; the government's system for releasing information on international standards is not consistent. The third and fourth difficulties reflect the need for improvement in the service functions of government and social organizations. The last difficulty reflects that because of the overall low technology standard in China, the gap between national and international standards is great.



3.5 China's Standards Regime

According to the Standardization Law of the People's Republic of China, implemented on April 1, 1989, China's standards regime includes national standards, industry standards, local standards and enterprise standards. National standards and industry standards can be divided into mandatory standards and recommended standards.

After China's entry into the WTO, according to the provisions of related WTO agreements and State Council provisions, the General Administration of Quality Supervision, Inspection and Quarantine (AQSIQ) became responsible for all the policies and procedures related to assessment of standards compliance. AQSIQ is expected to notify the WTO Secretariat about the WTO, TBT and SPS measures set by AQSIQ, appraise and consult on TBT and SPS measures set by other members of the WTO, and formulate provisions to deal with other WTO members' suggestions regarding AQSIQ's TBT and SPS measures. The Standardization Administration of the People's Republic of China is responsible for implementing the TBT Agreement and SPS Agreement under the arrangement and coordination of AQSIQ.

Since imports into China that are affected by technical trade measures are varied and distributed across several industries, at least 15 departments are involved in formulating and implementing the technical trade measures, and related committees and trade organizations also play important roles.

3.5.1 Measures the Chinese Government Takes to Help Enterprises Meet the Relevant Standards

In order to help export enterprises overcome foreign TBT measures, AQSIQ, as the government department responsible for leading on issues related to TBTs, takes the following measures with other member units (such as the Ministry of Commerce and the Ministry of Agriculture). The first of these is to collect the latest TBT measures formulated and revised by WTO members; send them to the relevant industries, departments, associations and enterprises; evaluate the measures in various ways and send suggestions to the involved WTO members. The second is to engage in bilateral and multilateral exchanges, discussions, consultations and negotiations with related WTO members about the TBT measures that negatively affect China's enterprises. The third is to formulate and complete a warning system that deals with provisions such as Japan's positive list system and the European Union's Registration, Evaluation, Authorisation and Restriction of Chemical Substances regulation, as well as its standard for non-food products. Fourth, AQSIQ must research key foreign TBT measures, offer informational consultation and organize various forms of training. Finally, it influences public opinion through all kinds of media.

Information Released

Since 2006, AQSIQ has published an annual report on TBTs affecting China. The report comprehensively investigates the TBT measures that China has come across in the previous year. It also summarizes the situation that China is dealing with for some TBT measures. Meanwhile, it also introduces the TBT measures that China itself has formulated and revised. This report offers a detailed introduction of the trends, experiences and practice of foreign countries' formulation and revision of TBT measures.

The *Foreign Market Access Report* has been released by the Ministry of Commerce annually since 2005. *Suggestions for Encouraging Enterprises to Overcome TBT Measures* was published jointly by the Ministry of Commerce and AQSIQ. These two reports not only introduced the implementation of TBT measures for China's main trading partners but also offered some guidance to export enterprises dealing with TBT measures.



Domestic Standards Perfected

In 2002 the Chinese government began to pay more attention to perfecting the Product Quality Management System and TBT Measures System. China continually improved the level of domestic standards and narrowed the gap between international standards and Chinese standards. For example, the Chinese government set up the same quality certification and accreditation system that developed countries had adopted. China founded the China National Accreditation Board and the China Import and Export Inspection Laboratory Authorization Committee according to this advanced system. Meanwhile, China announced TBT and SPS measures to the WTO: as of September 2008 China had submitted 499 TBT measures and 120 SPS measures. The full text of these technology measures has been available on the website of China's Standardization Administration since October 14, 2005.

International Standards Appraised

China evaluated other WTO members' TBT measures to assess effects on Chinese export firms and make suggestions for improvement, focusing on Japan's positive list system and the European Union's Registration, Evaluation, Authorisation and Restriction of Chemical Substances regulation; Restriction of Hazardous Substances Directive; Waste Electrical and Electronic Equipment Directive and Energy-Using Products Directive. These appraisals efficiently protected the interests of export enterprises.

For example, in 2005 Japan's Ministry of Health and Welfare announced to the WTO the positive list system, which limits the residues of agricultural chemicals on food. This system was launched in November 2005 and had a good chance of affecting Chinese export agricultural products and food values by US\$7 billion. The involved agencies in China submitted an appraisal to Japan and opened bilateral and multilateral negotiations. Japan partially accepted China's suggested amendments. At the same time, the related departments coordinated harmoniously and examined many kinds of ways of dealing with the system in order to minimize its negative effects.


3.5.2 The Current Status of the Response of Chinese Enterprises to the Standards

When foreign TBTs restrict Chinese exports, enterprises have to increase their inputs in order to meet world market requirements. This increases costs and reduces international competitive advantages. Chinese enterprises passively improve their products' standards in three main ways: the first is to invest in improving technology levels, green standards and working conditions; the second is to purchase advanced production equipment and more precise inspection equipment; and the third is to invest heavily in getting authentication from the related international body or importer.

Chinese enterprises do not participate in the establishment of national standards because of the absence of an inspiring mechanism inside the government and enterprises. The current situation leads two consequences. In the international market, Chinese enterprises participate at a low rate in the establishment of international standards, so they must follow the standards set by foreign multinational companies. In the domestic market, the organizations mainly involved in establishing various standards are academies and colleges directed by government. Enterprises also rarely participate in these, so the established national standards cannot always meet the needs of the export enterprises.

3.5.3 The Current Status of the Chinese Government's Participation in the Construction of International Standards

China participates in the construction of international standards and relevant activities in four main ways:



first, through direct participation in the establishment and amendment of international standards; second, by taking part in ISO's relevant work; third, by undertaking various activities and tasks for ISO; and fourth, by undertaking international bilateral cooperation for the development of international standards for other countries to meet when they trade with Chinese firms.

Through the end of 2006 China had been involved with the creation of 55 international standards, including 39 ISO standards and 16 International Electrotechnical Commission standards, and was involved with an additional nine standards compared with 2005.

Through the end of 2006 China had also taken part in the work of 13 ISO technical committees and subtechnical committees, and Chinese representatives occupied 23 chair, vice-chair, secretary and associate secretary positions, three more than in 2005. So China's participation in international standards activity has borne substantial fruit.

In 2006 China undertook many ISO activities and tasks, including participating in various important meetings and forums (see Table 3.2) and making use of the organization's basic databases, such as the international standards glossary database, which includes 117,000 items.

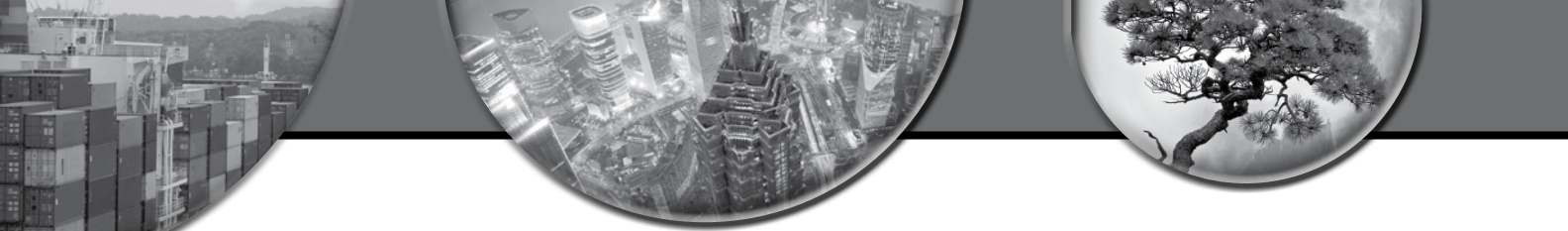
Table 3.2: ISO activities undertaken by China in 2006.

Date	Place	Name
May 8–12	Beijing	22nd annual session of the ISO graphical symbols of standardization administration committee
May 22	Beijing	8th forum of the International Electrotechnical Commission advisory committee on safety
May 21–25	Beijing	Annual session of ISO technical committee 37, on terminology and other language and content resources
December 14	Hong Kong	World telecom exhibition of the International Telecommunication Union

Source: China Institute of Standards (2007).

In the field of international bilateral cooperation, China has established friendly cooperation with countries such as Germany, the United States, Japan, Korea, the United Kingdom and Canada. Through the end of 2006 China had subscribed to 19 cooperation agreements and memos with different countries.

Above all, since China joined the WTO, the country has made breakthroughs in participating in international standards, which benefit not only the development of Chinese standards but also the world's understanding of Chinese standards.



4.0 Current Trends and Lessons from International Experience

The previous section made it clear that many of China's exporters face difficulties in conforming to international standards and technical regulations and that those difficulties involve significant costs. This section surveys the trends in regulations and standards and argues that according to those trends, the situation for China's exporters will only get more difficult.


4.1 Trends in International Trade, Environmental Regulations and Consumer Expectations

Several noteworthy international trends have relevance for China's exporters:

More stringent foreign import regulations. Though few current foreign environmental import regulations present insurmountable economic challenges for Chinese manufacturers, many countries are beginning to tighten their environmental regulations. As discussed above, Japan, one of China's biggest export destinations, has recently made food sanitation laws much more stringent (Fackler, 2007). The European Union has begun to call for the "greening" of international trade rules and has initiated efforts to turn its own environmental regulations into international standards. The European Union's tough domestic measures on environmental issues have given it a reliable defence against criticisms that its import standards and regulations are protectionist, and Europe is therefore uniquely positioned to enact such changes in international policy (Kelemen, 2007). If Europe succeeds in making international environmental standards more stringent, this will inevitably increase the number of environmental regulations that Chinese businesses will have to comply with, as well as increase the environmental performance levels manufacturers will have to achieve in order to maintain access to key markets.

Consumer demand for "green" products. In the last decade, consumer demand for green products in many of China's most important export markets, such as the United States, the European Union and Japan—and even in China itself—has increased dramatically. This certainly includes consumer concerns about public health issues related to the products themselves, but also includes consumer concerns about social and environmental impacts associated with the way products are produced. The number of consumers in the United States and the United Kingdom who actively seek out green products is roughly 20 per cent of the total population and is on the rise. In western Germany this figure has risen to nearly half the population (Hong Kong Trade Development Council, 2005). This demonstrates the significant potential competitive advantage provided by superior environmental performance and the inevitability of the enactment of further international environmental standards (public and private) geared toward differentiating superior performance.

"Greening" of corporate supply chains. Largely in response to the growing consumer demand for green products and corporate social and environmental responsibility, multinational corporations have begun to take greater strides to ensure the environmental responsibility of their suppliers, many of which are Chinese (Simms, 2006). *Supply Chain Digest* listed greening of the supply chain as the most prominent trend in supply chain management in 2006 (Gilmore, 2006). Some of the world's largest companies, including Walmart, Coca-Cola, Starbucks and dozens of others, have begun to implement comprehensive sustainable supply chain management plans (Simms, 2006). Such companies will look to existing international standards where they exist, or else will develop their own standards. Regardless, green supply chain policies will force many Chinese manufacturers to adopt corporate environmental standards in order to continue their status as



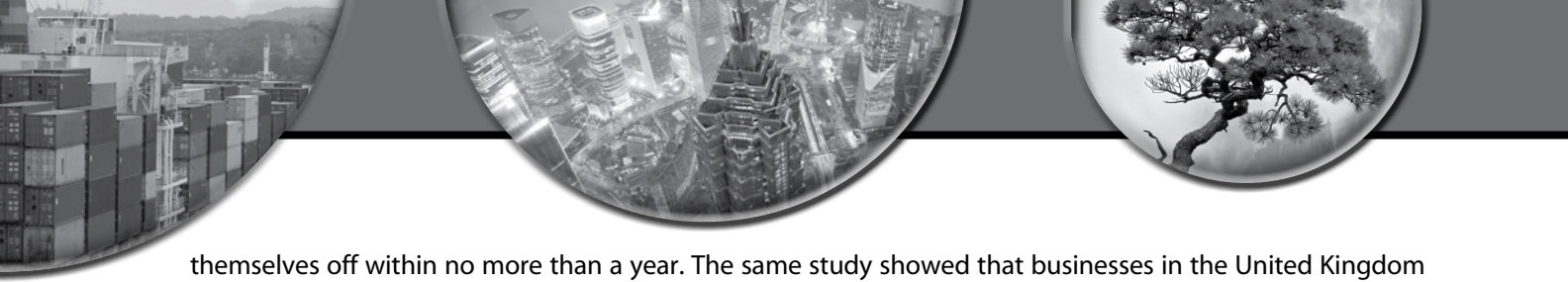
corporate suppliers. In this respect, corporate social responsibility and supply chain policies have already and will continue to become conditions of sale for many Chinese manufacturers. Furthermore, since these supply chain mandates will be company driven, they will not be subject to WTO law and thus can include any number of stipulations based on processes and production methods, such as, for example, greenhouse gas emissions and water efficiency.

Proliferation of private standards. Environmental standards in the last decade have increasingly spawned from voluntary private initiatives (Haufler, 2008), such as the Forest Stewardship Council, the Marine Stewardship Council, the Global Reporting Initiative guidelines and fair trade. The proliferation of such private standards significantly changes the economic landscape for Chinese businesses, as compliance with such standards is often carried out through private conformity assessment systems rather than by utilizing China's domestic, government-run conformity assessment system. China's strategy to date has been to block wide-scale uptake of such private, third-party certification schemes, though it's questionable whether such an approach will allow China to achieve its long-term trade policy objectives, including improving Brand China. Conversely, driving compliance with such private schemes may significantly increase Chinese manufacturers' ability to comply with more mainstream (and easier-to-meet) technical regulations through increased environmental proficiency and the efficiency gains associated with integrated management systems and the harmonization of programs, indicators and terminology.

4.2 Literature Review of Economic and Environmental Benefits of Environmental Standards and Regulations

Some recent research (for example, Porter and van der Linde [1995], Hart [1995] and Dowell, Hart and Yeung [1999]) has demonstrated a link between environmental standards and good financial performance. Dowell et al. (2000) showed that firms that adopted stringent environmental standards had much higher market values than firms adhering to less-stringent standards, refuting the viability of the "race to the bottom" theory. More recently, Maertens and Swinnen (2006) showed that Senegalese exports to the European Union grew sharply over a ten-year span, in parallel with the European Union's stringent food standards put in place at the beginning of that period. A 2005 report by the Network of Heads of European Environment Protection Agencies (2005) found that 51 of 60 studies reviewed by its researchers demonstrated a positive link between responsible environmental management and financial performance. It should be noted that such competitive advantage and increased market share will not apply to all sectors and all companies. Furthermore, different environmental standards have varying degrees of credibility and market value. Chinese industries must be selective in their compliance, analyzing which standards are most relevant and beneficial to their environmental management and business plans.

Many companies have responded that environmental standards and regulations have often increased production efficiency and decreased costs, often through the creation of new innovations. In response to environmental standards, Ciba-Geigy made process improvements that saved \$740,000 annually. 3M saved \$120,000 in capital investment costs and \$15,000 annually by using water-based solutions instead of solvents. The Robbins Company saved nearly \$300,000 in capital costs and more than \$115,000 annually by implementing a closed-loop system (Porter and van der Linde, 1995). Although these savings are significant, such calculations do not take into account the cost of compliance, which for some will result in net costs over the short term. One report argues that the costs of compliance with environmental regulations (in this case covering a variety of chemicals such as asbestos, CFCs, sulfur dioxide and benzene) are in almost all cases well below cost estimates, usually less than half of what is predicted, and in some cases, considerably smaller than even that (Hodges, 1997). Further research in the United Kingdom has shown that waste minimization resulted in savings equal to 7 per cent of profits in 2000. Waste-reduction investments were found to pay



themselves off within no more than a year. The same study showed that businesses in the United Kingdom could save up to the equivalent of nearly €7 billion (equivalent to over US\$3.8 billion) through energy efficiency (Network of Heads of European Environment Protection Agencies, 2005). Despite these savings, some firms have more potential to reduce production costs than others. Furthermore, the cost of compliance varies greatly and is much higher for companies that have high energy costs, few available technological improvements, foreign competitors taking advantage of low environmental regulations and so on. For this reason, compliance will be less practical for some in terms of short-term economic viability.

The adoption of environmental standards can also reduce business risk. Feldman, Soyka and Ameer (1996) showed that corporate environmental improvements led to a reduction in perceived and actual business risks and were often accompanied by a roughly 5 per cent increase in stock price. They argued that environmental management can be justified entirely on financial grounds. A different report demonstrated that environmental governance reduced business risk and that low environmental risk was a significant determining factor for investment from financial institutions (Network of Heads of European Environment Protection Agencies, 2005). However, business investments in risk reduction reach a point of diminishing returns. Therefore, companies must individually analyze the economic utility of each standard from a business-risk perspective, weighing the cost of compliance with the degree of anticipated risk reduction.

Environmental standards also lead to considerable indirect economic benefits through improved public health. The report from the Network of Heads of European Environment Protection Agencies (2005) shows that improved environmental performance decreases the amount of money governments spend on social services. The European Commission has estimated it can cut the costs of air pollution by the equivalent of US\$58 billion to US\$135 billion every year at a cost of roughly US\$10 billion per year. This report also argues that improved public health will improve workers' productivity and participation in national economies over their lifespans. Although such improvements to public health and workforce productivity are inherently valuable, they have not been analyzed purely from an economic cost-benefit perspective.


Chinese industries are currently limited in their knowledge of their own costs of compliance and the applicability and usefulness of specific standards to their business strategies. Chinese firms and policy makers need to better understand the sector-level dynamics of environmental standards in China in order to determine where standards can be most effectively implemented and what barriers to compliance exist for various sectors.

5.0 Policy Options for China

Based on the preceding analysis, we offer the following policy recommendations aimed at helping Chinese firms and policy makers better address the challenges and opportunities of international standards.

5.1 Improve China's Domestic Standards Regime

The analysis in this paper has made it clear that a strong link exists between China's domestic standards regime and the ability of its exporters to meet foreign standards. It has also shown how meeting international standards can further sustainable development in China by reducing environmental and human health impacts and increasing competitiveness and economic growth. Therefore, we recommend that the government undertake the following actions to improve China's domestic standards regime:

- 
- *Strengthen domestic quality standards.* Particularly in areas such as health, safety and environmental protection, China must aim to have domestic standards that approach or conform to standards set by international standard-setting bodies and by importers. This is rightly AQSIQ's task. To be effective, such standards must accompany a drive to improve enforcement of those standards, including augmenting the resources available, the legal remedies in place and the technical expertise of law enforcement.
 - *Improve communications with producers.* Chinese enterprises need more timely and accurate information if they are to comply with domestic standards. AQSIQ should establish advanced systems to communicate new and existing standards to producers, including web-based technologies and other outreach efforts, building a network of communication with domestic producers.
 - *Improve China's capacity to assess and review foreign standards.* An essential role of China's standards regime is to protect Chinese exporters from unfair or inappropriate foreign standards. It does this at present by reviewing and assessing proposed and existing standards and, where appropriate, suggesting changes (which are in many cases adopted). This system needs to be strengthened by increasing the budget and resources allocated, increasing interdepartmental cooperation and involvement of exporters and trade associations in the review (as recommended below), and learning from the practice of foreign review and assessment.

5.2 Enhance Exporters' Abilities to Meet Foreign Standards

The ability to meet foreign standards is critical to the competitiveness of China's exporters. Without this fundamental ability, China's export trade will not be able to play its full role in fostering sustainable development through economic growth. Meeting high standards can also pay dividends in environmental improvement and social benefits for workers and consumers. We therefore recommend that the Chinese government take the following steps to enhance the ability of exporters to meet foreign standards:

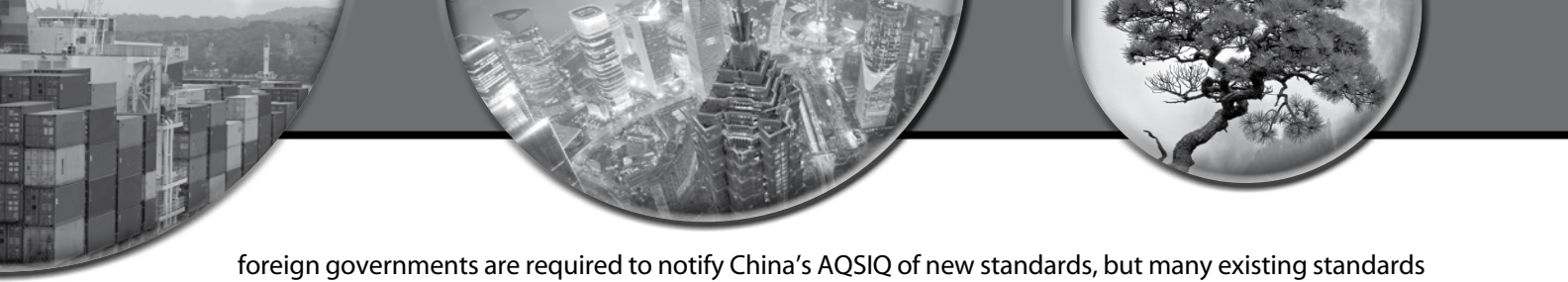
- *Improve the ability of exporters to know the prevailing standards in their export markets.* This involves first being aware of existing standards, then being proactive in collecting and updating relevant information on standards and the technologies available to meet them. And it involves an active campaign to disseminate this to the industries that need it, employing the same sorts of advanced communications technologies used and networks developed in the domestic context.
- *Upgrade the availability of accredited testing and certification in China.* The Chinese government should invest heavily in the construction and equipping of testing and quarantine facilities, the training of technicians, and the process of foreign accreditation for testing bodies within China. It should do so in consultation with exporters that can ensure that their needs are being met.

5.3 Strengthen Interactions with Private Sector Exporters

The challenge of helping China's exporters better meet foreign standards is not something that the government alone can do. The Chinese government, the industry associations and the individual firms that export from China need to have a strong partnership. The various elements of that partnership, some of which have already been described above, are listed below.

Government should:

- Actively gather information on existing foreign and international standards. Under the TBT and SPS rules



foreign governments are required to notify China's AQSIQ of new standards, but many existing standards and some new standards still are unknown, particularly those propounded by private buyers and those created as voluntary standards. AQSIQ should maintain a web-based, easily searchable and continuously updated database of such standards.

- Actively create a network of industry associations and exporting firms. AQSIQ should create this fundamental basis for the interaction with the private sector, which should be a comprehensive network of exporting firms and be continuously updated.
- Disseminate information on standards, both domestic and foreign, to the network.
- Seek comments and input from the network on standards being proposed by foreign countries (technical regulations) and by buyers and international organizations (voluntary standards), and relay any concerns and questions to the appropriate contacts.
- Run technical training courses for industry organizations or firm representatives on the international law as it relates to TBT and SPS, and on the rights that those agreements confer on exporters and exporting countries.
- Request assistance from developed countries, as necessary and as allowed for under TBT rules, in meeting foreign TBT measures and in setting up the regime to do so.

Industry associations should:

- Set up leaders, departments and personnel to take charge of interactions with the government and work on standards generally.
- Relay information that they gather about standards to AQSIQ for inclusion in the database.
- Contribute comments and questions on new and proposed standards when they are asked for input.
- Alert AQSIQ to any difficulties they encounter with foreign standards.

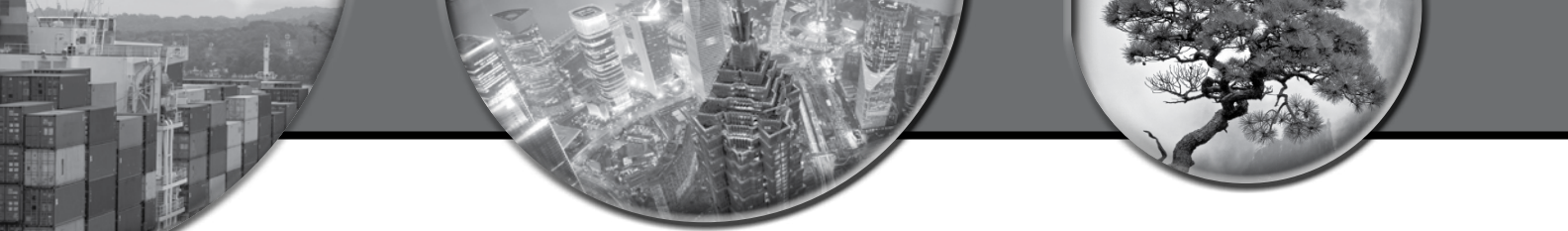
Individual enterprises should:

- Strengthen their relationships with industry associations and with AQSIQ.
- Relay information that they gather about standards to AQSIQ for inclusion in the database.
- Contribute comments and questions on new and proposed standards when they are asked for input.
- Alert AQSIQ to any difficulties they encounter with foreign standards.
- Adopt international and advanced foreign standards to meet the demands of the international market. To take one example of this kind of successful initiative, in an effort to inform its own development, production and testing of export goods, Haier Group has collected 2,400 standards, tracked and researched the relevant standards of international organizations and exporters in cooperation with technology standardization institutions, established an enterprise standards database, and analyzed and compared China's standards with the ISO standards and national standards of countries such as the United States, Europe, the Middle East and Russia.



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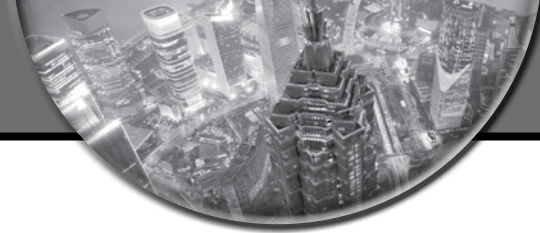
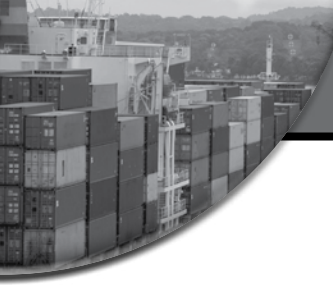
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5

Moving Up the Value Chain: Upgrading China's Manufacturing Sector

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1.0 Introduction: Upgrading and a Sustainable Trade Strategy for China

The development process is often viewed as involving a series of transformations of a country's economy, societal relations and governance. One of the most prominent manifestations of development is the shift from widespread employment in agriculture into a fast-growing, jobs-intensive manufacturing sector. China has been able to pull off this particular transformation with impressive speed. While some of China's neighbours (Korea and Taiwan province) saw faster growth of value-added manufacturing during their first 30 years of takeoff,¹ the sheer scale of China's industrial development has been unique.

That scale, however, has had implications for China's use of natural resources, for the degree of harmony in international trade relations and, ultimately, for the case for China modifying its development trajectory. The relatively intensive use of resources and energy by Chinese manufacturing firms is said to have put pressure on worldwide commodity prices, though in fact it is total demand for commodities that influences prices, not any one source of demand. The growth of manufacturing exports from China has caused alarm in many trading partners, both industrialized and developing, as Chinese products compete directly with foreign firms in the latter's home and export markets. Plus, there is dissatisfaction from some quarters within China at the pace with which its firms are developing their own products, brands and innovative capabilities. Together these concerns have helped put the subject of upgrading by Chinese firms on policy makers' agendas.

Having assessed the degree of upgrading by Chinese manufacturing firms and contrasted the Chinese experience with that of its trading partners, the purpose of this paper is to identify the challenges faced by Chinese firms in upgrading and the possible policy responses to those challenges. Since this paper is part of a larger project that seeks to flesh out a so-called sustainable trade strategy for China, it is worth recalling what the five objectives of that strategy are:

1. Promote the rebalancing of the Chinese economy away from its currently unsustainable path.
2. Promote added value in economic activities, not just sales.
3. Promote services, not just manufacturing.
4. Nationality matters; therefore, promote Chinese firms (including multinationals), brands and intellectual property rights.
5. Support a harmonious, sustainable architecture for international trade.

Arguably, upgrading—to the extent that it results in more sought-after products made by Chinese firms, higher levels of production-process efficiency (which in turn is related to lower resource use) and other process innovations, and organizational improvements—can help meet all five of the above goals. ² More efficient resource use helps attain the first goal. Product improvements, often the result of combining goods with services, help with the second and third goals. To the extent that the benefits of upgrading by Chinese firms are realized by those firms in the form of higher profits,

¹ See Brandt, Rawski and Sutton (2007, figure 15.1), for evidence. This chart also shows that in the first 30 years of the country's takeoff, the expansion of Japanese value-added in manufacturing was slower than that in China.

² We make no claim that upgrading alone is the only step necessary for China to attain all five goals. Other papers in this project explore the various contributions of state and non-state actors to the goals of a sustainable trade policy.



the fourth goal is advanced. Reduced tensions with trading partners, especially those producing low-end manufacturing goods, may also be a payoff from upgrading, advancing the fifth goal.³ These are the potential payoffs; what this paper aims to do is shed light on what the state can do to facilitate such upgrading.


At this stage it is important to distinguish between the manifestations of upgrading (product innovations, process innovations, more efficient resource use) and upgrading itself. In their review overview of Chinese industrial development, Brandt, Rawski and Sutton (2007) drew a contrast between the “revealed capabilities” of a firm—that is, the range of products that it currently produces, the unit costs of production (including resource use intensity) and the perceived quality of the product as manifested by the willingness of customers to pay for the product—and the “underlying capabilities” of a firm. The latter include the know-how that is collectively held by the firm’s employees and the capacity to spot and take advantage of new opportunities as demand and technology change. This distinction is useful, as it forces analysts to focus on how firms and managers acquire, develop and retain underlying capabilities and the on capacity to successfully employ those capacities, along with other firm resources, to improve the firm’s revealed capabilities.

Of course, it is not the firm that acquires, develops and retains underlying capabilities, but rather the firm’s owners and managers. This raises a subtle point about the skills of these owners and managers and the basis upon which firms are competing. Ultimately, upgrading may require substantial changes in the very basis upon which a firm operates. Rather than continuing to compete on the basis of low production costs—which requires a certain set of managerial skills—upgrading is going to require acquiring expertise and the capacity to manage that expertise. The very role of a manager has to change, and this may not be something that the traditional tools available to governments can do much to influence. Indeed, government policy is likely to play an indirect role here, as the principal decisions are made by firm managers and owners, both in China and elsewhere. Certainly, governments may offer financing and subsidies and establish institutions to enforce intellectual property rights, but they cannot directly upgrade firms.

Another important point is an appreciation of the motive for upgrading. Assuming that upgrading is desirable, it is useful to ask what market mechanisms and policies are most conducive to stimulating the effort and the expertise required to upgrade. Moreover, as the benefits of upgrading are typically not reaped immediately, then policy makers need to give thought to the procedures that will ensure the commercial payoff from upgrading is sufficiently large. Taken together, then, the principal linkages are among government policy, the market environment facing a firm (including the protection of intellectual property rights and the enforceability of contracts), the incentives of managers and owners (given the many factors influencing the market environment), the capabilities of firms and the manifestations of upgrading. As will become clear, different analysts emphasize different links among these factors. Even so, at least in principle, analysts and decision makers should be open to the fact that there may be several recipes for success and therefore, perhaps, menus of options for Chinese policy makers.

The rest of this paper is organized as follows: Section 2 examines the domestic and international imperatives for upgrading, making a particular link to the context of the expansion of global value (supply) chains in recent years. Section 3 provides a detailed overview of the current upgrading of Chinese manufacturing firms, identifying corporate opportunities and four related challenges faced by Chinese firms. We present

³ Although, to the extent that Chinese firms begin producing higher-value-added goods that compete more intensively with goods and services produced in industrialized countries by persons with moderate or high skill levels, then in principle, trade frictions with those countries could increase. Many factors are likely to determine the severity of trade frictions between two countries. One factor that may mitigate trade frictions is whether each party’s own commerce and markets for corporate control are in fact open to competition from another party’s firms. Much will depend on policy makers’ weighing of the ability to compete with the outcome of such competition.



two industry studies, one for the textile and apparel sector and the other the electronic and communications equipment sector. We then discuss international experience with respect to corporate upgrading in Section 4. We describe the state measures that can promote industrial upgrading, as well as some principles to guide decision makers, in Section 5.

2.0 Domestic and International Imperatives for Upgrading

Since the 1980s, fierce competition in global markets has pushed multinationals into adopting a new business strategy, creating one sizeable and ongoing opportunity for firms in developing countries to upgrade.⁴ By formulating unified design rules and technical standards, multinationals broke up the entire production and operation process into a number of value-added links such as product design, procurement, production of components and intermediate goods, processing and assembly, training, sales, and research and development. Then, through direct investment and outsourcing, the independent and closely interrelated value-added links were deployed in the most appropriate regions around the world, thereby forming a global value chain in the industry.⁵ The globalized deployment of industrial chains has resulted in the enormous enhancement of the efficiency of modern industries and the rapid development of the competitiveness of core enterprises. Such a new business strategy quickly came into extensive use in all industries, including both labour-intensive industries that make garments, shoes and hats and the capital- or technology-intensive industries of auto-making and communications, and including both manufacturing industries and service industries.

The expansion of global value chains has provided a new option for the industrial growth of developing countries. By introducing foreign capital and by outsourcing, developing countries can integrate with the global industry chain, starting from the link of processing and assembly at the lowest end and gradually moving up toward the links of high added value, such as upstream manufacturing and research and development and downstream sales, through continuous capital accumulation and technological progress. This is a new route, whereby the developing countries can achieve industrial growth and upgrading against the background of globalization. In 1970s the Asian “Four Small Dragons” accelerated their industrialization process and realized economic prosperity through such integration with global value chains. Since the 1990s, as the largest undertaker of the transfer of the global manufacturing industry, China has become a base of global manufacturing and created a wonder of international trade and economic growth.

The expansion of the global value chain has posed challenges to the industrial growth of developing countries. On the one hand, by leading technological innovations and systemic change, multinationals are gradually concentrating most of the added value of the entire value chain into the core links and continuously slashing the total profits to be made along the manufacturing chain. On the other hand, through outsourcing and original equipment manufacturing, more and more developing countries are squeezing into the low-end links of the industry chains, creating intense competition that has placed the developing countries involved in the links of processing and manufacturing under unprecedented pressure to upgrade. Moreover,

4 It would be wrong, however, to conclude that upgrading in developing countries would have not happened in the absence of the development of global supply chains. As will become clear later, one school of thought argues that the integration of the national market in China (that is, the gradual removal of interprovincial trade barriers) facilitated intensified competition between Chinese firms and promoted upgrading too.

5 For the development of global value chains—or global production networks, as some prefer to refer to them—see Hess and Yeung (2006). This paper summarizes much recent research on global production networks, including the relationship to upgrading. In this regard Hess and Yeung argue that various aspects of the business environment in which multinationals operate in developing countries influence how much local value-creation and upgrading takes place. Moreover, they argue that the lessons for China from other developing countries may be limited by the fact that the former is seen as “must invest” location for multinational investment.

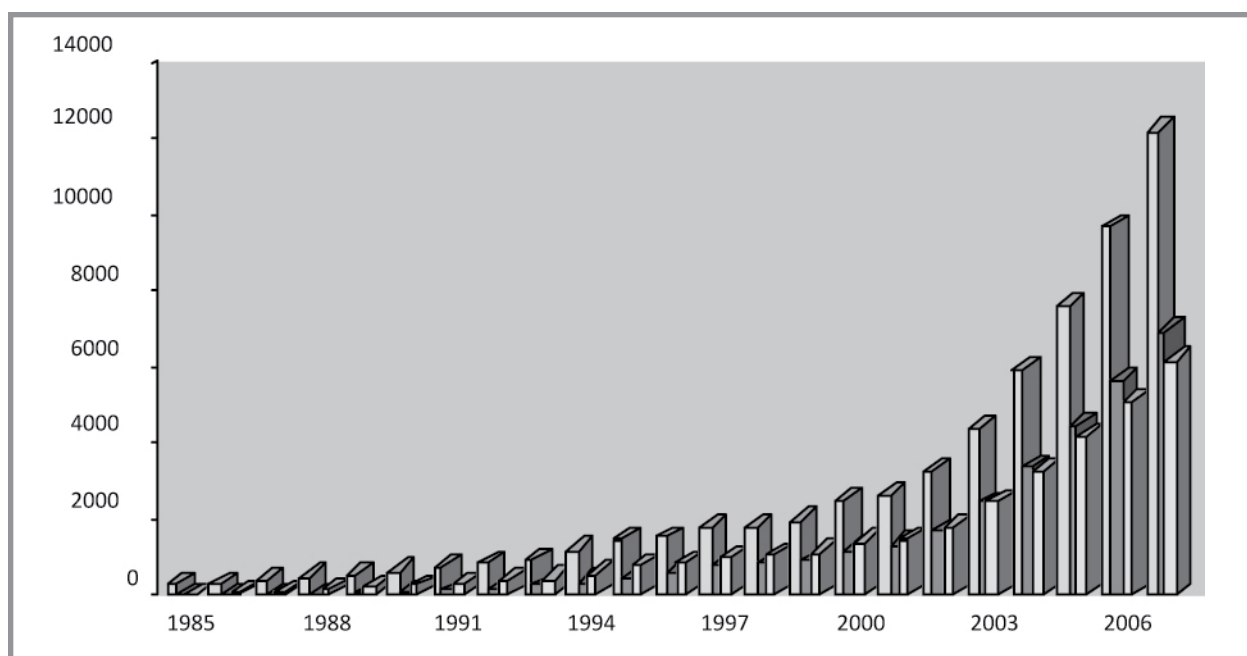


the international transfer of the low-end manufacturing industry is often accompanied by the transfer of high pollution, high energy consumption and high raw material consumption as well as causing frequent trade frictions. Therefore, although the pursuit of “clean” upgrading and sustainable trade growth are the important tasks of developing countries, they tend not to be seamlessly accomplished.


2.1. “Made in China”: China’s Role in Global Value Chains

Since the inception of reform and associated opening up to the world economy, China set out on the development route of international industrial transfer by enthusiastically introducing foreign capital and working hard to develop foreign trade. Thanks to China’s abundant, high-quality and low-price labour resources; a potentially huge domestic market; preferential policies for foreign capital and foreign trade; and a stable political and social situation, China has gradually become one of the largest global destinations of direct foreign investment. From 1979 to 2007 China cumulatively introduced several hundred billion U.S. dollars of direct foreign investment, of which 70 per cent went into the manufacturing industry, which mostly consists of the processing and manufacturing links in the global value chain. The concentration and development of the global value chains of all industries, including the high-tech industry, on the eastern coast of China have boosted the sustained, rapid growth of Chinese exports and caused a marked improvement in the country’s export makeup, resulting in China becoming a base of manufacturing industry and capturing global attention (the so-called “Made in China” phenomenon). As can be seen In Figure 2.1, since the mid-1990s the processing trade (of parts, components and raw materials) has accounted for half of the Chinese export trade, and foreign-invested enterprises have become an important force propelling Chinese exports. This adequately reflects the aggregation and expansion of the processing and manufacturing links of the global industrial value chain in China and shows that the development of the Chinese manufacturing industry has merged deeply with the global value chain and the system of international division of labour.

Figure 2.1: Growth of Chinese exports, 1985 to 2007.



Source of data: China statistical yearbooks.



However, many surveys and studies have shown that, in spite of the noticeable differences among different industries and regions, “Made in China” still lies among the low-end links of the global value chain for most industries, which carry out processing and manufacturing activities of lower added value. This phenomenon finds expression in the fact that not only are over two-thirds of Chinese processing trade enterprises still engaged in labour-intensive production and processing but also that the added value of most Chinese manufacturing industries is far below that of developed countries. For quite a long time, the share of value-added in the processing trade has remained around 50 per cent. Besides, under China’s mode of extensive economic growth, the expansion of the manufacturing industry has further projected the negative effects brought by international industrial transfer, and China has become one of the global regions with the worst environmental pollution. As its gains from the division of labour on the global value chain are falling and the profit space of its enterprises continues to dwindle, China faces intensifying international trade frictions, increasing risks of internal-external economic imbalance and grave challenges to the sustainability of its economic growth.

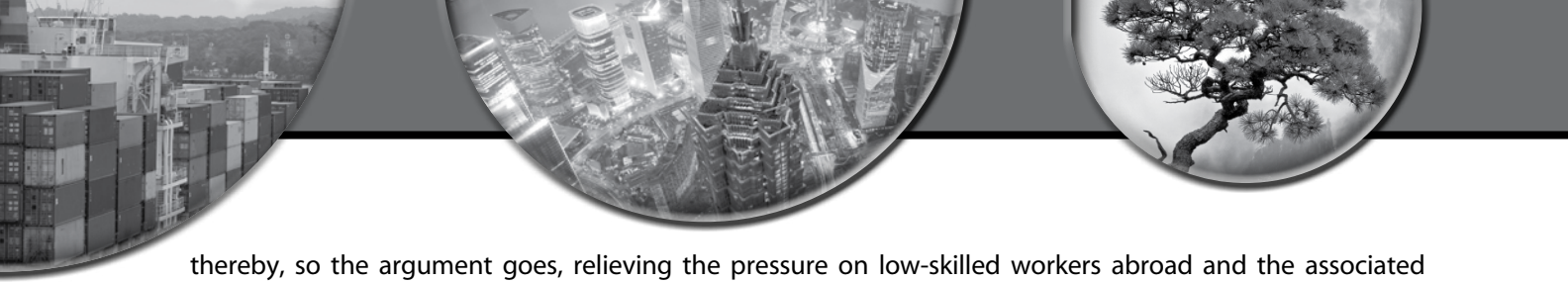
It has always been a policy objective of the Chinese central government and of local governments to promote the technological progress of enterprises and expedite industrial upgrading so as to increase the gains from the division of labour in the global value chain. Under the guidance of the new concept of development—“sustainable development”—China has developed an even more clear-cut policy orientation toward new industrialization and lifting the position and role of “Made in China” on the global value chain. Therefore, the achievement of “clean” upgrading and sustainable development is becoming an integral part of “promoting the good and rapid development of the national economy” (Hu, 2007). Since the beginning of the new century the shortage of labour has hit the Pearl River delta and the Chang Jiang River delta; the unlimited supply of labour has materially changed; the price of energy and other elements has risen sharply; and China’s traditional low-cost advantage has begun to trail off.

In addition, as the incomes of Chinese private consumers have risen, so has the demand for higher-quality domestically made products. The days when consumers would buy anything that firms chose to make are coming to a close. Managers must therefore learn what customers want and keep abreast of the changing tastes of potential buyers, in particular those willing to pay higher prices. Once a firm has spotted new consumer trends, it must also have staff who can develop new products and bring them to market expeditiously and within budget. Competition on the basis of time to market requires a broader range of managerial skills than has hitherto been necessary.

In the meantime, the environmental protection standards for all industries have been raised continuously and are progressing steadily. After nearly three decades of reform and opening, China is feeling urgent internal pressure for upgrading, which requires “Made in China” to move up along the global value chain toward upstream and downstream processes while lowering resource and energy consumption so as to realize environmentally friendly, clean development. For a large developing country in transition, this will be a difficult takeoff.

2.2 The International Context: Diminishing Returns from Competing on the Basis of Low Costs

The upgrading of Chinese manufacturing firms should be seen in the context of disparate foreign commercial and political dynamics. Collectively, effective competition from Chinese firms in the manufacture of low-tech products and the assembly of goods has put considerable pressure on the profits and employment levels of firms in developing and industrialized countries. This has manifested in a growing number of trade disputes and trade-defence measures against Chinese exports (see Evenett and Li, 2010, also from this project, for more details). One suggested response to these pressures is for Chinese firms to upgrade their product offerings,



thereby, so the argument goes, relieving the pressure on low-skilled workers abroad and the associated protectionist pressure. (Whether calls for trade restrictions on Chinese products would in fact decrease after Chinese firms had upgraded and were competing directly with mid- to high-tech firms and their employees is another question.)

Another important consideration facing Chinese firms is that, in some sectors, they face low-wage competition from nearby neighbours in the Greater Mekong subregion. Ultimately, in many Chinese manufacturing sectors, competition based on low costs is probably not sustainable.⁶ Firms need to innovate in their product offerings and processes to keep one step ahead of rivals, so the very basis of competition between firms must evolve. Moreover, cutting Chinese wages or not sharing enough of any productivity increases with workers is a recipe for social instability, and therefore it is not surprising that some advocate upgrading Chinese products so as to raise both long-term living standards and the competitiveness of Chinese industry.

Historically, of course, much has been made of the so-called flying geese characterization of export patterns and associated upgrading within East Asia, with Japan being the first goose to set off on this trajectory. Seen in this light Chinese upgrading is part of a long-established trend within the region. However, the very scale and growth of the Chinese manufacturing sector, with its impact on world markets, is distinctive. Indeed, it has been argued that because of China's export growth, some trading partners are reluctant to lower their tariff barriers in the Doha Round of multilateral trade negotiations.


In addition to pressure from firms that compete with imports and from the governments they complain to, other potential partners for Chinese companies that are headquartered in industrialized countries may demand as part of their collaboration that their Chinese counterparts improve their product offerings and production and organizational processes. Upgrading may thus become a more prevalent prerequisite for Chinese corporate engagement in higher-value-added, collaborative initiatives. More generally, to the extent that broad-based upgrading leads to increased national productivity levels, living standards can improve in China and the nexus between export growth and national economic growth will likely strengthen.

The international context reinforces domestic dynamics—including those created by governmental priorities for cleaning up the environment and the more demanding aspirations of Chinese consumers for better products—and points to the need for upgrading. The question arises as to how such upgrading can be done, whether policies to foster upgrading exist and whether upgrading can be undertaken in a way that is consistent with the other development objectives of the Chinese central government. Much of the rest of this paper seeks to shed light on these matters.

3.0 Upgrading of “Made in China”: Status Quo, Opportunities and Challenges

In the first part of this section we present raw data on Chinese manufacturing sectors to provide an indication of the degree to which Chinese firms have upgraded. Recall that upgrading is a firm-specific process that takes place over time and ultimately manifests itself in terms of the types of products a firm offers to sell,

⁶ A January 2008 report by the Boston Consulting Group examined the factors underlying the overseas expansion strategies of the 100 largest internationally active firms headquartered in developing countries (Boston Consulting Group, 2008). The authors of the study found that in only 14 per cent of cases did the firms' overseas expansion strategy turn principally and solely on low-production-cost advantages. The remaining 86 per cent of firms expected to compete principally on some other basis. This is not to imply that low production costs are not important for a firm, just that for many of the developing world's multinationals, low cost is not the expected basis for competition in international markets. Low production costs may well reflect efficient resource use and, if so, are desirable from the perspective of sustainable development. Finally, it is worth noting that 40 per cent of the 100 firms examined in the Boston Consulting Group study were Chinese.



whether those products are combined with services, a firm's costs or its productivity growth. This is important for a number of reasons. First, ideally, firms need information on the inputs associated with upgrading—such as managerial effort, skill acquisition and deployment—not just outputs that are potentially affected by a decision to upgrade. Second, upgrading can impact many indicators of firm performance, so firms must be cautious about drawing too many inferences from any one indicator. Third, in a perfect world, decision makers would like to know the effect on a group of performance indicators of different upgrading decisions made by managers and, ultimately, the link between policy instruments and those upgrading decisions. Unfortunately, information on the latter linkages is rarely available, and analysts often only have piecemeal information on the various relevant causal factors.

3.1 Upgrading Process of the Manufacturing Industry: A Factual Overview

Since the turn of the century the manner in which Chinese manufacturing firms are upgrading has become clearer. Such upgrading was initially represented by the rapid growth of the heavy and chemical industries (including steel, machinery and chemical engineering, and technology-intensive industries such as electronics and communication equipment). According to available statistics, heavy industry has grown faster than light industry. By 2006 the percentage of total industrial output represented by the heavy and chemical industries had reached 70.04, while that of light industry had dropped to 29.95. While the proportion represented by traditional industries has declined, the tendency toward heavy industrialization has strengthened continuously. Some industries, such as precision machinery and specialized equipment, are also showing a trend of accelerated development. The rapid growth and increasing driving force of these industries will undoubtedly further speed their structural adjustment and upgrading. Table 3.1 lists the top five industries contributing to industrial added value in different years. As can be seen from the table, compared with 1995 the proportion represented by the textile industry has gone down gradually since 2000, while the proportion of technology-intensive industries, such as chemical industries and the electronic and communications equipment industry, went up. By 2003, as the textile industry dropped out of the top five, the technology-intensive industries had built up to become the leading industries and an industrial group that was growing rapidly in a new round of a boom cycle.

Table 3.1: Top five industries in China contributing to industrial added value (selected years).

Year		Rank	1	2	3	4	5
1995	Industry		Ferrous-metal smelting & rolling	Chemical raw materials & chemical product manufacturing	Oil & natural gas extraction	Non-metal mineral products	Textiles
	Proportion (%)		6.82	6.10	6.08	5.82	5.81
2000	Industry		Oil & natural gas extraction	Electronic & communications equipment manufacturing	Chemical raw materials & chemical product manufacturing	Transport equipment manufacturing	Textiles
	Proportion (%)		8.70	7.18	5.57	5.21	5.01
2003	Industry		Electronic & communications equipment manufacturing	Transport equipment manufacturing	Ferrous-metal smelting & rolling	Chemical raw materials & chemical product manufacturing	Oil & natural gas extraction
	Proportion (%)		8.29	6.90	6.73	5.87	5.69
2006	Industry		Electronic & communications equipment manufacturing	Ferrous-metal smelting & rolling	Oil & natural gas extraction	Chemical raw materials & chemical product manufacturing	Transport equipment manufacturing
	Proportion (%)		7.74	7.66	6.54	5.90	5.39

Source of data: China statistical yearbooks.

In contrast with the heavy industrialization based on raw materials in early 1990s, more recent industrial growth has tended to be in more technologically sophisticated sectors and to involve processing activities. Table 3.2 shows the shift in production toward Chinese industries with greater technological intensity, with industries classified based on an OECD scheme. Comparing the data for 2006 with that for 1995 reveals that the contribution to industrial added value made by the low- or medium-tech industries decreased gradually, while that made by medium-high and high-tech industries increased, especially for the latter industries. Table 3.3 shows the changes in the distribution of added value made by the components of the chemical industry. According to the data in the table, from 1995 to 2003 the mining industry's proportion of heavy industry dropped by 4.58 percentage points, that of the processing industry rose by 4.84 percentage points and that of the intermediate category, raw materials, fell slightly. The ratio between these industries was 1 to 2.1 to 2.1 in 1995, compared with 1 to 2.77 to 3.09 in 2003, which reflects the upgrading of Chinese industries in the direction of greater processing. Influenced by the changes in world prices of energy and raw materials, the size of the mining industry rebounded dramatically in 2006, and that of the processing industry went into reverse. As a whole, Chinese manufacturing industries have continuously improved in technological capability and processing depth.⁷

⁷ Similar evidence, based on indexes of revealed comparative advantage, can be found in Bennett, Vaidya and Liu (2007). These authors conclude that from 1987 to 2005, Chinese exports shifted toward more medium- and high-tech sectors, notably in electronics and electrical products and in telecommunications. The authors recognize that the rate of technological improvement inevitably varies across firms and sectors, but they are not as pessimistic as some observers (such as Nolan, 2001). It is also possible to compare Chinese export performance in higher-tech sectors with that of other developing countries. One such analysis, which presents evidence of faster upgrading of Chinese exports compared with Mexican rivals, can be found in Gereffi (2009). This paper considers the pattern of exports from China and Mexico to the United States, a market that both countries' exporters actively contest.

Table 3.2: Technological intensity level of the Chinese manufacturing industry, as percentage of total.

Year	Low-tech	Low-medium-tech	Medium-high-tech	High-tech
1995	44.13	25.50	20.85	9.52
2000	47.34	19.75	20.10	12.81
2006	42.58	22.82	21.25	13.35

Source of data: China statistical yearbooks.

Table 3.3: Proportion of Chinese heavy industry by sector, as percentage of total.

	Mining	Raw materials	Processing
1995	19.16	40.57	40.26
2000	19.82	39.12	41.06
2003	14.58	40.32	45.10
2006	18.14	40.61	41.25

Source of data: China statistical yearbooks.

Structural upgrading has also occurred as multinationals have moved into a new phase of their industrial transfer toward China. In pace with the rapid growth and restructuring of the Chinese economy, multinationals have adjusted their strategy of investing in China and changed the industrial makeup of their transfer into China. Since China's accession to the WTO, multinationals around the world have expanded their operational objectives in China and integrated their business operations there by introducing into China the upstream research and development, design and manufacturing of core components and intermediate products, as well as downstream sales and logistics.

According to published government statistics, since 2000 substantial foreign investment has been made in industries that manufacture electronic and communications equipment, transport equipment, electrical appliances and apparatuses, general-purpose equipment, and chemical raw materials and chemical products, in contrast with a dwindling flow into light textiles and other labour-intensive industries. Meanwhile, investment in research and development has been on the rise. By the end of 2006 over 980 R&D centres had been set up by multinationals in all forms. A new pattern has unfolded that features an obvious upstream and downstream extension of the industrial chain in China. China is becoming an important provider of new technologies and new products, and the Chinese manufacturing industry has begun to shift from a base of processing and assembly to a base of production, procurement, and research and development.

Table 3.4 lists the top five industries contributing to the industrial added value of foreign-funded enterprises in different years. As can be seen from the table, since the mid-1990s the manufacturing of electronic and communications equipment has been the largest contributor to the industrial added value of foreign-funded enterprises, reflected in a proportion that has risen each year to reach 21.43 per cent in 2006. At the same time, the textile and apparel industries fell back in the ranking until they dropped out of the top five in 2006, compared with the strong build-up in the electrical appliance and transport equipment manufacturing industries. By 2006, capital- and technology-intensive heavy- and chemical industries occupied all of the top five places, and the ratio of their contribution to the industrial added value of foreign-funded enterprises reached as high as 47.18 per cent. A comparison of Table 3.4 with Table 3.1 shows that they are nearly the same, consistent with a significant contribution from international transfer of technology and managerial practices to the industrial upgrading of China.

Table 3.4: Top five industries contributing to the added value of foreign-funded enterprises.

Year \ Rank		Rank				
		1	2	3	4	5
1995	Industry	Electronic & communications equipment manufacturing	Transport equipment manufacturing	Textiles	Apparel & other fibre product manufacturing	Electrical appliance & apparatus manufacturing
	Proportion (%)	14.44	7.32	7.05	6.72	5.39
2000	Industry	Electronic & communications equipment manufacturing	Electrical appliance & apparatus manufacturing	Transport equipment manufacturing	Chemical raw materials & chemical product manufacturing	Apparel & other fibre product manufacturing
	Proportion (%)	19.59	6.92	6.70	5.01	4.75
2003	Industry	Electronic & communications equipment manufacturing	Transport equipment manufacturing	Electrical appliance & apparatus manufacturing	Chemical raw materials & chemical product manufacturing industry	Textiles
	Proportion (%)	20.90	11.13	6.15	5.33	3.97
2006	Industry	Electronic & communications equipment manufacturing	Transport equipment manufacturing	Electrical appliance & apparatus manufacturing	Chemical raw materials & chemical product manufacturing	General-purpose equipment manufacturing
	Proportion (%)	21.43	9.14	6.67	6.07	3.87

Source of data: China statistical yearbooks.

The change in the profile of China's exports of goods is the most direct reflection of structural upgrading. Since the beginning of the new century, the upgrading of the industrial structure has found a vivid expression in the export structure of China. As shown in Table 3.5, from 2000 to 2006 the export proportion composed of primary products fell from 10.2 per cent to 5.5 per cent, compared with an increase in the export proportion of industrial products from 89.8 per cent to 94.5 per cent. The most prominent expression of the changes in export structure is the sharp rise in the proportion of exports that is made up of mechanical and electrical products and high-tech products. The proportion of exports composed of mechanical and electrical products rose from 42.3 per cent in 2000 to 56.7 per cent in 2006, accounting for more than half of total exports. The proportion composed of high-tech products rose even faster during this period, from 14.9 per cent to 29.1 per cent. Since a large portion of exports are conducted by foreign-funded enterprises through the processing trade, the structure of export products is insufficient to support a judgment about the position of Chinese industry in the global chain of industries. Nevertheless, the transition of the export-product makeup from traditional, labour-intensive products to technology-intensive products indicates that "Made in China" has upgraded successfully between different types of industries.

Table 3.5: Composition of Chinese exports, as percentage of total.

Year	Classification	Primary products	Finished products		
			Total	Mechanical & electrical	High-tech
1995		14.4	85.6	29.5	6.8
2000		10.2	89.8	42.3	14.9
2003		7.9	92.1	51.9	25.2
2006		5.5	94.5	56.7	29.1

Source of data: statistical data of customs.

Since 2005 the imperative to upgrade has strengthened due to soaring production costs in coastal regions and a series of government policies. The Pearl River delta is where foreign-funded enterprises settled when they first entered mainland China and also where the labour-intensive industries and the links of processing and assembly, such as of garments, shoes, hats and toys, have concentrated. In recent years, however, traditional labour-intensive enterprises have begun to relocate as a result of the constant rise in wages and land cost as well as in the standards for environmental and labour protection. In the city of Dongguan, in 2007 alone 15 per cent of shoemaking enterprises were closed down or relocated (Mitchell, 2008). They moved part of their production lines or processes either to hinterland provinces such as Jiangxi or to Southeast Asian countries such as Vietnam. Still, most of the enterprises have chosen to stay because of the first-rate infrastructure in the Pearl River delta, skilled labour force, tight-knit upstream and downstream supply chains, and an enormous market. They also try to meet the challenges of rising costs, trade frictions and appreciation of the Chinese yuan by enhancing productivity and optimizing production modes.

In the meantime, the shifting out of low-end industries has provided space for the shifting in of mid- to high-end industries. In Dongguan the shortage of land made it impossible for over 100 foreign-invested projects to move in during the first half of 2006. These industries involved a total of US\$2.8 billion (Chen, 2006). The shift out of traditional industries, such as shoe and hat manufacturing, is no doubt a precondition for the entry of high-tech enterprises. Also, according to statistics, in 2007 China absorbed US\$74.8 billion of direct foreign investment, registering a year-over-year rise of 13.6 per cent. During the same period, the number of newly established foreign-funded enterprises was 37,888, a year-over-year fall of 8.69 per cent. While the influx of capital increased, the number of newly established foreign-funded enterprises decreased. This is proof that the influx of foreign capital has not been entirely stifled by rising costs. Instead, the quality of the new influx of foreign capital is improving steadily, for foreign-funded projects of large scale and high added value are gradually becoming mainstream. The value-added ratio of the processing trade is an indicator that measures the added value created by an industry and indirectly reflects the upgrading status of the industry on the global value chain. From Figure 3.1 we can see clearly that after nearly eight years of hesitation from 1998 to 2005, the value-added ratio of the Chinese processing trade began to manifest a marked upward trend in 2006 and 2007. This is a new change in the processing trade, which occurred after production costs started their uphill climb, and presents an optimistic prospect for the upgrading of Chinese processing trade.

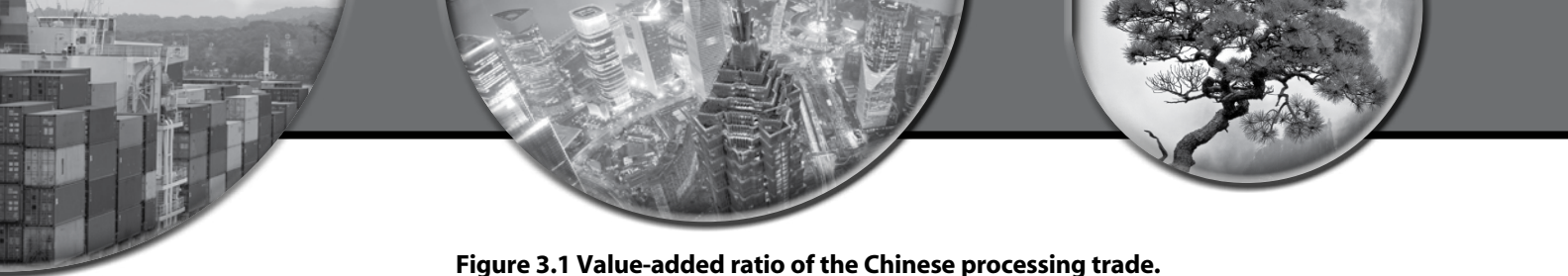
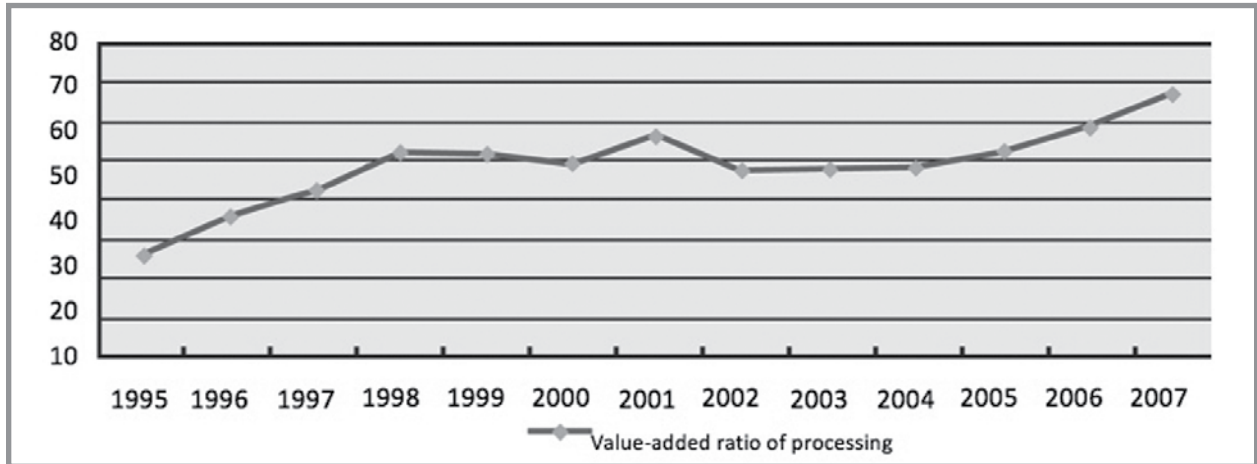


Figure 3.1 Value-added ratio of the Chinese processing trade.




3.2 Other Economy-Wide Perspectives on Chinese Upgrading

Here we summarize other, economy-wide evidence on the extent of and factors determining upgrading by Chinese manufacturing firms. Our starting point is the recent, detailed overview of Chinese industrial development found in Brandt, Rawski and Sutton (2007), three leading scholars of either the Chinese economy or the behaviour of firms in developing countries. These authors argue that “starting from the late 1970s, liberalization and market expansion arising from the gradual demise of planning, the relaxation of control over international trade and investment, and improvements in transport and communication stimulated entry into formerly closed markets, intensified competition, and deepened market integration” (p. 576).

In the authors’ view, intensified competition provides the incentives managers need to upgrade production processes and products. Put another way, beyond the intensification of competition through reforms, these authors give little credit to state policies for fostering upgrading. They accept that circumstances differ across industries and sectors, and therefore that the response to greater competition is not always the same. Indeed, Brandt et al. argue that industry-specific factors are likely to be important enough that Chinese firms’ upgrading will ultimately follow that seen in other countries (p. 570).⁸

In general, Brandt et al. argue greater competition has three effects on firm performance and upgrading. The first is that greater competition puts downward pressure on prices, and the least capable firms are less likely to be commercially viable. Pressure to upgrade production processes so as to lessen costs would then follow from this intensification of competition. Failure to improve performance leads to firms’ exits and to consolidation within the sector. Second, firms intensify research and development expenditures in response to greater competition and the ensuing shakeout. The goal is to enhance the very capabilities defined in the introduction to this paper as being central to the notion of upgrading. Third, shocks to the market environment, brought about by changes in competitive pressure but presumably also other sources, can sometimes reveal a gap between a firm’s current revealed capacities and its underlying dynamic capacities. When this gap emerges, the firm may lose market share, and its future may be in jeopardy. From this perspective, competition and the upgrading it induces are likely to produce substantial changes in market

⁸ This suggests that there will not be a particular Chinese approach to upgrading. Presumably this claim relies on the implicit assumption that the principal determinant of upgrading in the Chinese case remains competition and not a specific set of policies tailored to Chinese circumstances.



shares (and perceived market leadership among firms.) This outcome is, the authors argue, not anomalous or perverse, even if it is likely to lead to job loss and dislocation.

Brandt et al. (2007) point to several indicators of upgrading by Chinese firms. At the end of 2005 nearly 144,000 firms had met International Organization for Standardization standards, up from around 7,500 in 2001 (p. 616). Defect rates in industries subject to international benchmarking, such as automobiles, have fallen considerably. Detailed analyses of patterns of Chinese exports to demanding overseas markets such as the United States show breakthroughs into higher-quality product market segments (they cite the research of Schott, 2008, and Hallak and Schott, 2008.) They note the growing qualitative evidence connecting these positive developments to various international linkages developed by Chinese firms, including participation in value chains and the foreign direct investments along the Eastern seaboard (pp. 623–624). Still, the situation could improve. Research and development expenditures as a share of sales are still relatively low. More generally, however, the authors argue that “the gains of high-performance firms cluster within the realm of production: industry has recorded much smaller advances along other segments of the industrial value chain, including R&D, design, product development, branding, and management of supply networks” (p. 624).

These authors explore this logic for a number of fast-growing Chinese manufacturing sectors. These sectoral accounts do not give much (if any) weight to positive government interventions to promote upgrading. It is not that these authors deny that there has been substantial intervention in various sectors (pp. 623–624). On the contrary, they criticize government measures to “cushion” (offer financial support to) less successful firms, for example, in the case of televisions (p. 586). They say, “Official efforts to shield client firms and their employees from the rigors of the market competition, though diminishing, continue to obstruct the process of upgrading by blunting incentives and prolonging the lives of uncompetitive firms” (p. 624).

In sum, Brandt et al. put competitive pressure and international linkages at the heart of their explanation for the current extent of Chinese upgrading, though one could argue that competition for international linkages is another form of competitive pressure. As will become clear in a later section of this paper, this perspective is consistent with Michael Porter’s (1990) account of the factors that determine upgrading and innovation by firms.⁹

Further information on the extent and form of innovation by Chinese manufacturing firms, and on impediments to such innovation, can be found in the recently published study by Alcorta, Urem and Tongliang (2008). This study reports the results of a professionally conducted survey of a sample of manufacturing firms located in Jiangsu Province. The survey instrument was based on that used by the European Commission and the Organisation for Economic Co-operation and Development. In this survey, “innovation was defined as the commercial introduction of new products and processes,” and therefore the paper focused on improvements that were brought to market. To provide a comparator, the survey was also put to firms that had not been successful in innovating (what the authors referred to as “non-innovators”). The authors distinguished between radical innovation, which “involves a transformed design, profound changes in the technical characteristics and features, alternative inputs or components and/or creating different uses or applications for a good,” and incremental innovation, which “involves adaption, enhancement or upgrading in design, technical characteristics, use of inputs and components and applications of the good” (p. 562). The third major modification of the survey was to determine the degree of novelty of the innovation. Innovations were, therefore, classified as “new to the world,” indicating a high degree of novelty, or “new to the firm,” a lower degree of novelty.

⁹ These findings are consistent with those a study that employed a very different economic methodology. Jefferson, Rawski and Zhang (2007) used standard econometric techniques to assess, among other matters, the productivity dynamics of China’s largest manufacturing firms over the years from 1998 to 2005. They found that the entry and exit of firms, a consequence of the competitive process, was a significant contributor to the improvement in industry productivity levels and the convergence across Chinese regions in productivity levels of firms in the same sector.



With respect to the degree of innovation, Alcorta, Urem and Tongliang found that 91.3 per cent of surveyed firms claimed to have introduced some form of innovation. Just over 80 per cent claimed to have introduced both process and product innovations. Around one-eighth claimed to have introduced only product innovations, and 6.8 per cent claimed to have introduced only process innovations. Three-fifths of sales were associated with products that had undergone incremental innovation, providing one indicator of the relative importance of incremental versus radical innovation. Innovations concerning established products accounted for three-fifths of sales too. Only 4 or 5 per cent of innovations by the surveyed firms were new to the world;¹⁰ between 8 and 12 per cent were new to China or to Jiangsu Province. About 15 per cent of product and process innovations were new to the firms themselves (pp. 565 and 566, Tables 1 and 2). The authors argued that, despite the inevitable difficulties in making international comparisons of innovation based on firm-level surveys, the Jiangsu Province innovation survey showed that the extent of innovation in Chinese firms compared favourably with those in many industrialized and developing countries (for which they cite comparable percentages). They also noted that the most common form of innovation found in the survey was of the “catching up” type (that is, adopting innovation closer to best practice as opposed to defining new best practice).

The survey also considered the motives for innovation and examined whether any significant differences existed between innovating and non-innovating firms. They succinctly summarize their findings thus:

By and large, the most important objective underlying innovation is to improve general competitiveness. Managers in China seem to be clearly aware of the relationship between developing new products and processes and their relative position *vis-à-vis* their domestic and international competitors. Indeed, the next four top objectives—improving product quality, increasing or maintaining market share, extending product range and creating new markets—can be seen as specific manifestations of this more “generic” competitiveness objective. The next objectives by importance were responding to R&D projects by competitors, lowering production costs and obtaining revenues from licensing. Bottom of the list was reducing environmental damage. (p. 579)

These findings suggest that innovation by Chinese firms is motivated by very conventional considerations. For a project such as this one, the low ranking given to reducing environmental damage is depressing. However, the authors’ further analysis revealed that innovating firms placed a greater weight on environmental improvement as an objective than non-innovating firms. Likewise, innovating firms placed a greater weight on improving the conditions and safety of workers than did non-innovating firms. Perhaps the conclusion to draw here is that while innovation tends to be motivated by more traditional commercial factors than by sustainability considerations, inducing a firm to innovate (and therefore leave non-innovating status) itself increases the priority given to the sustainable motives for innovation.

This survey also elicited responses from firms concerning the impediments to innovation (pp. 582–586). Here the findings are revealing precisely because they highlight the relative unimportance of government-related factors as impediments to innovation. “Legislation, norms, regulations, standards, and taxation” were among the lowest-ranked impediments to innovation, along with form of ownership, resistance to change within the enterprise and the view that prior innovations by the firm were sufficient. Instead, concerns about the “innovation potential” of a firm, lack of information about available technologies, lack of information about product markets, lack of skilled personnel and the long payoff periods for innovation were seen as the most important impediments. If these findings are correct, the role implied for the state is one of providing the necessary ingredients (skilled personnel and information) for firms’ innovative activities, rather than direct regulatory intervention.

¹⁰ The authors noted that the new-to-the-world product innovations were found in the biotechnology, electronics, machinery, new materials and toys sectors. New-to-the-world process innovations were found in heat-process technologies, specialized conservation techniques for wine, new fermentation processes for pharmaceuticals, and grinding and surface technologies in mechanical engineering (p. 566).



3.3 Upgrading of Specific Manufacturing Industries

A specific look at the industries can reveal more about the status quo of the upgrading of Chinese industries. On the global value chain, the upgrading of industries can assume four states: technological-flow upgrading, aimed at improving productivity through the transformation of technology and production processes; product upgrading, from the production of simple products at a lower level to the production of complex and precision products; functional upgrading, from the low-end links of low added value to the high-end links of high added value on the same value chain; role-change upgrading, from low-level suppliers of poor technical capability on the industrial value chain to high-level suppliers having independent know-how and technological property rights. Meanwhile, according to different driving forces of the industrial chain, the global value chain can be divided into two types: driven by producers and driven by buyers. For the former, the strategic links are research and development and the production of core components; for the latter, the strategic links are design and marketing. Generally, industrial upgrading follows a progressive process, from flow upgrading to product upgrading, then to functional upgrading and finally to role change. The process of moving from original equipment manufacturing to original design manufacturing and then to original brand manufacturing is usually seen as a sequence of functional upgrading, while the upgrading process from non-strategic links to the strategic links is a symbol of role change. Different characteristics of industries lead to different status quos and trends in the upgrading of each industry. We have selected as our cases the buyer-driven textile and apparel industry and the producer-driven electronic information industry.¹¹ By analyzing and describing the two industries, we can roughly judge the achievements and challenges of China's traditionally advantageous industries and rising high-tech industries in upgrading within the new economic situation.

3.3.1 Textile and Apparel Industries

The textile and apparel industries are the representative of China's traditionally advantageous industries and also two of the industries that were opened the earliest and widest to the outside world. At the beginning of reform and opening, the foreign capital introduced by China was mostly tied to investment projects in the labour-intensive industries of the small and medium-sized enterprises in Taiwan, Hong Kong and Macau. The textile and apparel industries became two of the Chinese industries that introduced the largest amount of foreign capital. The textile and apparel enterprises in Taiwan, Hong Kong and Macau transferred their processing and manufacturing links to mainland China, especially the Pearl River delta, opening the door for the international textile and apparel industries to move to mainland China. Since the 1990s global multinationals have flooded into China, and foreign investment in the textile and apparel industries has grown rapidly. Driven by these foreign developments and by competition against foreign-funded enterprises, China's textile and apparel industries not only made great progress in processing technology, product quality and business management but also merged into the global value chain and secured a vast foothold on the world market.

After China's accession to the WTO, large multinationals strengthened the structural upgrading of their investments in the Chinese textile and apparel industries, which became integrated even more deeply and completely with the global production system and began to seek upgrading that was supported by technological progress in the global industrial chain. Table 3.6 shows the increasing proportion of the

11 Other recent sector-specific studies of upgrading include studies on mobile phones (Imai and Jingming, 2007) and thermionic valves, telecommunications equipment, electrical machinery and office machines (Devadason, 2009). The former study documents the impressive development of the organic mobile-handset industry in China, the growing technical capabilities of domestic firms and the diminished importance of foreign subsidiaries. That study does note that a constraint on innovation by Chinese firms is the availability of specialist engineering talent, confirming a point made earlier in this paper. The latter study compares the exports of Malaysia and China in the four sectors identified above. The author concludes that Chinese firms have quickly established themselves as producers of sophisticated goods and notes the importance of the intensity of competition in the respective markets for these products in China.

foreign-funded economy among the major economic indicators of the Chinese textile and apparel industries, and Table 3.7 shows the rising proportion of Chinese exports among global textile and apparel exports. These two data sets are sufficient proof that the Chinese textile and apparel industries have involved themselves fully in the global production network and have continuously lifted their position and expanded their influence globally.

Table 3.6: Major economic indicators of foreign-funded firms in the textile and apparel industry, percentage of respective industry totals. The reported figure for the proportion of total profits in 1995 is, in fact, the proportion to total profits and taxes.

Textiles					
Year	Industrial added value	Total value of assets	Product sales income	Total profits	Value-added tax payable in the year
1995	20.28	18.81	17.88	24.89	12.68
2000	20.73	20.76	21.16	24.62	16.32
2003	24.16	24.15	23.34	24.64	16.59
2006	24.85	28.02	24.51	25.70	20.13
Apparel					
Year	Industrial added value	Total value of assets	Product sales income	Total profits	Value-added tax payable in the year
1995	50.02	47.91	50.81	44.79	39.20
2000	48.83	45.35	49.05	50.38	40.88
2003	47.11	44.81	47.28	45.30	39.13
2006	47.39	48.20	45.37	43.12	43.82

Source of data: China statistical yearbooks.


Table 3.7: China's share of world textile and apparel production.

	1990	1995	2000	2003	2006
Global trade of textiles (billion US\$)	104.33	151.58	154.74	173.73	218.59
Chinese exports of textiles (billion US\$)	7.22	13.92	16.14	26.90	48.63
China's share of global trade (%)	6.90	9.20	10.40	15.48	22.25
Global trade of apparel (billion US\$)	108.10	158.30	196.78	232.56	311.41
Chinese exports of apparel (billion US\$)	9.67	24.05	36.07	52.06	95.39
China's share of global trade (%)	8.90	15.20	18.30	22.39	30.63

Source of data: www.wto.org.

In recent years the upgrading of the Chinese textile and apparel industries on the global value chain has been reflected in flow upgrading, product upgrading and functional upgrading.

Through large-scale technological transformation, the textile and apparel industries have witnessed a great improvement of equipment and production technology. In the period covered by the 10th Five-Year Plan, imported advanced equipment accounted for 50 per cent of the total investment in equipment for the textile industry, thereby bringing most domestic equipment up to the international levels reached in the 1990s. Accordingly, the technology for production of textile equipment has greatly improved. At



present, the production of advanced frames for spinning cotton has been nationalized, so that Chinese-made complete sets of blowing-carding equipment have accounted for 70 per cent and homemade chemical fibre equipment 50 per cent of the domestic market for such equipment. New-tech equipment, such as digital printing and screen-making, has entered the stage of batch production. In some fields, textile and apparel technology has reached or is close to the advanced international level, for example, in the cases of automatic colour-separation systems for printing designs and the comprehensive control systems for yarn bleaching and dyeing. New fibres developed independently in China, such as bamboo pulp fibres, protein fibres and high-performance fibres, have found use in some important fields such as space flight, military applications and special uniforms. China has seen breakthroughs in the processing and weaving technologies for natural hemp, bamboo and true silk fibres (Chinese Academy of Social Sciences [CASS], 2007, p. 321). In addition, conspicuous results have been achieved in the transformation of information technology in the textile and apparel industries. Computer-aided design and computer-aided manufacturing systems are now in widespread use in all links of the textile and apparel industries, including production, design and product development. Some advanced domestic apparel enterprises have set up quick response systems for producing small batches and multiple varieties by leveraging these computer-aided design and computer-aided manufacturing systems (CASS, 2003, p. 158).

Moreover, benefiting from the continuous enhancement of equipment and production technology, the textile and apparel industries are feeling a palpable itch for product upgrading. Since the 1990s the product categories of the Chinese apparel-processing trade have gradually changed, from the predominant underwear, T-shirts and shirts in the early days to apparel products that require more advanced and complicated technology. These include Western-style clothes, overcoats, and ladies' wear. Many enterprises emphasize the development and application of new fabrics, raw materials and auxiliary materials and use advanced technologies, resulting in a tremendous enhancement of the overall level of Chinese apparel products. Chinese enterprises have widely adopted technologies for non-creasing and no-iron fabrics for shirts, pants and casual dresses. Fabrics that are high-count, lightweight, and resistant to shrinkage and moths are used in quantity for high-grade suits and occupational uniforms. Accompanying the trend toward greater environmental protection, the production of green cloth has also started in China (CASS, 2003, p. 158). Currently, except for some top-grade apparel, China can produce nearly all complicated, high-end apparel products.

In addition, on the basis of equipment updating and the progress of product technology, the design capabilities of the textile and apparel industries have expanded quickly, and some enterprises have begun to shift from original equipment manufacturing to original design manufacturing. The added value contained in Chinese textile and apparel exports has also been continuously rising. A distinct new upgrading posture has begun to emerge. The increasingly fierce competition in domestic and foreign markets, as well as increasing production costs, is forcing the Chinese textile and apparel industries to hasten the processes of independent innovation and building up their own brands. The development of new fabrics and new technology through technical innovation has become the production and operation guideline for textile enterprises, and brand-based growth has become the common choice of apparel factories, which have long relied on original equipment manufacturing.

In 2007 the growth of profits outpaced that of output, and the growth in export prices outpaced growth in export quantity for the Chinese textile and apparel industries ("Upgrading urge," 2007), indicating that firms are succeeding in both technical progress and brand management in the domestic and foreign markets. Meanwhile, government policies have tightened control over energy savings, reduction of energy consumption and environmental protection. In July 2006 the Chinese State Environmental Protection Administration released the industry standard Clean Production: Textile Industry, which guides the environmental protection efforts of the textile industry. The standard is one of the environmental




protection policies promulgated by the central government in recent years. “Ecological environmental protection, energy savings, reduction of emissions and clean production” are the objectives pursued by the textile and apparel industries through their technical innovations.

But the Chinese textile and apparel industries are also faced with a number of restraints in its upgrading, which constitute a challenge to the traditional, labour-intensive industries. Rising production costs are the foremost issues confronting the textile and apparel industry now. As the largest global exporter of textile and apparel products, China relies on low cost as the strongest competitive edge for this industry. In recent years, however, the price hikes for domestic factors such as land, raw materials and labour have caused enterprises’ production costs to continuously increase. In 2005 the average annual pay for employees of the textile industry rose by 81.1 per cent from that in 2000. Data from the State Statistics Bureau show that in 2006, the principal costs of the textile industry chalked up a year-over-year increase of 21.3 per cent. At present, compared with some other developing countries, the Chinese textile and apparel industries maintain the upper hand in industrial matching and market systems, but their edge in production costs basically no longer exists (CASS, 2007, p. 323). On the global industrial chain, the Chinese textile and apparel industries have long been among the links of low added value. Given the small scales of enterprises, low profits and poor capital accumulation, whether or not upgrading can be accomplished before the cost edge is totally lost has become a critical concern for these industries’ survival.

Weak innovation capabilities and low levels of research and development are among the major obstacles for the Chinese textile and apparel industries. For a long time the industries have been held back by the stress placed on expanding scale of production to the neglect of efficiency enhancement, and by the stress placed on equipment introduction to the neglect of getting the most out of existing plants and equipment. The textile and apparel industries fall visibly behind the advanced world level in the five major technical links of fibres, yarns, weaving, dye-finishing and design. The Chinese textile industry features low variety, substandard quality and reliance on the import of fabrics for large-scale garment processing, which seriously hinders the progress of industrial upgrading. Furthermore, the industry does not pay enough attention to technical innovation, and investment in research and development is acutely inadequate. The industry not only wants original technology, with independent intellectual property rights, but also has failed to make a major breakthrough over the years in the crucial technology that prevents Chinese textile products from rising in grade, such as deep-processing and after-finish technology. There is even a gap in the research and development of such new technologies as multi-component fibres, compound fibres and modified fibres. Data from the general economic survey conducted in 2004 show that the R&D investments by Chinese textile enterprises accounted for merely 0.287 per cent of sales proceeds, much lower than the average level of 5 per cent in developed countries (CASS, 2007, p. 321). As cost advantage wanes, the low technological level and weak R&D power are a stern challenge to the textile and apparel industries.

Brand popularization and operation is another vulnerability of the Chinese textile and apparel industries. Of the Chinese garment products sold on the international market, 85 per cent are original equipment manufacturing products, and less than 10 per cent of them use independent brands, which are mostly sold to developing countries (CASS, 2006, p. 231). The protracted pursuit of processing and original equipment manufacturing production has both caused most enterprises to rely on introductory technologies and placed these enterprises at a great disadvantage. Original equipment manufacturing is characterized by low added value and narrow profit margins. Whenever something goes wrong, purchasing agents will immediately pass the buck to the manufacturing enterprises. Although the state encourages independent brands, and the importance of brand management has begun to dawn on Chinese enterprises, most of them do not have the ability now to really grasp the core of brand management.

Finally, restrictions on resources and the environment are exerting more and more constraints on the



development of the Chinese textile and apparel industries, which have become more reliant on imports of raw materials. Currently 40 per cent of cotton, 75 per cent of wool, 60 per cent of hemp and 60 per cent of chemical fibres have to be imported. This high reliance on imports has made textile enterprises susceptible to the impacts of fluctuating world prices and destabilized business operations. Some enterprises have even been pushed to the critical point between profit and loss by the rising prices of raw materials.

The textile industry is highly sensitive to resources and the environment. Influenced by factors like insufficient investment, the small scale of enterprises, and a low level of technology and equipment, the textile industry has never managed to lower its consumption of water and energy. Rather than being eradicated, the environmental pollution and damage caused by waste water, waste gas and noise tend to get worse. For example, total emissions of waste water are increasing alongside the growth of production capacity. Now that the enterprises causing the most serious environmental pollution, such as the textile industry's printing, dyeing and chemical fibre enterprises, are concentrated in the densely populated regions of Jiangsu, Zhejiang and Guangdong provinces, their development has placed heavy pressure on the local environment. Furthermore, the production of raw materials in the textile industry depends mainly on the products and by-products of agriculture and animal husbandry, and production activities are basically extensive. This means that chemical fertilizers, pesticides and other chemical products are used more and more, causing considerable pollution and damage to the environment (CASS, 2005, p. 213). In short, the textile and apparel industries face the pressing and difficult task of realizing energy savings, emission reductions and cleaner production.

3.3.2 Electronic and Communications Equipment

In contrast to the textile and apparel industries, China's electronic and communications equipment manufacturing industry is an epitome of high-tech industry that has risen quickly under the impetus of foreign capital after the start of reform and opening. From the end of the 1970s to the early 1980s, under the pressure of falling prices for global electronic products and rising production costs on the island, Taiwan-based electronic information industries began to gradually transfer processing and manufacturing links to the mainland, enabling China's electronic and communications equipment manufacturing industry to find its way into the global value chain as a low-end supplier. In the 1990s, as the global electronic communication industry accelerated its outsourcing, China accepted in a big way the part of the manufacturing industry chain that was transferred from the electronic communications industry of developed countries. In the meantime, the effects of reform and opening began to emerge, and the potential of the domestic market loomed larger. China's electronic and communications equipment manufacturing industry boomed under the joint drive of the large-scale transfer in from external industries and the strong demand of the domestic market. Following China's accession to the WTO, the position of this industry as an important global processing and manufacturing base and a potential market was consolidated and enhanced. Multinationals not only vied with each other to transfer production but also set up their R&D organs in China. China's electronic and communications equipment manufacturing industry approached development through combined scale expansion and industrial upgrading. Figure 3.2 shows the industry's rapid growth since the mid-1990s, and Table 3.8 reflects the position and role of foreign capital in the industry.

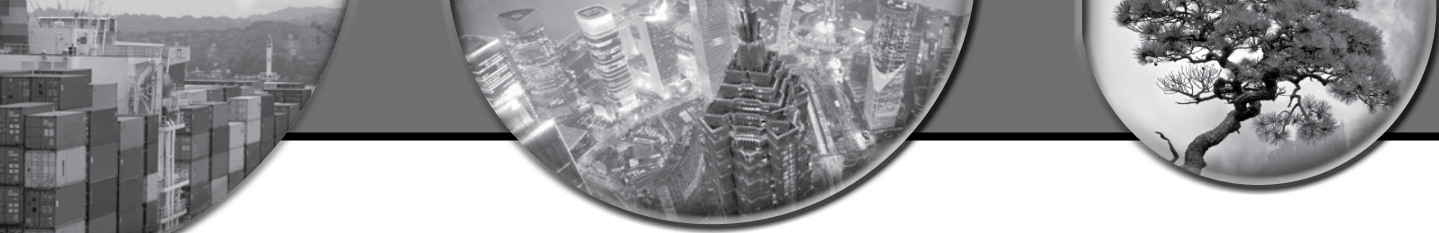


Figure 3.2: Total industrial value of China’s electronic and communications equipment manufacturing industry (in 100 million yuan).

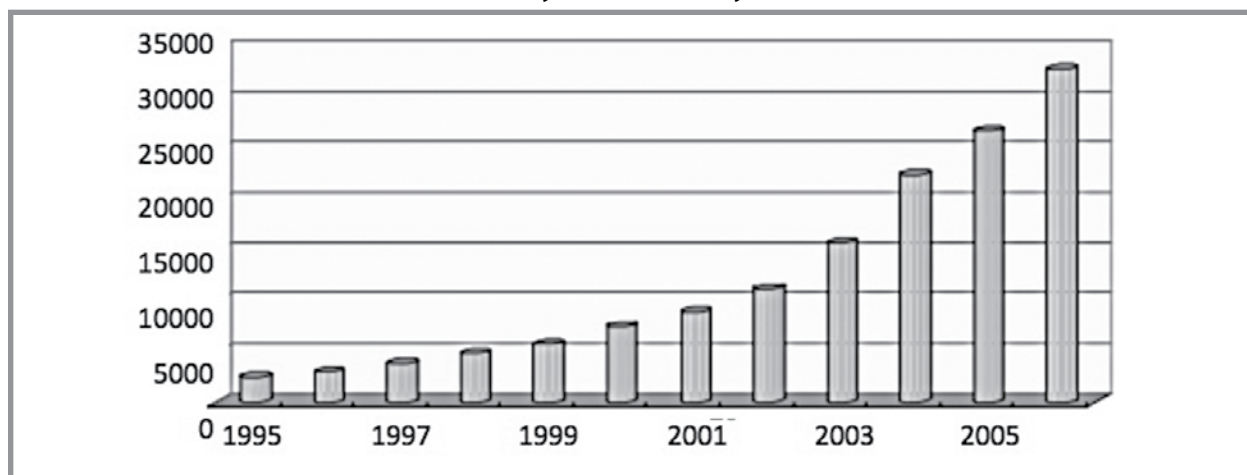



Table 3.8: Percentage of major industry-wide indicators in electronic and communications equipment manufacturing accounted for by foreign-funded enterprises. The reported figure for the proportion of total profits in 1995 is, in fact, the proportion to total profits and taxes.

Year	Industrial added value	Total value of assets	Value of product sales	Total profits	Value-added tax payable
1995	58.82	44.49	60.80	60.36	48.94
2000	65.39	55.89	72.21	70.45	57.49
2003	69.62	63.25	78.27	71.87	60.32
2006	77.29	71.24	82.07	79.53	56.85

Source of data: China statistical yearbooks.

As a rising industry, electronic and communications equipment manufacturing in China has not only grown rapidly in production capacity but also has made remarkable headway in technical flow upgrading, product upgrading and functional upgrading. This headway is well embodied in all the sector’s subindustries. In the integrated circuit industry, since the start of the 21st century China has made considerable progress in the independent design and development of integrated circuit chips, mastery of core technology and possession of independent intellectual property rights. In the field of design, a number of “Chinese chips” with fully independent property rights have been developed, including Ark, Loongson and Patriot. The design capability of the domestic integrated circuit industry has exceeded 500 categories, which involve complete machines and many aspects of informatization engineering, including computers, communications, consumption and industrial control. In the field of chip production, China’s integrated circuit mass-production technology has reached 12 inches and 0.11 microns, with the proportion taken up by eight-inch silicon chips going up continuously. With the rapid development of chip manufacturing and design industries, the structure of the Chinese integrated circuit industry has changed. By 2006 the ratio of chip manufacturing to design and encapsulation testing in the integrated circuit industry was 30.7 to 18.5 to 50.8 (CASS, 2007, p. 308).

In the computer industry, the technology of domestically made PC servers is equal to that at the advanced international level and can compete with the products of leading international server manufacturers. Chinese development and production of high-performance computers has also broken the monopoly of



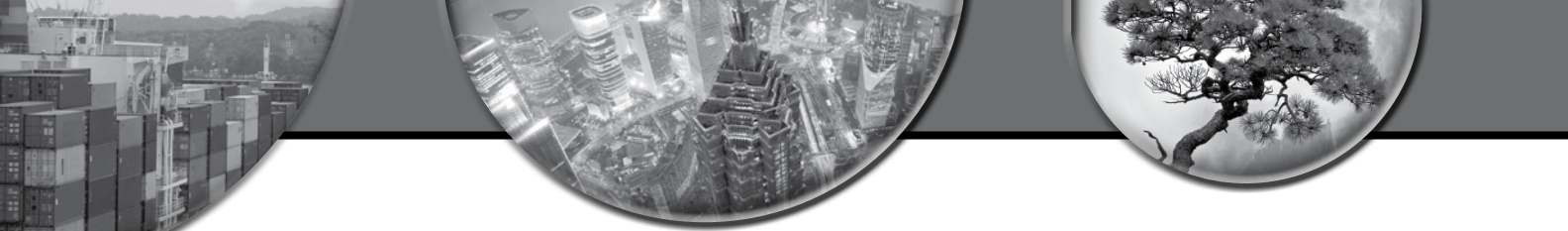
developed countries. And as far as domestic manufacturing of network products, Chinese routers have not only dominated the low- to mid-end market thanks to their cutting-edge advantage in price and service, but have also broken into the high-end market, so that Chinese-made high-end routers are now used by many operators on a large scale, including China Telecom and China Mobile, smashing the monopoly of foreign competitors in the high-end market.

In the communications equipment industry, the independent R&D capabilities of Chinese enterprises have constantly strengthened. Currently China possesses a full line of communications products and has begun to come into an advantageous position domestically in some important fields, such as program-controlled exchangers, SDH/DWDM transmission equipment and cellular communication equipment. In the research and development of 3G mobile communication equipment, optical networks and core exchange routers, China has also begun to stand at the forefront of the world to participate in the formulation of the international communication standard and develop core technologies with independent intellectual property rights (CASS 2007, pp. 306–307). In the components industry, products are becoming more miniaturized, chip-based and high-frequency, and the chip-using rate of electronic components has topped 80 per cent.

In colour TV production, by the end of 2006 China had constructed three G5 thin-film-transistor LCD display-board production lines, and the number of patents owned in this field also increased sharply. In cellphone production, the enterprises producing domestic-brand cellphones have initially mastered the technology of cellphone structure, industrial design, development of application-layer software, RF modules and the production technology for large batches, and have made great progress in the development of core chips and low-level protocols. Overall, the electronic and communications equipment manufacturing industry has made great technological strides. In most subindustries, native enterprises have followed a route from assembly of finished products, to production of general parts, to production of key intermediate products, to production of final products. Most enterprises have gotten into the production stage of general parts and intermediate products and have completed the upgrading shift from original equipment manufacturing to original brand manufacturing.

Still, the upgrading prospects in the electronic and communications equipment manufacturing industry are not that bright. The first and foremost restraint is that the industry possesses weak capability for technological innovation and insufficient investment in scientific research. Because of its late start and poor foundation, the industry lags far behind that of developed countries in core technology innovation, a fact highlighted by the small quantity of patent applications, low product quality, lack of technical standards and reliance of most firms on imports for the supply of core technology and crucial components, such as the CRT production technology of the colour TV industry, the CPU technology of laptop computers and LCD display technology. The integrated circuit industry is the core of the electronic and communications industry. But China is still weak in its capabilities for independent design and development of integrated circuits, and chip-design manufacturers' products are mostly concentrated in the field of low- and medium-grade consumer products. Basically all the machines installed on integrated circuit production lines are foreign products, as the stability and reliability of domestically made machines still cannot meet needs.

The shortage of core technology has not only plunged the Chinese industry into increasing intellectual property right disputes but also greatly increased production costs and reduced the profitability of enterprises, thereby inhibiting their technological progress and investment in innovation. Another important reason for and expression of the weak capability for innovations in core technology is the inadequate R&D investment of enterprises in research and development. Although enterprises that manufacture electronic and communications equipment now place more and more emphasis on technological innovation and are increasing their R&D investment year after year, the scale of investment remains small in comparison with that of developed countries. As shown in Table 3.9, China lags far behind not only the United States and Japan



but also the rising industrialized countries such as South Korea in the strength of research and development in its electronic and communications equipment manufacturing industry.

Table 3.9: R&D intensity of electronic and communications equipment manufacturing industries in various countries and years. Here, R&D intensity is the ratio between R&D expenditures and the total added value of the industry.


China (2005)	USA (2003)	Japan (2003)	Germany (2002)	France (2002)	Britain (2003)	Italy (2002)	South Korea (2003)
6.9	26.9	15.2	37.6	57.2	27.5	17.6	23.4

Source of data: Statistics of Chinese High-Tech Industries, www.sts.org.cn.

Closely associated with the weak capability for technological innovations is the shortage of high-calibre talent. Since 2003 the number of employees of China's electronic information industry has increased at a rate of 25 per cent annually. In 2005 that growth rate reached as high as 48 per cent. The gap between supply and demand is widening each year and is hard to fill with university graduates alone. China has only 20,000 integrated circuit designers, including only 4,000 senior personnel, compared with 500,000 designers in the United States. Meanwhile, many multinationals have set up R&D organs in China to fight with native enterprises for talent, which has exacerbated the shortage of talent and turned into a serious restraint on the technological progress and upgrading of China's electronic and communications equipment manufacturing industry.

The second constraint to the upgrading of China's electronic and communications equipment manufacturing industry is its mode and route of development. This is an export-oriented industry that has quickly merged into the global industrial chain and then realized rapid growth by leveraging the introduction of foreign capital and the export-led strategy. The negative effect of such a mode and route is the dominance of foreign capital and the dependency on exporting. Foreign-funded enterprises occupy a dominant position in the industry. Multinationals invest in China mainly to make full use of the country's cheap labour force. Therefore, in mainland China they deploy the processing and manufacturing links of low added value on the global industrial chain. The foreign-funded enterprises in China lack both the necessity and urgency for technological innovation, with equipment updating and technical progress relying completely on and obeying the edicts of their parent companies. Additionally, foreign-funded enterprises make use of their global edge to transfer profits so that their book sales profit margin (3.4 per cent) is lower than that of native enterprises (4.2 per cent) and the average level of the entire industry (CASS, 2007, p. 310), thereby further lowering the economic benefits of the industry and inhibiting its R&D and innovation activities. Research shows that in China's electronic and communications equipment manufacturing industry, the R&D intensity of foreign-funded enterprises has remained lower than the average level of the entire industry since 2000 (CASS, 2006, p. 317).

The negative impact on the development of the industry caused by the prolonged policy preferences for foreign capital and export incentives is gradually exhibiting. The preferential policies for foreign capital have caused unfair competition between domestically funded and foreign-funded enterprises, reinforced the dominant position of the foreign-funded economy in the industry, and impaired the capability of domestically funded enterprises for independent innovation. Furthermore, under these policies a large number of labour-intensive links continue to move inland, further abetting the quantitative growth of the industry. Under the export incentive policy, electronic and communications products that are sold on the domestic market will be subject to a value-added tax as high as 17 per cent, which is refunded if the products are exported. This makes



the enterprises that manufacture electronic and communications equipment more willing to work for foreign companies. As a result, the immense demand of a large number of domestic manufacturers for integrated circuits cannot be satisfied and can be met only through imports. This has intensified the growth pattern of the processing trade in the industry and is likely to lock the industry into the processing and assembly link of the global value chain, from which it will have difficulty breaking away.

The third constraint on the upgrading of the electronic and communications equipment manufacturing industry is resources and the environment. For a long time, people have equated high technology and high capital intensity to low consumption of resources and low environmental pollution. People lack a sufficient understanding of the resource and environmental concerns of the electronic and communications equipment manufacturing industry. But with the development of this industry, these concerns have begun to gradually emerge. The shortage of water resources and electrical power has become an important factor blocking the development of the industry. China is a country with meagre water resources, and over 400 of the 600-plus cities across the country suffer from an inadequate supply of water (Beijing Energy Saving & Environmental Protection website, www.bjjnhb.com.cn). This is worsened by the serious pollution of China's water resources: 40 per cent of its rivers and 50 per cent of its lakes have been seriously polluted. The semiconductor industry has high water consumption and very high requirements for water quality. It is now mostly concentrated in the Chang Jiang River delta, Beijing–Tianjin Rim–Bohai Bay belt and Pearl River delta, which face a shortage of water resources and deteriorating water quality. This has become a bottleneck that holds back the development of semiconductor production.

In the last couple of years, power shortages have become an important factor that undermines the normal industrial production in coastal areas. All four regions where China's electronic and communications equipment manufacturing industry is concentrated—the Chang Jiang River delta, Pearl River delta, Rim-Bohai Bay belt and Fuzhou-Xiamen region—are all hard-hit by power shortages, which have already deterred follow-up investment by foreign-funded enterprises in some areas.

Regarding the environment, the high pollution generated during the production of electronic products and disposal of waste electronic products is a common thorny issue encountered in global development. But China's understanding of high-tech pollution is insufficient, and its supervision of environmental protection is incomplete. In recent years, with the rapid increase in the domestic market demand for semiconductor products, the global semiconductor industry has sped up its transfer to China and quickly formed a complete industrial chain in China that extends from research and development, design, manufacturing and encapsulation to testing, resulting in a fast-expanding production scale. However, the environmental problems created during semiconductor production have not been fully recognized or effectively controlled. Furthermore, as the world's largest consumer of electronic products, China has entered a peak period for disposal of waste electronic products. From 2003 onward, 5 million TV sets, 4 million refrigerators and 6 million washing machines have needed to be scrapped each year. But the prevention and control of the pollution caused by electronic refuse is just starting, and the toxic substances created during the disposal of the refuse have created serious pollution (CASS, 2005, p. 278). In addition, imports of electronic wastes to China are increasing, and cause serious pollution to the local environment. Environmental pollution has become a major obstacle to the further development of China's electronic and communications equipment manufacturing industry.

4.0 Upgrading Opportunities and Challenges to the Manufacturing Industry

"Made in China" is presented with a golden opportunity for upgrading on the global value chain. Insofar



as the external environment is concerned, the expansion of the global value chain dominated by the multinationals of developed countries, and the transfer of international industries driven by it, are picking up speed, expanding in scale and continuously upgrading structures. Studies show that the chain of the manufacturing industry is continuously moving and outsourcing to countries with low costs, and from chains and sectors of low added value to chains and sectors of high added value (Balasubramanian and Padhi, 2005). In the 1990s the transfer and outsourcing in the manufacturing industry centred on the labour-intensive industries, represented by garments, shoes and hats, and some technology-intensive industries, represented by computer hardware and home appliances. Since the beginning of the new century, the transfer and outsourcing of manufacturing industries has focused on more technology-intensive industries such as auto making, biopharmaceuticals and communications equipment.


Meanwhile, the configuration of the global value chain and the international transfer of industries are extending along the chain from manufacturing industries toward service industries and the R&D sector. Since the 1990s the outsourcing and offshore movement of the service industry have jointly stirred up a surge in the international transfer of the industry. In spite of this rapid development, service outsourcing is still at an early stage, and the outward movement and outsourcing of global service industries have broad prospects (Zhan, 2005). The universal globalization of R&D efforts began to appear in the late 1980s. From then on, multinationals have been increasing the quantity and expanding the scale of their overseas R&D establishments, so that globalization of R&D has become an important integral part of their global strategy. In the global deployment of the industrial chain of these multinationals, China is no doubt one of the most competitive locations, whether for the links of processing and manufacturing or for the links of research and development and service. This new pose in the deployment of the global value chain and the international transfer of industries has brought new opportunities for upgrading of Chinese industries.

Insofar as the domestic environment is concerned, the supply and demand conditions have improved continuously in ways that promote industrial upgrading in China, and the Chinese manufacturing industry is embarking on a new journey of sustainable growth.

First, the Central Committee of the Communist Party of China adopted the scientific concept of development for all-round, coordinated and sustainable growth, underscores the importance of environmental protection and the growth of “green GDP” and encourages independent innovations and technical progress, thus creating an excellent atmosphere throughout society for the “clean” upgrading and sustainable development of industries. The report delivered by Hu Jintao to the 17th Party Congress lists three vital aspects of the efforts made to boost the positive and rapid development of the national economy. These are:

1. “Enhance China’s capacity for independent innovation and make China an innovative country.”
2. “Accelerate transformation of the mode of economic development and promote upgrading of the industrial structure.”
3. “Improve energy, resources, ecological and environmental conservation and enhance China’s capacity for sustainable development.”

With this as guide, from the central government to the localities, the concept of economic growth focusing on “scale, speed and output value” is changing to the concept of economic growth focusing on “technology, benefits and environmental protection.” A series of system changes are underway, and the government has gradually taken relevant policy measures, including increasing the proportion of R&D expenditures to GDP, adjusting the state system for management of scientific and technological plans, and establishing the responsibility and insurance system for environmental pollution. The dynamics in all fields and links are



showing that independent innovations and clean growth have become the theme of China's new approach to industrialization.

Second, the increasing income of Chinese nationals and the accelerated development of the heavy and chemical industries have ignited robust domestic market demand for industrial upgrading. A notable hallmark that distinguishes China from other developing economies in East Asia is the huge domestic market, which has not only attracted massive investment from multinationals but has also helped native enterprises grow gradually on the low-end market segment. Three types of market changes will push the upgrading of the Chinese manufacturing industry forward:

1. The increasing income of Chinese nationals has enabled some regions to become moderately prosperous after meeting subsistence needs. Consumer spending is gradually displaying the characteristics of structural upgrading, including diversification and refinement, which has raised requirements for equipment manufacturing, product design and after-sale service and formed increasingly more evident pressure on enterprises to extend toward the upstream and downstream industrial chains.
2. After over 20 years of development, the processing and manufacturing links oriented toward the international market have developed an enormous processing and assembly capability, creating huge market demand for the upstream and downstream component industries.
3. The quickened urbanization process and surging construction of urban infrastructure in China have triggered strong market demand for heavy and chemical industries such as steel, cement, petrochemical engineering and construction machinery (Long, 2007, p. 6).

Third, since the beginning of reform and opening, the country's high investment in education has begun to pay off significantly and has provided abundant sources of high-quality labour for industrial upgrading. China has a time-honoured tradition of valuing education, as reflected by the fact that the government enthusiastically develops education and every Chinese family, rich or poor, gives top priority to their children's education. The results of China's high investment in education have been gradually emerging in recent years. Since the beginning of the new century, the number of graduates from regular Chinese institutions of higher learning has grown rapidly at a two-digit rate. Now the number of undergraduate students exceeds 16 million, and over 3.5 million people a year graduate from university, including nearly 700,000 with bachelor degrees and nearly 100,000 with advanced degrees in science and engineering (China Statistical Yearbook, 2007).

Returning students add new blood to firms and are increasing in number year after year.¹² Most of them have working experience in the manufacturing or service industries, especially high-tech industries in developed countries. The flourishing domestic economy, upbeat expectations for the future and strong state support have led to a tide of expatriates returning to China and starting businesses. At present, more and more students are becoming qualified for study abroad, and more and more students are returning after completion of their studies to start businesses. Since 2005 the number of students returning home has reached more than 30,000 each year. These returned students have become the main force behind "Made in China's" push into the high-tech industries and to compete on the world market. They are also an important factor in drawing multinationals to invest in Chinese equipment manufacturing and service industries and to launch their R&D centres.

¹² This is in addition to the "brain circulation" identified by Saxenian (2005). Brain circulation is the growing cooperation between Chinese nationals resident in the technologically advanced sectors of the United States and their compatriots back home.



4.1 Challenges Confronting the Upgrading of the Manufacturing Industry


Both theory and practice have proven that on the road of industrialization, natural comparative advantages in the labour force can enable the labour-intensive industries and links of developing countries to develop smoothly, but the acquired accumulation of capital and technological advantages and the development of capital- and technology-intensive industries and technology-intensive links driven by such accumulation cannot be taken for granted. Although the Asian “Four Small Dragons” are a successful precedent, China, as a large, socialist, developing country without abundant natural resources, is faced with more complicated and severe challenges to accomplishing the upgrading of its industries on the global value chain.

4.1.1 Traditional Cost Advantages are Fading Away

The largest and most prominent characteristic in the composition of Chinese production factors is the high redundancy of the labour force factor. The substantial redundant labour force has attracted multinationals to continue to move the processing and manufacturing links on the global value chain to China. Over more than 20 years of reform and opening, Chinese labour costs have remained nearly unchanged, land-use cost was almost zero, and pollution and other environmental damage could be overlooked. Such extremely low costs, plus taxation preferences and incentives, turned mainland China into an ideal destination for the congregation of labour-intensive industries and the processing and manufacturing links.

But a series of changes since the beginning of the new century imply that the traditional advantage of low cost has started to fade out. The shortage of migrant workers is spreading in coastal regions, revealing the rise in Chinese labour costs. The shortage is actually an expression of the structural changes that have taken place in the supply of Chinese labour. First, with the continuous intensification of industry supporting agriculture and cities supporting the countryside, the income of farmers has increased steadily and the ranks of labour flooding into the secondary and tertiary industries have slowed down their pace. Second, with the sustained development of the national economy and the state’s continuous investment in education, the education and quality of the new labour force have been enhanced in general, so that both skilled and low-skill workers are in relative shortage. Therefore, although the comparative advantage of the Chinese labour force will remain unchanged for a considerable period of time to come, changes have indeed taken place to the low wages and low labour rights that have existed since long before the inception of reform and opening; in short, the age of inexhaustible low-cost labourers is gone. In fact, the increased wages are universal and are not limited to migrant workers. Statistics show that since 2005, the national nominal wages have gone up at an average annual rate in the double digits, especially in the eastern coastal regions. Any link in the global industrial chain that was placed in mainland China has keenly felt the momentum of this change, which is set to increase with the enactment of the new Labour Contract Law and other policies.

In the meantime, as a result of the China’s efforts to change its economic growth mode, the policy adjustments covering land, resources and environmental protection will push up the related operating costs, so that the comprehensive operating costs of China’s portion of the global value chain will gradually climb. A consequent concern is that such a continuous increase in operating costs will compress the already narrow profit space of “Made in China.” The traditionally advantageous industries, such as the textile and apparel industry, have already fully felt the pinch caused by this cost increase. In the Pearl River delta, processing enterprises will see 3 to 5 per cent of their average profit vanish in the next few years.



In essence, rapid economic growth is bound to bring increased incomes, resource savings and environmental beautification. That day is just a bit slow in coming for China, a country with a large population in the process of industrialization. Meanwhile, a changed mode of economic growth is also an active reaction to the increasingly more austere constraints on resources and the environment brought about by the existing extensive economic growth. Can a new profit space be opened before the existing profit space has disappeared? In other words, can new competitive advantages be built up while the traditional comparative advantages are fading out? This is the most practical and pressing concern confronting the upgrading of the Chinese manufacturing industry.

4.1.2 The Downside of the Localization Strategy Is Becoming More and More Apparent

An ideal route for late-coming countries to take toward industrial development on the global value chain is to integrate with the global value chain, starting from the lowest end and the simplest processing and assembly, then gradually accumulating capital and technical advantages, and finally upgrading toward the middle- and high-end links, targeting both intermediate products of high added value and core products. The Asian “Four Small Dragons” once did quite well on this route, and China also hopes to use it to excel. But against the new background of globalization, the configuration of the global value chain has changed. When the low-end links of the global value chain began to transfer to China, direct foreign investment became the carrier for the transfer, and enterprises from developed countries and the “Four Small Dragons” set up factories directly in mainland China. The affiliated upstream and downstream enterprises flocked in to quickly form industrial clusters and create large-scale development in local places with foreign-funded enterprises as mainstays. This caused the holistic transplantation and embedded development of the external industrial chain in China.

Such transplantation and development of the external industrial chain aims only to leverage cheap, local essential resources, but gives a very small space to local enterprises for integrated development. China is a country in transition; its state-owned enterprises lack vigour and its private economy is weak. This has further consolidated the dominant position of foreign-funded enterprises, which account for over 60 per cent of the export volume of China’s high-tech industry and the lion’s share of the export volume from the processing trade. This stance is gradually being beefed up even more (see Figures 4.1 and 4.2). The processing trade pursued by foreign-funded enterprises accounts for 98 per cent of the processing trade in the city of Shenzhen (Shenzhen Bureau of Trade and Industry, 2005) and 75 per cent of that in Guangdong Province (Department of Foreign Trade and Economic Cooperation of Guangdong Province, 2005, p. 134). The dominant position of foreign-funded enterprises in the processing trade is a universal phenomenon throughout the country. Moreover, the surveys and research show that even if there are Chinese investment enterprises that can team up with foreign-funded enterprises, most of them are concentrated on the low-end links, where they do simple processing of lower added value.

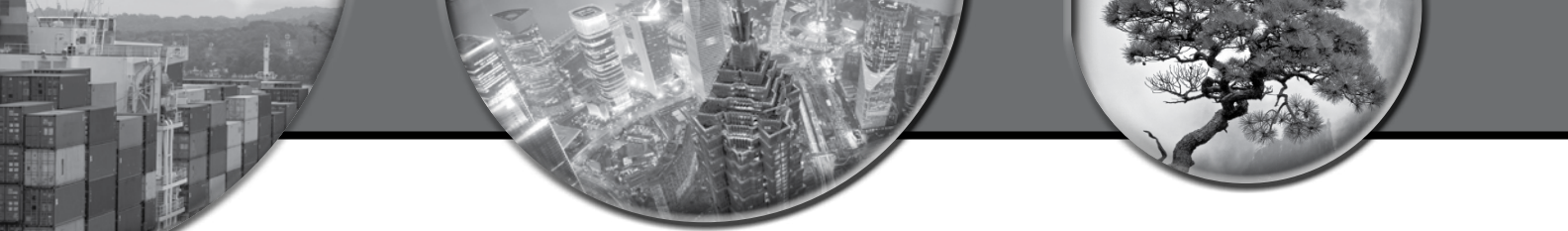
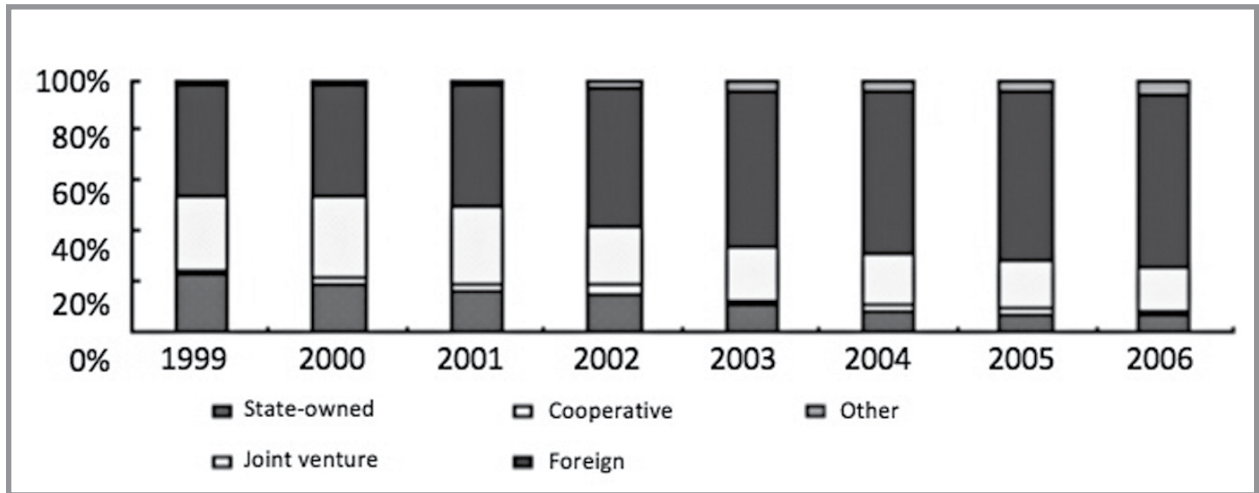
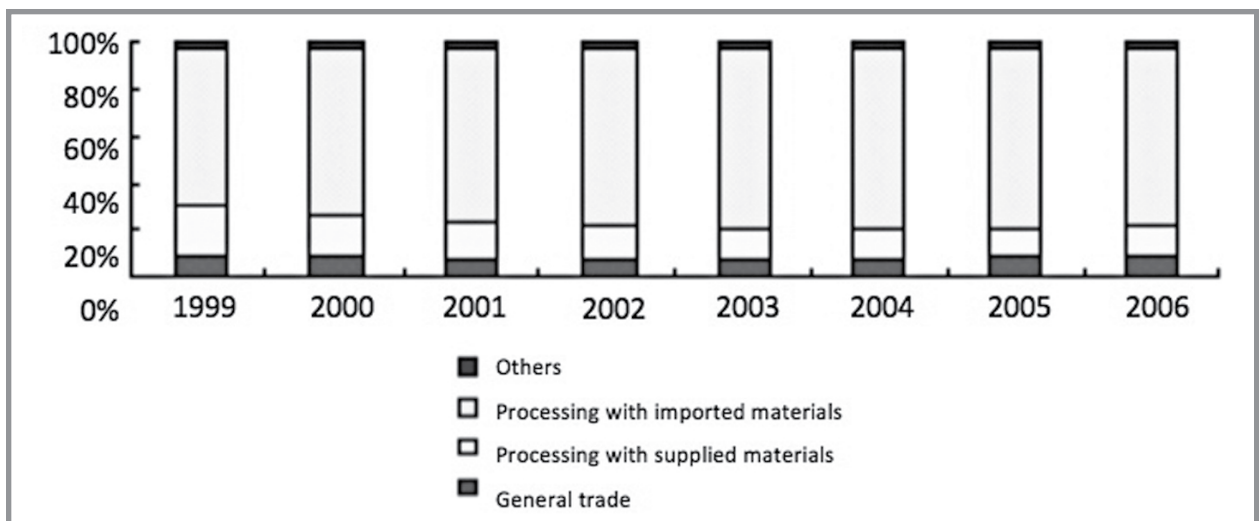


Figure 4.1: Proportions of exports of high-tech products, by ownership of the exporting enterprise.




Source of data: Scientific and Technological Statistics of China, www.sts.org.cn/sjkl/gjscopy/index.htm.

Figure 4.2: Proportions of exports of high-tech products, by source of material.



Source of data: Scientific and Technological Statistics of China, www.sts.org.cn/sjkl/gjscopy/index.htm.

The dominant position of foreign-funded enterprises in the part of the global value chain that has been transplanted into China is the root cause of many problems. The high rate of growth of trade, a high trade surplus, late development of domestic capability to match foreign innovations, low rates of local procurement, and unsatisfactory levels of technological transfer are all closely related to the clustered development of foreign-funded enterprises. The growth and structural upgrading of “Made in China” are more often than not composed of expansion and restructuring of the foreign-funded enterprises in China, and the continuation and extension of the domestic industrial chain of the processing trade are more often than not the result of follow-up investment by foreign-funded enterprises in the respective upstream and downstream enterprises. Compared with foreign-funded enterprises’ own booming development in China, they have only very limited positive spillover effects and are a relatively small driving force for the native economy and native enterprises.



The dominant position of foreign-funded enterprises in “Made in China” has enabled people to see China’s economic prosperity and swelling exports, but has covered up the fact that China is still in a disadvantageous position in this new international division of labour and concealed the risks posed by this “enclave economy” of foreign-funded enterprises. More importantly, in the international transfer of the labour-intensive or capital- and technology-intensive links in the industrial chain, most multinationals deem China the best destination for deployment of labour-intensive links. The dominant position of foreign-funded enterprises in many of China’s industries and their role in defining mainland China may keep “Made in China” fastened onto the chain at a level of low added value for so long that independent upgrading may be hard to attain.

In the early days of reform and opening, China seized hold of the historical opportunity for international industrial transfer and unveiled a plan for high-speed economic growth. To accommodate this transfer is a wise choice that China made after sizing up the situation, and the country’s emergence into the global value chain has made tremendous contributions to the Chinese economy. However, a series of factors has caused Chinese native enterprises to fail to really integrate into the global value chain and to remain on its perimeter. With the gradual weakening of China’s traditional advantages, the pressure for industrial upgrading has gradually increased, and the negative effects of localization are getting more and more conspicuous. Therefore, in order to upgrade, the Chinese manufacturing industry needs to solve the important issue of how to motivate more native enterprises to develop processing trades and integrate with the global value chain for gradual expansion.

4.1.3 Resource Availability and Environmental Concerns are Becoming More of a Constraint

With China’s rapid economic growth, especially the accelerated development of heavy and chemical industries, resources are becoming a greater and greater constraint on China’s economic development. China’s farmland per capita is less than 40 per cent of the world average. By 2006 one-tenth of the country’s farmland had suffered industrial pollution, 37 per cent of the territory had experienced soil erosion and land resources had further intensified as a constraint on industrial development. China lacks adequate water resources, which are distributed unevenly across regions, and the deficiency worsens each year. The disparity between supply and demand is especially striking in the north and in the coastal cities. Meanwhile, the discharge of liquid waste and pollutants and the unplanned and excessive exploitation of water resources have caused the pollution of water bodies, further exacerbating the deficiency of water resources.

Because of rapid economic development and the international transfer of a large number of manufacturing industry chains, China has become one of the world’s largest consumers of energy sources and mineral resources. The country’s reliance on imports of these resources has skyrocketed in recent years. China’s possession of major mineral resources on a per capita basis is less than 50 per cent of the world average, and that of such important mineral resources as iron ores, copper and aluminum is 42, 18 and 7.3 per cent, respectively, of the world average. In 2002 China could meet only 69, 57.6 and 56 per cent, respectively, of the domestic demand for iron ores, copper and aluminum. For decades to come, it will remain difficult to meet the domestic demand for minerals, including iron, manganese, chromium, bauxite, copper, gold, silver and sulphur (DRCNet, 2006). The International Energy Agency predicted in 2004 that given China’s current energy consumption, the country’s reliance on imported oil would rise to 74 per cent by the year 2030. Since oil imports mainly rely on maritime transport and the route used for such transport is fixed, the stable supply and security of energy is becoming an increasing concern.

China has paid a very high environmental price for its industrial development. In 2003, 90 per cent of the rivers flowing through cities were seriously polluted, 75 per cent of the lakes were eutrophic, nearly 300 million rural residents drank substandard water, one-third of the urban population lived in seriously polluted air, acid rain




affected one-third of the country, one-half of urban wastes received no treatment and the disposal rate for industrial hazards reached only 32 per cent (Zhao, 2004). The worsening environment caused by pollution is demonstrated not only in the increase of the total amount of pollutants discharged and the expansion of ecological damage but also in the overall functional downgrading of various ecological systems. Moreover, in certain regions and valleys, especially in developed coastal areas, interaction of the pollution of the atmosphere, water bodies and soil has already occurred (CASS, 2007, p. 133). Serious environmental problems have become an important factor that restrains China's healthy economic and social development.

Although the consumption of resources is increasing rapidly and the gap between resource supply and demand is broadening, China has a very low resource utilization rate compared with other countries, which is the root cause of its problems concerning resources and the environment. According to reports, for every US\$1 increase in GDP, China consumes three times as much energy as the world average for the same increase, 4.7 times as much as the United States, 7.7 times as much as Germany and 11.5 times as much as Japan. The Chinese output efficiency of every ton of standard coal is equal to only 10.3 per cent of that of Japan, 16.8 per cent of that of the European Union and 28.6 per cent of that of the United States; the output efficiency of every cubic metre of water is equal to only 2.2 per cent of that of Britain, 3.6 per cent of that of Japan and 3.9 per cent of that of Germany (CASS, 2005, p. 66). At present, China's energy utilization efficiency is about 30 per cent, nearly 10 percentage points lower than that of developed countries. The unit product energy consumption—that is, the energy required to produce one unit of GDP—of China's major energy-using products is 25 to 90 per cent higher than that of developed countries, and the weighted average is about 40 per cent higher (Wang and Yang, 2004). The low resource-utilization rate is a typical characteristic of China's extensive growth, which features "high investment, high consumption and high discharge."

The first reason for the relatively low resource-utilization rate is the relative backwardness of the technological level of the manufacturing industry. Therefore, the key to improving resource utilization lies in the progress of industrial technology. In this sense, the constraints posed by resources and the environment are important motivators for industrial upgrading. As a country in transition, China can attribute the protracted existence of its problems with resources and the environment to another, even more important factor: institutional deficiencies in the use of resources and protection of the environment, which are in urgent need of correction and improvement. The high externalization of the cost of resources and environmental damage is the institutional cause for China's problems in these areas. Since the beginning of the new century, China has entered a stage of accelerated development of heavy-chemical industries. Meanwhile, the transfer of the global manufacturing industry into China continues. China will provide global consumers with more high-quality, competitively priced products. This development momentum of "Made in China" will undoubtedly further increase China's consumption of resources. Past practices indicate that the large-scale and low-efficiency use of resources, which characterizes extensive growth, has exceeded the carrying capacity of China's resources and environment, and it will be hard for China to continue on this path. Therefore, how to speed up technological innovation and institutional change to form a long-term mechanism that saves resources and is environmentally friendly is a crucial issue that China needs to solve for the upgrading of its manufacturing industry.

4.1.4 Technological Innovation, Though Impressive to Date, Must Accelerate

Technological innovation is the central component of China's industrial upgrading and the ultimate way to build up new competitive advantage and overcome the bottleneck posed by resources and the environment. Since the onset of reform and opening, through international competition and cooperation China has witnessed remarkable enhancement of its capability for technical innovations in its industries and great progress in technology. But as a whole, subject to the common restraints of macro and micro factors, China still falls far behind developed and rising industrialized countries and regions in terms of the technical



innovations of its manufacturing industry, with a shortage of core technologies for various industries, especially those that are capital and technology intensive. The large amount of technical equipment needed for industrial production, especially of high-end products, relies mainly on imports. The emphasis placed on imports rather than on integration and absorption of technologies still plagues the upgrading progress of many industries; the status quo in technical innovation is obviously insufficient.

At the macro level, the insufficient state investment in R&D resources and the low efficiency of resource allocation are the crucial problems that constrain China's technical innovation. Since the 1990s, with the rapid development of the Chinese economy, the proportion of R&D spending to GDP has increased continuously, reaching 1.49 per cent in 2007. This is up from 0.71 per cent in 1990, though it is noticeably lower than that of the developed countries in Europe and North America as well as the rising industrialized countries such as South Korea. This low R&D intensity is more prominent in China's manufacturing industries, especially in high-tech industries (Table 4.1). Accompanying the insufficient investment in research and development is the low efficiency of resource allocation. The deficiencies in state innovation mechanisms and systems have clamped down on the growth of returns on R&D investment.

Table 4.1: R&D intensity of manufacturing and high-tech industries, various countries and years. R&D intensity is the ratio between R&D expenditures and the added value of the industry.

	China (2005)	USA (2003)	Japan (2003)	Germany (2002)	France (2002)	Britain (2003)	Italy (2002)	South Korea (2003)
Manufacturing	3.2	8.5	10.1	7.7	7.4	7.2	2.3	7.5
High-tech	5.6	29.0	25.7	24.2	28.6	27.6	11.0	18.2

Source of data: Statistics of China's High-Tech Industries, www.sts.org.cn.

Governments at all levels have yet to straighten out the relationship between economic growth and scientific and technological development, lack systematic research on and unified planning of the policies supportive of industrial innovations, and have a long way to go before they can provide decent services for industrial innovation. Interdepartmental discordance and low efficiency of utilization of government funds have led to serious repetition and waste. Additionally, the separation of scientific research from production that came into being under the planned economy has not yet been eradicated, so enterprises have not yet established independent positions in technical innovation and a road has not been created for industrialization of the fruits of scientific research. According to one study (DRCNet, 2007b), enterprises find themselves in a secondary position in the current combination of "production, learning and research." State R&D funds focus on supporting institutions of higher learning and scientific research, which generally suffer from insufficient innovative capability and unresponsive innovation mechanisms that are hard to correct in the short term. As a result, these institutions' R&D results often lack marketability and are hard to translate into products. Furthermore, both productive enterprises and commercially oriented scientific research institutes are focused on economic benefits and do not attach enough weight to the crucial, forward-looking technological research that would promote national competitive power and the long-term interests of enterprises. In addition, teaching in higher education institutions is getting more and more out of step with industries' development needs. While a large number of university graduates face difficulty finding jobs, there is a shortage of both the high-tech R&D personnel and mechanics essential for industrial development.

At the micro level, the core problems that curb technical innovation are the insufficient motivation and capability of Chinese enterprises for technical innovation.



Despite the advantageous resources they own for technical innovations, state-owned enterprises have a serious shortage of motivation for innovation. According to 2005 statistics from the State Statistics Bureau, the R&D investment of the 500 largest enterprise groups ranked in terms of sales income, most of which are state owned or state controlled, accounted for only 0.78 per cent of sales income, a proportion that has been dropping over the past four years. Also in 2005, the R&D investments of central enterprises accounted for around 1.5 per cent of sales income (2 per cent for industrial enterprises), far below the international level (Chinese Entrepreneur Survey System, 2006). The research carried out by the Development Research Centre of the State Council (DRCNet, 2007a) shows that state-owned enterprises do not rank as highly as their non-state-owned counterparts in enthusiasm for and levels of investment in research and development, developing new products and introducing them into the market, and they still have some serious problems, such as facile work and formalism. They participate in innovative activities for prize evaluation, not for market rewards. Additionally, the talent mechanism and scientific research programs in state-owned enterprises still bear evident traces of the planned economy, and they have wasted substantial resources that could have been used for independent innovations.

The private economy provides the fresh blood for technical innovation in Chinese industry, but these companies' innovative activities have run into one restraint after another. The first of these is scale and strength; most private enterprises are not that aware of independent innovations. The majority of China's private economy belongs to small and medium-sized enterprises, which struggle for survival on the fringe of the market, sandwiched between large state-owned or foreign-funded enterprises, leaving basically no time for considering technical progress and innovation. On the global value chain, most private enterprises are located at the labour-intensive, low-end links, where competition within the industry is fierce and profits are marginal, so that they can barely survive, let alone dare to cherish the wild wish for technical innovation.

The shortage of talent and funds has also seriously hindered the innovative activities of private enterprises, especially private technology enterprises. In Jiangsu Province, 72 per cent of private technology enterprises lack senior technical staff, and 35 per cent lack senior technical workers (Jiangsu Provincial Federation of Industry & Commerce, 2007, p. 147). A large gap in needed funding and difficulty obtaining financing are a common sight in private economy. Restricted by funds, China's private technology enterprises have seen a year-over-year decline in the proportion of their funds dedicated to research and development, which was 11.5 per cent in 1993, dropped to 2.77 per cent in 2000 and rebounded to 3.63 per cent in 2005 (Investigation and Research Group of All-China Federation of Industry & Commerce, 2007, p. 11).

Finally, less-than-satisfactory effects of policies and a non-standardized market environment have also fettered the independent innovative activities of enterprises. Long-established mindsets, modes of action, and even rules and regulations that value state-owned enterprises to the neglect of the private economy have maintained considerable inertia in many fields, weakening the effects of government policies that encourage technical innovation. In the meantime, the lack of standardization in market competition has interrupted the technical progress of the entire industry, and inadequate intellectual property rights protection has dealt a heavy blow to enterprises' enthusiasm for technical innovation.

In short, lack of motivation and capability, insufficient investment and low efficiency in technical innovations are all problems that have haunted China's economic transformation and industrialization process for a long time. They are fundamentally subject to the stages of China's economic growth and the processes of its system changes. A look at this process reveals that the above problems are developing in a direction that gives cause for optimism. How to speed up such development through changes in the decision making, management and enterprise systems is the core issue for us to boost the upgrading of the Chinese manufacturing industry.



4.2 The Risks of the Status Quo and the Case for Reform

Investigations into “Made in China” have revealed the links between industrial chains and the upgrading of products within an industry. Some industries and enterprises have completed the successful transition from original equipment manufacturing to original design manufacturing and even original brand manufacturing on the same industrial chain. But it will be some time before development can lead China’s industry toward occupying the strategic links and role change can be accomplished. The development of “Made in China” has once again brought to light the strategic significance for backward countries of merging into the global industrial chains in order to accelerate the development of their manufacturing industries. Thanks to upgrading and development on the global value chain, “Made in China” has built up one after another industrial cluster having global competitive force. These clusters cover a wide spectrum of fields, from garments, toys, home appliances, automobiles, steel, petrochemical engineering and pharmaceuticals to information technology. “Made in China” has also fostered large enterprise groups that have a strong international competitive force. Their results of upgrading on the global value chain give cause for upbeat expectations for the sustainable development of “Made in China.”

Three factors are playing a prominent role in the upgrading of “Made in China.” Unlike other rising industrialized countries or regions in East Asia, China boasts a huge domestic market for its industrial development, so that inherent factors such as the upgrading of the domestic consumer structure are the primary impetus for industrial upgrading. More importantly, the huge domestic market can also provide sufficient room for industrial growth. Many national industries and domestically or foreign-funded enterprises have gone through the development journey of leveraging the domestic, low-end market for development and expansion first before competing with multinationals for the high-end market.

Unlike other industrialized countries whose growth preceded China’s, China has developed its industries, especially the heavy and chemical industries, against the background of globalization. The global industrial chain has provided Chinese industry with a new upgrading route, and the desire to merge into the global chains for competition and collaboration is an important impetus for industrial upgrading. Therefore, China’s industrialization displays marked characteristics of the synergy of internal and external markets and the common progress of heavy and chemical industries and technology-intensive industries, such as the electronic information industry. Meanwhile, the government plays an important role in industrial upgrading. To spur the upgrading with sustainable development, the central government and local governments at all levels have implemented a series of policy adjustments, including labour, environmental, trade, taxation and industrial policies. Practices show that these policy adjustments have strongly boosted the structural upgrading process in the Chinese manufacturing industry.

“There’s no such thing as a free lunch.” The emergence into the global value chain for survival and development has also forced China to pay a non-negligible price. The first part of this price is the environmental damage brought by international industrial transfer. According to the findings of China’s third national industrial survey, among all foreign-invested industrial enterprises, foreign-invested enterprises in pollution-intensive industries and sectors (industries that will create large quantities of untreated pollutants directly or indirectly in the course of production) account for around 40 per cent of total recorded measures of pollution. It is an established fact that foreign-invested enterprises have transferred polluting industries to China. In essence, on the global value chain, the sections with the most intensive consumption of labour, land, raw materials, energy, and resources are all concentrated on the links of processing and manufacturing. The process whereby multinationals have continually transferred the manufacturing links of the global value chain to China through direct investment and production outsourcing is, therefore, also the process of accelerated consumption of energy and resources and damage to the environment in China. The more “Made in China” processes and manufactures for the rest



of the world, and the more resources China exports in the form of commodities, the heavier will be the environmental load China bears and the cost in resources and environmental damage it pays.

The second part of the price China is paying for its emergence in the global market comes from the economic frictions that arise from its acceptance of the international industrial transfer. According to WTO statistics, from 1995, when the WTO was established, through the first half of 2007, China was involved in 551 antidumping cases, ranking first among all WTO members and accounting for 17.79 per cent of all antidumping cases in the world. China has outstripped any other country in terms of the high frequency and intensity of the antidumping frictions its products have suffered on the world market. Furthermore, Chinese products also face threats from antisubsidy and safeguard measures on the world market, limitations from countless technological trade barriers, and intellectual property rights accusations. The yuan is also under heavy pressure to appreciate. These international economic and trade frictions, which are becoming increasingly fierce, are an objective reflection of the dizzying growth of Chinese exports on the world market. But they are the necessary outcome of the continuous transfer of international industrial chains to China. As global multinationals vie with each other to transfer the links of processing and manufacturing to mainland China, and as the products processed and manufactured in mainland China are sold back to European and American markets, the surplus of Chinese trade with Europe and America has kept increasing. Therefore, the more industrial chains are transferred, the greater the benefits received by European and American consumers, the more handsome the profits gained by the multinationals, the more fierce the trade frictions confronting China and the more prominent the negative impact to the domestic economy caused by the excessive growth of foreign exchange reserves.

The third factor is the imbalance of the proceeds from the division of labour on the global value chain. On the global value chain, which is driven by multinationals, developed countries focus on research and development and sales links with high added value, and they place the production and processing links, with their high consumption of materials and energy, in developing countries. Through the innovations in industrial technology and system changes initiated by developed countries, the share of total added value attributed to the processing and manufacturing links of the value chain has fallen continuously. Meanwhile, cutthroat competition among developing countries for the low-end links has aggravated the fall in added value on the processing and manufacturing chains. Therefore, as a developing country that is the largest undertaker of the chain of the global manufacturing industry, China takes on the risks of an internal and external economic imbalance, with the price of high energy consumption and pollution and under the heavy pressure of unfair trade, but also has to face the reality of reduced proceeds from the division of labour on the global value chain and the shrinking profits. Although the so-called sweatshop and crisis of confidence of "Made in China" are admittedly the necessary outcome of manufacturers' greed, they are signs that the profit space of the processing and manufacturing links on the global value chain has been squeezed so hard by the multinationals as to be unbearable (Stern, 2007).

"Made in China" is in urgent need of changing its low-added-value position on global value chains and upgrading toward the upstream and downstream industrial elements of these chains. The rising costs of production and operations, and the worsening problems surrounding resources and the environment, have added to the necessity and urgency for "Made in China" to realize "clean" upgrading. In its development of the past 30 years, "Made in China" has increased the benefits available to global consumers through lower prices and greater choice, brought high returns to global investors, and set up a model for developing countries by way of its development on the global value chain. In the future, it will be the clean development of "Made in China" that provides the global market with finished products as well as having irreplaceable significance for global economic and social development.



5.0 Systems of Upgrading: The Experience of Other Countries

The purpose of this section is to examine whether any lessons from international experience are applicable to the potential upgrading of Chinese industry. Different countries face different circumstances, not the least of which is the historical trajectory of a nation's development path, so we must take care in seeing lessons for China in another country's experience. Moreover, corporate managers as well as state measures have a bearing on the pace of upgrading by a firm or industry. Indeed, it is an interesting question whether private sector incentives and market forces provide more of a jolt for upgrading than do state measures. Of course, there is also the question of which state measures and which form of private incentives matter, and under what circumstances.

Broadly speaking, there are two distinct perspectives on the factors that can advance upgrading by firms over time. In what follows, we present the central principles of both perspectives even though ultimately, given the other stated goals of China's government and, in particular, their manifestation in employee-employer relations, the second perspective may well be more attractive to a Chinese policy-making audience. Still, the contrast between perspectives may clarify a difference from what might be characterized as the traditional Anglo-Saxon approach.

The dynamics of international competition in industrialized economies, with their emphasis on innovation and upgrading, have been thoroughly studied by professor Michael Porter in his 1990 study, *The Competitive Advantage of Nations*.¹³ Central to this perspective is the dual role that companies and the national business environment play in determining the capacity of a nation's firms to compete on international markets, upgrade and innovate. On the balance between the firm and the national level, Porter argues: "Competitive advantage ultimately results from an effective combination of national circumstances and company strategy. Conditions in a nation may create an environment in which firms can attain international competitive advantage, but it is up to a company to seize the opportunity" (Porter, 1990, p. 5). This statement suggests that while there may be much that the Chinese government can do to promote upgrading through improvements in the national business environment, such measures are no guarantee of success. It is the fusion of the right policies and the right entrepreneurship that matters.

Also at the core of Porter's perspective is the importance of competition among firms. He argues that an important prerequisite for international commercial success is stringent competition in domestic markets from other viable domestic rivals. Such competition provides the incentives to upgrade and exposes firms to stimuli that are conducive to innovation, such as very demanding customers and suppliers interested in upgrading their product mix too. Incentives from competition are sharper, however, when there is a discernible price of failure, including the possible bankruptcy of a firm and the laying off of staff. Consequently, Porter takes a very dim view of measures to protect domestic firms from national and international rivals. In the Chinese context, then, this perspective would call for the adoption and implementation of a national competition policy that kept barriers against foreign imports low, did not seek to limit or condition foreign direct investment and tackled state and private sector anticompetitive practices.

But promoting competition is not enough. In Porter's view governments should take steps to develop the following four elements of the national business environment, which he has labelled the "diamond":

1. Access to resources (human and otherwise) that is not unduly expensive. This includes sufficiently

¹³ A succinct and useful summary of this perspective can be found in Porter (1990).



high-quality and specialized inputs. The national transportation and communication infrastructure must be in place to deliver such resources.

2. Encouragement of the use of meritocratic incentive systems that, along with competition and access to finance, stimulate and facilitate investments and R&D activities.
3. Nurturing of sophisticated and picky national segments of demand; these customers push domestic firms to improve their product and service offerings. Such demand segments can be created and influenced by government regulation, including regulation covering environmental matters.
4. Encouragement of the development and co-location of innovative and competitive firms all along the supply chain, thereby promoting the development of specialized pools of talent and suppliers and the co-invention of products, processes and services by buyers and their suppliers.

In Porter's schema, while the elements of the diamond may differ in their importance across sectors of the Chinese economy, the four components feed off one another, so any deficiencies in one element constrain the overall performance of firms and the national economic system. From this perspective, then, government must seek to improve all the relevant elements of the diamond at the same time, and not tackle them sequentially. Policy prioritization does not follow naturally from this particular framework, though it might be possible to identify a number of sectors, and elements of the Chinese business environment central to those sectors' performance, that could be the target of government policy making at first.

With respect to "clean upgrading," over the years Porter has argued that improved environmental regulations and their enforcement as an opportunity for business rather than a constraint. Porter has argued that regulatory upgrading may provide a strong spur for the innovative activities of firms, and so long as the regulatory environment remains predictable and is applied even-handedly, it can provide plenty of profit opportunities for firms that most quickly adapt to the new circumstances. These profit opportunities are in addition to any other corporate payoff from being seen to have more environmentally friendly activities. "Clean upgrading," then, from this perspective is not an oxymoron.


While Porter's schema holds a number of prescriptive lessons for policy making, a large number of analysts do not feel that it adequately captures the manner in which innovation and upgrading take place in many industrialized economies, in particular those economies not associated with the Anglo-Saxon tradition. Consequently, in recent years a group of analysts have emphasized that there are a variety of capitalisms whose operation may differ in subtle and important ways.¹⁴

While some of these analysts are no doubt motivated by a desire to argue that one form of capitalism is better than another, for our purposes it may be useful to consider alternative formulations of policies and circumstances that promote the upgrading of firms.¹⁵

In particular, this perspective distinguishes between what are termed the liberal market economies

14 The canonical reference in this literature is Hall and Soskice (2001), *Varieties of Capitalism*. This volume contains a number of chapters that highlight the different ways in which certain managerial challenges are addressed in different types of capitalist systems. As noted in the main text, some read these chapters as describing "what is" and some as "what should be," which can be two very different matters. Peter Hall has recently discussed the evolution of the types of capitalism in Europe in Hall (2007).

15 Ritchie (2007) provides a particularly useful overview of the different forms of capitalism in East Asia and compares them to European variants of the coordinated market economies. Table 1 of that paper is particularly instructive in comparing forms of capitalism. Ritchie argues that East Asian nations face difficulties in technological upgrading and that there are limits on the degree to which foreign institutions can be emulated. He highlights that particular forms of coordination between business and government are effective in facilitating transfer of improvements.



(LMEs) and the coordinated market economies (CMEs). The former economies are associated with the arm's-length transactions between parties and the apparently limited government intervention and business-government linkages of the Anglo-Saxon countries (the United States, the United Kingdom, Canada, Australia, Ireland and New Zealand.) The latter refer to those successful capitalist societies where business-government-union linkages tend to be stronger and where finance is allocated more through banks than through stock markets. Consequently, the latter refer to Japan, Korea and the continental European economies. Because competition and arm's-length transactions and financing are core to the characterization of LMEs, as they are in Porter's schema, we focus here on the CMEs.

An important feature of the CMEs is that objectives other than productivity and economic growth are privileged by national governments and the populations they represent. Stability, reducing and sharing the burdens of adjustment, limiting risk to employees and maintaining high levels of social cohesion and employment are also accepted as legitimate societal objectives. These objectives have been imposed on to the national economic systems of the CMEs, and managers and company owners have had to find ways to maximize profits under circumstances that some in Anglo-Saxon countries would find unnecessarily restrictive. The fact that the CMEs have produced internationally successful companies and that some CMEs (such as Germany, Japan and Korea) are export powerhouses and have maintained their primary position in a number of manufacturing industries suggests that the pursuit of non-growth objectives does not automatically result in economic underperformance.

The manner in which firms in CMEs innovate and upgrade has, unsurprisingly, received attention, not least because of the role that these activities play in long-term corporate performance (see Lazonick, 2007, for an overview of innovation in various CMEs, and Casper and Whitley, 2004, and Lane and Probert, 2004, for sectoral studies). Particular attention is given in what follows to three characteristics of CMEs: the long-term relationship between employers and employees brought about by legal restrictions on the former's treatment and termination of the latter, the nature and extent of vocational education, and the degree of acceptable interfirm cooperation. These characteristics depart sharply from what many see as desirable in the LMEs. It has been argued, however, that these characteristics promote a different form of innovation by firms. Rather than winner-takes-all leapfrog innovations, whereby a firm seeks to make obsolete the products of a rival firm, in CMEs innovation and upgrading are best managed on an incremental (and ideally continuous) basis. The effort and expertise necessary to engage in incremental innovations is easier to monitor and assess in longer-term employment contracts with product-development staff and their managers.

Moreover, a strategy of incremental innovation can be designed in such a way that the innovations rapidly accumulate over time, making it hard for rival firms to emulate or copy an entire path of product changes. Under these circumstances customers may be more reluctant to switch away from a firm's products when the prospect of more innovations is in sight. For policy-making purposes, perhaps the greatest significance of this perspective is that it suggests that governments do not have to abandon social and employment objectives when seeking to promote the upgrading of their country's firms. Whether this remains true of environmental objectives has yet to be demonstrated, but the notion of developing a long-term relationship between a firm and its local stakeholders on environmental matters does not seem immediately at odds with the thrust of the literature on CMEs. Another important implication of this approach is that not every good or service may lend itself to incremental upgrading and innovation, and therefore future Chinese manufacturing activities might have to be oriented toward those products and services that are.



6.0 Recommendations for Accelerating Upgrading in a Sustainable Trade Strategy

On the basis of the evidence on the factors influencing the upgrading of Chinese firms, and recognizing the other important objectives associated with a sustainable trade strategy, the recommendations developed below are based on the following four principles:

1. There is a profound need to accelerate the upgrading of Chinese industry.
2. The upgrading must be “clean” in environmental terms.
3. The upgrading must respect the employment imperatives of current Chinese policy, in particular in light of the need to find 10 to 15 million new jobs for people leaving school and university graduates.
4. Upgrading must be market driven, even if it is government influenced.


Therefore, the objective supported by our recommendations is not the promotion of upgrading per se, but rather upgrading that attains the social (labour-market related) and environmental goals of a sustainable trade strategy. This distinction is important, as it suggests that greater weight be put on one successful form of upgrading over another.

6.1 Fundamental Recommendation

While competitive pressures in response to domestic and international market stimuli have played an important part in inducing significant amounts of upgrading by Chinese manufacturing firms, questions arise as to whether this system is consistent with the other goals of a sustainable trade strategy. As we noted earlier, at present innovative firms in China place a low weight on product and process improvements that reduce environmental damage and improve resource use. Plus, much productivity growth at the industry level has been driven by the entry and exit of firms, which in turn results in dislocation for Chinese employees. The passage of a new Chinese labour law in late 2007 signals a desire to reduce the amount of uncertainty faced by workers and to share the benefits of economic progress more widely. In recent months, many have argued that reducing the various forms of uncertainty faced by Chinese workers and families would have macroeconomic payoffs, as savings could fall and consumption increase, remedying some of the demand reduction induced by falling exports.

The policy challenge, then, is whether upgrading can be accomplished without the downsides of labour market dislocation and with a greater premium on environmental improvements. Here the discussion about the varieties of capitalism is particularly important, as it suggests a mechanism through which upgrading can be encouraged (through better performance in global markets) while limiting the degree of labour market disruption. The longer-term contractual relationships between German firms and their employees offer an interesting alternative to the Anglo-Saxon approach. Germany, still the world’s largest exporter, has managed to substantially upgrade its manufacturing products over the past decade and, in recent years, to expand employment considerably. These adjustments rest on a set of labour market and collaborative institutions that foster long-term planning and incremental innovation in particular.

Rather than seeing, for example, the inability to fire an employee as disadvantage, successful German managers see such employment laws as an opportunity to establish a long-term relationship with an



employee whereby both the firm and the employee both make repeated investments over time in improving skills and finding better ways of accomplishing goals with fewer resources. German firms also refrain from hiring (or “poaching,” as it is often called) employees from their rivals, and with seniority-based pay make clear to an employee that he or she will have a strong incentive to make the long-term relationship work too. Similar considerations apply in the relations between German firms and their suppliers—that is, long-term relationships supplant short-term contracting. While competition in the labour market is deliberately stifled under the German system of innovation, German firms still compete vigorously for customers in world markets. Successful product upgrading and innovation allow German firms to charge premium prices and ride out currency fluctuations and other volatility.

The institutional underpinnings of the German system of innovation extend beyond employment relations in ways that have direct relevance for government policy making. German governments work closely with their industries to develop and support apprenticeship systems through joint curriculum design, establishing technical skills and providing tax incentives to promote apprenticeships and on-the-job training. Fewer Germans go to college than in many Anglo-Saxon countries; they take apprenticeships instead. Another significant institutional underpinning is that many German firms and their financiers, typically banks, do not face pressure from shareholders to maximize profits on a quarterly basis. This enables such companies to take a longer-term view of their priorities.

A nation’s system of corporate governance has important implications for the incentives supplied to managers, including incentives to upgrade and innovate. Should the Chinese authorities decide, therefore, to move toward a more German system of upgrading, it would have implications for Chinese policies toward corporate governance and stock-market development—as well as for the educational system and national labour market, emphasizing how far-reaching any decision to adopt any particular system of upgrading will be.

German firms also face stringent environmental regulation. It has long been recognized that such regulation can act as a spur for innovation and for overseas competitiveness rather than a cost burden. There may be a case for progressive increase in the stringency of environmental regulations, allowing firms to adjust—not least in their innovation strategies. In sum, then, the German model of corporate governance, labour market conventions, and environmental protection offers much of the social stability and environmental improvement that Chinese officials may crave, without diminishing the strong incentives to upgrade products that access to global markets provides.

6.2 A Four-Point Reform Agenda to Promote Upgrading

This section adds further levels of specificity and describes several of the specific steps that the Chinese authorities might consider in their strategy toward upgrading of Chinese firms. These steps complement others suggested in this project, such as developing a high-quality service sector.

6.2.1 Go “All-Out” to Promote Technical Innovation

Making full use of domestic and foreign resources to speed up technical innovations and progress in opening will be the core content of a strategy for upgrading “Made in China” on the global value chain. As a newly developing country, China ultimately needs to rely heavily on external forces for its technical innovations and progress. Exogenous technical progress realized through foreign trade and direct investment is still an important route for the technical progress of China. China is a large, rising country and faces increasingly more austere intellectual property right constraints on technology imports. Thus, to accelerate its industrial upgrading, China must inevitably choose an independent innovation strategy



and encourage enterprises to do the same.

The technical progress of Chinese industry requires a combination of technology imports and independent innovations, as well as a combination of external resources and fostering of internal resources to eventually overcome reliance on technology imports. Enterprises play a leading role in technical progress and innovations, while the government is an auxiliary force. As a developing country in transition, China especially needs the government to use institutional innovations and policy measures to create an environment of fair competition and build up the leading role of enterprises in technical innovation.

The focus of current and future policy for promoting technical innovations should be the following:

- Continue to vigorously promote R&D investment by multinationals, encourage multinationals to launch higher-level R&D initiatives in China, strengthen and diversify exchanges and cooperation between multinationals and native enterprises, scientific research institutes and institutions of higher learning, and take a variety of policy steps to enhance technology spillover from the R&D initiatives of multinationals.
- Expedite the reform of state-owned enterprises and impel state-owned and private enterprises to establish and improve modern corporate governance structures and form a long-term mechanism conducive to independent innovations. Create effective incentives and supervisory measures to step up the integration and absorption of imported technology by Chinese firms.
- Smash monopoly power, eliminate and avoid restrictive and discriminatory policies for the industrial development and technical innovation of native enterprises, especially private enterprises, and encourage and strengthen fair competition between all types of commercial enterprise.
- Strengthen intellectual property rights protection, raise awareness of the Chinese population for intellectual property rights protection and create an institutional environment that stimulates technical innovation and cracks down on cutthroat competition.¹⁶
- Further financing for the innovative activities of enterprises, especially small and medium-sized enterprises, by providing monetary support that is timely, sufficient and commensurate with these enterprises' risks and earnings.
- Step up personnel training in a big way. Further promote the reform of the university education system and the establishment and development of the vocational education and training system, and ensure that teaching supply matches market demand. Encourage the return of senior overseas professionals and provide students returning home to start businesses with preferential and more convenient policies and environmental conditions.
- Enhance the efficiency of the state innovation system; tighten the interaction between the production, education and research aspects of innovation; and promote personnel flow. Under the precondition of meeting international practices, provide government support of independent research and development at the links of taxation and finance by increasing R&D investment, setting up a public R&D platform and providing sufficient basic conditions for the advancement of science and technology.

¹⁶ This will have the additional payoff of protecting those Chinese brands that do develop at home. Organic domestic brand development is a prerequisite for development of international brands, which would allow Chinese firms to command higher prices in international markets for their goods and services.



6.2.2 Promote “Clean” Industrial Upgrading

A dialectic relationship exists between resources and the environment and industrial upgrading, with the latter being an important route of breaking the bottleneck caused by the former. The progression from low-added-value links to high-added-value links on the global value chain can effectively lower the consumption of materials and energy and enhance the benefits of industrial growth, but the supply of environmental resources is a precondition for industrial upgrading. The sufficient supply of resources and environmental protection has opened up a vast space for the expansion of the heavy and chemical industries. International experience proves that the two are part of a mutual, virtuous cycle. For “Made in China’s” accelerated development of heavy and chemical industries, there is a need to break the current bottleneck of resources and environmental protection through institutional and technical innovations that achieve clean industrial upgrading. This can be accomplished through the following measures:

- Further lift the environmental standards for industrial development. There should be uniform environmental standards for industries of different densities and compositions to prevent new pollution as these industries develop. This is especially true for the heavy and chemical industries and rising high-tech industries.
- Continue to attract foreign investment. This is an important way for China to acquire additional components of the international industrial chain and promote industrial upgrading. China has restricted the importation of resource-based industries with high costs, high pollution and high energy consumption. Moreover, given the transfer of industrial chains from coastal areas to the hinterland, China must strictly control the relocation of such industries to the hinterland for development. Meanwhile, China should prudently scrutinize the catalogue of industries it wishes to invite for investment and give preference to the expansion of technology-intensive industries.
- Attach full importance to technical progress and innovation in clean upgrading. As a newly industrializing country, China has the advantage of being able to use advanced, applicable technology to achieve energy savings and environmental protection. The country must give a strong push to the import of such technologies and promote independent innovations in the same vein, reinforce the popularization and application of these technologies, include energy savings and environmental protection in the important development objectives for industrial upgrading and the measurement indicators for technical progress, and use technologies for energy savings and environmental protection to transform traditional industries and develop rising industries.
- Establish and improve a long-term mechanism for energy savings, emission reductions and environmental protection through institutional innovation and reform. China cannot rely purely on administrative measures to promote energy savings and environmental protection. Instead, the country should leverage continuous institutional reform and policy design to spur energy savings and environmental protection through the integrated utilization of market mechanisms, economic policies and effective supervisory mechanisms.
- Adjust the demand structure to inhibit resource waste and environmental pollution. For a long time China’s policies for energy savings and environmental protection have mainly applied to producers, while a mechanism to reward or punish consumers is absent, impairing the effect of these policies. Therefore, China should take all policy measures, especially taxation measures, to encourage technical innovation and applications for energy saving and environmental protection and stimulate the purchase and use of products that promote these goals, so as to gradually promote an energy efficient and environmentally friendly lifestyle.




6.2.3 Actively Promote the Localization of the Processing Trade

Against the background of globalization, the increasing transfer and outsourcing carried out by multinationals has led to China holding a rising proportion of the international processing trade. The results of current practices have borne out that developing the processing trade is a shortcut for Chinese industries to merge into the global value chain and realize industrial upgrading. Because of the holistic transplantation of external industrial chains and inherited economic structures, the benefits to development and industrial upgrading derived from China's processing trade are low. Therefore, it makes sense to take the following measures to boost the localization of the processing trade:

- Encourage localities to pay attention to the job. Causing the processing trade to “settle down” has always been an important goal for China. For a long time, however, localities have focused more on the quantitative growth of investment and neglected of the problems related to the localization of the processing trade. To solve these problems, localities should regard localization of the processing trade as an important aspect of local economic development and list it as an important indicator for measuring local development.
- Encourage private enterprises to pursue the processing trade. The localization of the processing trade relies mainly on the expansion of private enterprises. China needs to clear up the restrictive and discriminative policies that target the private economy and to provide active guidance and support for private enterprises in the areas of business start-up, financing, technical progress, personnel flow and matching buyers and sellers. This should all be done with the preconditions of meeting international standards, helping the private economy form a rational corporate and industrial organizational structure, and creating a fair environment that facilitates the development of private enterprises.
- Encourage native enterprises to actively take on business outsourced by multinationals. Undertaking such business can enable enterprises to enter into direct business interactions with the leading manufacturers of the industrial chain, which will help native enterprises “learn by doing” and hasten the steps toward technical progress and industrial upgrading. Currently, China should give special encouragement and support to native enterprises that are technology oriented and have independent intellectual property rights so that they can take a direct part in the international division of labour for development of the processing trade. China should also encourage and support native enterprises in speeding up the digestion, absorption and secondary independent innovation of advanced foreign production technology and realizing the development of a processing trade with high added value.
- Improve the system of supportive services for the upgrading of the processing trade; provide enterprises with scientific and feasible informational, organizational and technical services; and improve, through taxation and other policies, the processing trade's alignment with its upgrading objectives and industrial policies.
- Strengthen personnel training to localize the staff of processing trade enterprises.

6.2.4 Steadily Promote Overseas Investment

Direct overseas investment has strategic significance for China's industrial upgrading. Overseas investment is an effective route whereby enterprises realize the following operational objectives: obtaining advanced technology and using advanced technological resources, dodging trade barriers, expanding overseas markets, transferring superfluous production capacity, improving the competitive edge, realizing the transfer from traditional industry to rising industry, acquiring overseas resources to



make up for deficiencies in domestic markets, approaching local markets, and building up international brands and marketing networks. It is therefore an integral part of China's industrial upgrading to steadily promote overseas investment and foster a large number of Chinese multinationals. In recent years China has entered a new phase of its investments overseas, which has begun to rapidly increase. The advantages and disadvantages of Chinese multinationals in overseas operations and development have also come out. This is why China needs to draw on the successful experience of rising countries, fostering native multinationals to steadily boost the development of overseas investment in combination with its own national economic circumstances.


Acknowledgement

The authors gratefully acknowledge the comments and suggestions of participants in workshops associated with the China Sustainable Trade Strategy project.



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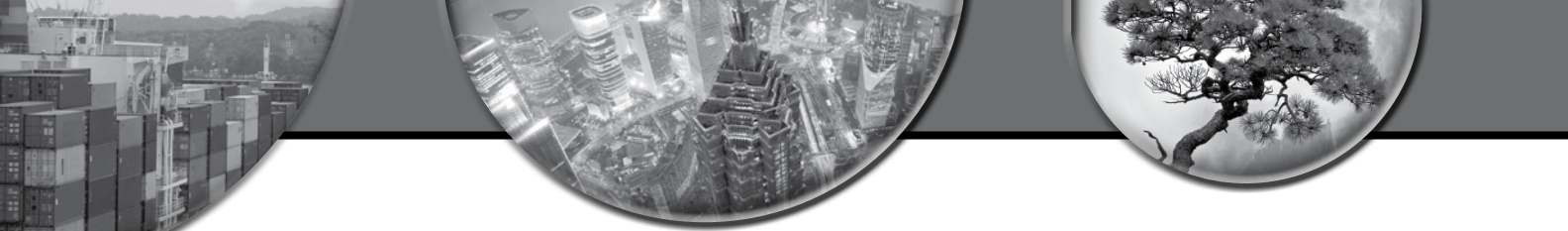
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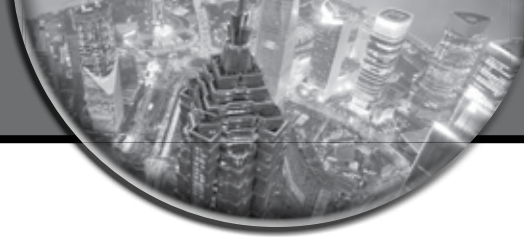
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6

The Growth of China's Services Sector and Associated Trade: Complementarities Between Structural Change and Sustainability

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1.0 Introduction

Although China's prowess in manufacturing and exporting goods is well-established, it is perhaps not so well-known that China's service sector has been growing even faster for the past 30 years. Moreover, while it may be the case that, for the moment, China's service sector accounts for a smaller share of national income than in many other developing countries, since the reform period began, that share has risen from one-quarter to two-fifths. This represents profound structural change in the Chinese economy and raises the question of what this sector can contribute to a sustainable trade strategy for China.

Given that this paper is part of a larger project that seeks to flesh out a so-called sustainable trade strategy for China, it is worth recalling what the five objectives of that strategy are:

1. Promote the rebalancing of the Chinese economy away from its currently unsustainable path.
2. Promote added value, not just sales, in economic activities.
3. Promote services, not just manufacturing.
4. Promote Chinese firms (including multinationals), brands and intellectual property rights. (Nationality matters.)
5. Support a harmonious, sustainable architecture for international trade.

In addition to these broader objectives, some have inquired as to what reforms would create jobs more quickly in the service sector and could narrow China's trade deficit in services.

Drawing on national and international experience, the goal of this paper is to shed light on what reform of the Chinese service sector might entail and whether the objectives of the sustainable trade strategy can be met. It would be difficult to overestimate the challenge for policy making here. Not only is the service sector very large, placing much at stake, but to the best of our knowledge, no major economy has ever put its service sector at the core of its development strategy, though certainly some service sectors, such as tourism and financial services, have been promoted. In contrast, the service sector has often been treated as a "residual." Worse, if the experience of many industrialized economies is anything to go by, government policies have done much to sacrifice productivity growth in favour of other national objectives, such as creating employment opportunities for the lower skilled. The lessons from international experience are by no means all positive, and China should not repeat the mistakes of others.

The rest of this paper is organized as follows: to set the discussion in its appropriate developmental context, Section 2 describes the various linkages between the service sector (or, to be precise, the different service sectors), the traditional structural and spatial transformation of economies, and international commerce. This discussion emphasizes the need for an economy-wide perspective on reform toward the service sector, rather than a sectoral perspective. Section 3 describes the current state of China's service sector, making specific reference to service sector performance and the various relevant laws and regulations that are in force. Three imperatives for and challenges facing the Chinese service sector are then described in the fourth section. Section 5 gives lessons from comparative analyses and international experience with reform and growth of the service sector and discusses the relevance of those lessons to China. Policy options for the Chinese government are discussed in Section 6.



2.0 The Service Sector, Economic Transformation and a Sustainable Trade Strategy

Perhaps it is best to start with the very notion of the service sector, or tertiary sector, as literature on China often calls it. Services are distinguished from other economic activities, specifically, agricultural production and resource extraction (together typically called the primary sector) and from the manufacture of goods and production of energy (typically referred to as the industrial or secondary sector). Services are often thought of as intangible or, as one observer put it, not something that will hurt you if drop it on your feet.

The attention given to the service sector arises because of its size, as measured by either employment or value added, compared to the primary and secondary sectors. As Francois and Hoekman (2009, p. 2) note in their recent survey article, “modern economies are increasingly dominated by services.” Indeed, economic development has typically been associated with structural transformations, and one of the most important manifestations of this has been the growing share of services in national economies. Initially, analysts debated whether this growth was due to demand-side phenomena, since the cost of food and essentials was thought to grow less slowly than income, allowing for greater funds to be spent on services, or supply-side factors, such as slower growth in labour productivity in the service sector relative to manufacturing and agriculture—so-called Baumol’s disease.

In recent years, however, our understanding of the contribution of the service sector to economic development has been refined. No longer are services implicitly or explicitly treated as being purchased by final consumers. Instead, consideration is given to the role of producer and business services as important determinants of the level of productivity in the secondary or manufacturing sector. Moreover, the factors determining the productivity and variety of services (so-called supply-side considerations) have received greater attention that also emphasizes, as we will argue below, degrees of specialization as well as spatial considerations. Indeed, while the service sector is viewed as part of the structural transformation of economies, that transformation is also taken to include spatial components (in particular the organization of economic activity in cities) as well as the organization of manufacturing processes. The purpose of this section is to sketch out a view of the importance of services to economic development, then describe the implications for international trade flows and the objectives of a sustainable trade strategy.

The service sector covers a wide range of economic activities. As Francois and Hoekman (2009, p. 3) argue:

Services are very heterogeneous, and span a wide range of economic activities. Conceptually, this diversity masks a fundamental function that many services perform in relation to overall economic growth and economic development: they are inputs into production. One dimension of this “input function” is that services facilitate transactions through space (transport, telecommunications) or time (financial services). Another dimension is that services are frequently direct inputs into economic activities, and thus determinants of the “fundamental” factors of production—labor and capital—that generate knowledge, goods, and other services. Education, R&D and health services are examples in the production of human capital.

This perspective leaves out those services that are bought by individuals and are not transformed before being “consumed.” Haircuts, watching a film at a cinema, housecleaning and cooking are examples of these types of services. Still, many services are inputs for other economic and non-economic processes, and this implies that the demand for services is not confined to demand from private consumers. Moreover, the determinants



of the service sector are not independent of developments in other sectors, especially the manufacturing sector. Knock-on effects are important. The sheer heterogeneity of services also makes generalizing about the service sector especially hazardous.


Perhaps it is the economic geography literature that has most emphasized the knock-on effects of developments in the services and manufacturing sectors (see Burgess and Venables (2004) for an accessible survey that examines the development dimension in some detail). Structural transformation, the generalized process through which economies reallocate labour to more and more productive uses, has tended to have both a spatial and organizational dimension.

The spatial dimension has involved the concentration of economic resources (labour, capital, and so on) and the creation of added value in cities. The organizational dimension reflects the tendency of firms to specialize only in those functions at which they are particularly effective and buy the remaining goods and services from other firms. Over time, then, firms specialize in different elements of the value chain. Moreover, as the quality and variety of available goods and services increases, so does the productivity of the purchaser, thereby linking the downstream firm's productivity to the performance of firms upstream.

Both the spatial and organizational dimensions of structural transformation interact in a way that is important for understanding the evolution of producer services. The vast literature on economic geography emphasizes the cumulative linkages between the manufacturing sector, producer services and the location of production. Expansion of the manufacturing sector in a given location will increase demand for business services, which in turn increases the incentive for entrepreneurs to set up specialized service sector firms in that location. To differentiate their services from others, new service sector firms try to find business services that give even more value to their buyers. This often requires hiring more specialized labour, which in turn increases the incentive for trained personnel to move to cities. The resulting pools of labour also attract firms, since managers know that there is enough talent to hire. Expansion in city size is therefore associated with more specialized manufacturing and service sector output and higher levels of productivity.

The proximity of specialized service sector suppliers, labour and purchasers also creates faster growth. Ideas and innovations dissipate faster when there are large pools of talent close to each other. Concentrations of economic activity stimulate competition among firms (both manufacturing and service) and talent, all of which spurs innovation. The growth dynamics associated with cities, however, are not all one-sided. Larger city sizes without commensurate investments in infrastructure lead to overcrowding, longer travel times, pollution and the like. No individual or firm takes into account the negative impact on others that their movement to a city generates, just like they don't take account of the positive impact. As a result, government has a role in encouraging service sector development through liberalizing unnecessary entry restrictions for such firms and their customers, as well as improving amenities—including environmental amenities—to optimize the benefits of proximity (or co-location). In short, many discussions of economic development and the environment point to the need to identify win-win solutions. Arguably the research on economic geography that emphasizes spatial and organizational transformation identifies an important win-win policy prescription: improving amenities and intra-city and suburban infrastructure so as to encourage greater concentrations of labour and higher levels of productivity and innovation. Later in this paper we return to the relevance of these observations for China.

From the perspective of social sustainability it is also worth recalling that some services used by individuals directly affect standards of living as well as having, in some cases, economic payoffs. Education, social services and health services are important examples. Here the challenge for policy makers in both developing and industrialized economies is to develop mechanisms that deliver high-quality services at the lowest possible cost, bearing in mind that the delivery of a service need not be undertaken by the party that finances the



service. (In other words, state funding with private delivery of services is an alternative to either purely private or purely state financing and provision.) To the extent that the variety and quality of health, education and other social services influences the location decisions of firms and employees, improving amenities and standards of living through better personal services may have economic payoffs by triggering the cumulative processes outlined earlier.

The relationship between service sector development and the trade balance is not straightforward. Some service sector firms sell to customers located abroad, and so directly contribute toward exports. Other service sector firms provide business services to domestic firms and foreign subsidiaries that are located within the same jurisdiction and that ultimately export. In this case, the service sector firms indirectly and positively contribute to the national trade balance. To the extent that foreign transportation and logistics firms are used to ship manufactured goods (including parts and components) out of a country, it is possible that an expansion in manufactured exports could be associated with a corresponding worsening in the trade deficit in services.

Furthermore, to the extent that a generalized expansion of the service sector occurs, it will increase the demand for labour generally within the economy (and probably in certain segments of the labour market), increasing wages and reducing the size of the other sectors of the economy. To the extent that exporting firms reduce their employment without an offsetting increase in productivity, total manufacturing exports are likely to fall and the trade balance in goods worsen. In turn this may reduce demand for producer services, which may induce the latter firms to seek foreign customers, with implications for the balance of trade in services.

Since the demand for many services arises from the manufacturing sector and since the service sector and manufacturing firms can find themselves competing for the same types of labour, it makes little sense to discuss the “service sector trade balance” and “services trade deficit” in isolation from developments in the manufacturing sector. Worse, attempts to correct one perceived problem in trade in services may actually do greater harm to the overall trade balance, once the impact on manufacturing is taken into account.¹

The relationship between the development of the service sector and the physical environment is also far from straightforward. As one recent survey put it:

The perception that the services economy has no significant impact on the environment is increasingly called into question as high income, service-based economies still account for most of the world’s natural resource consumption, polluting emissions and impacts on biodiversity. (Mayrand and Paquin, 2007, p. 1)

1 Large-scale expansion of China’s service sector will almost certainly require significant changes to the expenditure patterns of Chinese consumers and firms (the latter buying some services that consumers may buy, but also producer services). Without a shift in the share of expenditures that goes toward services, an expansion in the service sector’s total output can only occur if there is a generalized fall in the price of services. This consideration raises questions as to what could trigger such a fall in prices. A change in firms’ purchases of services may well follow from certain upgrading and innovation strategies that require the employment of specialists who are external to the firm. Presumably, changes in Chinese consumers’ spending on leisure (often very services-dominated), transportation and activities performed within the home (such as cleaning, cooking and washing) would be required, and this poses questions as to why such changes have not occurred to date. Expansion of the share of expenditures spent on services could come at the expense of the demand for manufactured goods and food, or with lower savings rates. If the former, the Chinese current account will not change, and there could be a reshuffling of the trade deficit and surplus between goods and services. If the latter, the Chinese current account surplus could be expected to diminish. Whether the trade deficit in services diminishes would probably depend on whether the service sectors that face greater domestic demand are internationally tradable and enjoy economies of scale in production, and therefore can supply overseas markets at lower cost. The knock-on effects for the Chinese current account of changes in national economic structure depend on a number of factors; once again, simple generalizations are unwise.



Every activity in an economy tends to involve both the purchases of goods and services produced somewhere else in the economy or abroad and the hiring of labour. Therefore, the expansion of any given activity will have direct and indirect implications on demand for a nation's resources. The indirect demands may be very resource intensive—and a threat to sustainability—even if the direct demands appear small. To use data (or worse, to make assumptions) about the latter to infer anything about the overall impact of an expansion of activities on national resources is risky. Input-output tables were designed precisely for this purpose, and it would be advisable to check whether any service sectors are particularly intensive in natural resource use. When one considers that there is likely to be variation across manufacturing and service sectors in the degree of natural resource use per unit of output, the proposition that expanding the latter sector at the expense of the former must reduce overall Chinese demands for resources is doubtful. Likewise, given that the expansion of an activity may generate waste and pollution directly and indirectly (indirectly through increasing the demand for other goods and services), it is possible that some service sector activities are not quite as “clean” as they initially appear.

Again, as this survey notes, the tendency has been to examine these matters on a sector-by-sector basis rather than take into account the many different ways in which services are used by private consumers, governments and firms. Moreover, the knock-on effects across sectors need to be considered. Improvements in the productivity of certain types of business services may result in increases in the productivity of a heavily pollution-intensive manufacturing sector and ultimately in greater environmental damage. This is not to imply that the productivity improvement is bad, rather that economy-wide evaluations are called for. Yet Mayrand and Paquin (2007, p. 2) also argued that our knowledge of “the service sector's environmental impacts remains incomplete and fragmentary at best.” This conclusion is not an excuse to stop thinking about environmental impacts. Rather, it is a warning that as far as economy-wide assessments are concerned, there is less to guide policy making than many might like.

Still, some sectors stand out in terms of their potential environmental impact, and it is not surprising that analysts and policy makers have wanted to understand the dynamics involved and policy options available. Certain transportation sectors, which link national as well as international markets, have long been a source of concern. Meanwhile, those promoting win-win-win solutions such as higher sectoral employment, higher sectoral exports and an improved physical environment have long focused on developing environmental services. Without denying that such solutions are possible—indeed, from an economy-wide point of view the spatial and organizational reorganization of economic activity emphasized by the economic geography perspective is perhaps the largest win-win-win alternative around—it is still important to evaluate any such claims at the national and sector levels.

The sustainability of the structural transformation of an economy over time has an international dimension, too. Some might rightfully question, for example, a country's commitment to environmental sustainability if its firms reorganize their corporate activities to move or outsource the “dirty” stages of production and processing to trading partners. In other words, it is difficult to reconcile the objective of promoting sustainable development with the cross-border displacement—rather than worldwide reduction—of environmental impacts such as pollution.

The purpose of this section has been to highlight the potential relationships between development of the service sector and the aspects of a Chinese sustainable trade strategy that are related to growth, employment and the environment. We argued that the development of China's service sector should be seen as part of the structural transformation of the Chinese economy, a transformation that goes well beyond the service sector and involves spatial and organizational reallocations of economic activity. This approach sheds light on the many different contributions of services to economic development—and highlights the need for a cross-sectoral evaluation of any policy that seeks to promote a service sector or services in general. On a positive

note, we described the potential win-win-win outcome in the development of liveable, productive cities with high-end services, which is implied in the economic geography literature.

We also showed the linkages between service sector development and China's trade balance. Of course, one can question why the trade balance is a legitimate indicator of national economic well-being. Here, however, we pointed out that improving the service sector trade balance might come at the expense of worsening the trade balance in goods. With respect to the impact of Chinese service sector development and environmental degradation, the fact that so many services are inputs to the production of other goods and services complicates assessments of the impact of changing policies toward any one sector. We also repeated a warning from the literature that relatively little is known about the economy-wide effects of service sector liberalization and growth.

3.0 China's Service Industry and Trade: The facts

This section provides information on the pace of the structural transformation of the Chinese economy that has occurred as the tertiary sector has expanded over time. It also provides a review of the factual record concerning Chinese trade in services.

3.1 Service Industry

Since the beginning of reform and opening up, China's tertiary industry has developed rapidly. As shown in Table 3.1, from 1978 to 2007 the annual average growth rate of the tertiary industry's value added reached 10.8 per cent, which is three to six percentage points higher than that of Chinese agriculture and manufacturing. The tertiary industry's proportion of GDP rose to around 40 per cent from over 20 per cent. The tertiary industry is therefore becoming an important determinant of national economic growth.

Table 3.1: GDP and value added of the tertiary industry. Data in this table are calculated at current prices.

Year	GDP (billion yuan)	Tertiary industry	
		Value added (billion yuan)	Share of GDP (%)
1978	364.52	87.25	23.9
2000	9,921.46	3,871.40	39.0
2001	10,965.52	4,436.16	40.5
2002	12,033.27	4,989.89	41.5
2003	13,582.28	5,600.47	41.2
2004	15,987.83	6,456.13	40.4
2005	18,321.75	7,343.29	40.1
2006	21,192.35	8,472.14	40.0
2007	24,952.99	10,005.35	40.1

Source of data: *China Statistical Yearbook 2008*, National Bureau of Statistics of China.

The rapid development of China's tertiary industry employs a large number of workers. Since the mid-1990s, the number of people employed in the tertiary industry has exceeded that in the manufacturing industry. Table 3.2 shows that by the end of 2007, 250 million people were employed in the tertiary industry, a number that accounted for 32.4 per cent of the total employed people—a 20 percentage point increase over 1978.

Table 3.2: China's employment, total and tertiary industry (end of year data). For 1990 to 2000 the total number of employed persons (overall and in the tertiary sector) has been adjusted in accordance with the data obtained from the 5th National Population Census. For 2001 onward these data have been derived from the annual sample survey on population changes.

Year	Total number of employed persons (millions)	Tertiary industry	
		Number of employed persons (millions)	Share of total (%)
1978	401.52	48.90	12.2
1994	674.55	155.15	23.0
2004	752.00	230.11	30.6
2005	758.25	237.71	31.3
2006	764.00	246.14	32.2
2007	769.90	249.17	32.4


Source of data: *China Statistical Yearbook 2008*, National Bureau of Statistics of China.

Among the sectors in the tertiary industry, the wholesale and retail trades sector and the transport, storage and postal sectors ranked as the top two, accounting for 7.4 and 5.9 per cent of GDP, respectively (Table 3.3). These two sectors comprise producer services that are principally bought by manufacturing industries. The fast development of these two sectors mostly reflects China's export drive. In contrast, the sectors closely related to social and environmental development, including health, social security and social welfare; scientific research, technical services and geological prospecting; culture, sports and entertainment; and management of water conservancy, the environment and public facilities, lag behind, with their combined value added accounting for only 3.8 per cent of GDP.

Table 3.3: Value added and composition of the tertiary industry by sector (2005). Data in this table are calculated at current prices.

Sectors	Value added (billion yuan)	Share of GDP (%)
Tertiary industry	7,343	40.1
Wholesale and retail trades	1,353	7.4
Transport, storage and postal	1,084	5.9
Real estate	824	4.5
Public management and social organizations	683	3.7
Financial intermediation	630	3.4
Education	566	3.1
Information transmission, computer services and software	477	2.6
Hotels and catering services	419	2.3
Services to households and other services	313	1.7
Leasing and business services	291	1.6
Health, social security and social welfare	293	1.6
Scientific research, technical services and geological prospecting	205	1.1
Culture, sports and entertainment	119	0.6
Management of water conservancy, the environment and public facilities	85	0.5

Source of data: *China Statistical Yearbook 2007*, National Bureau of Statistics of China.



Since 2001, when China joined the WTO, the country has entered a new stage of opening up. Seven years after accession, the Chinese government feels it has honoured its WTO commitments and adjusted its foreign trade policies. It is pursuing liberalization of its service industry. Up to now, China has made commitments in nine service sectors and 84 subsectors of the WTO, accounting for 54.2 per cent of the 155 possible subsectors. China has made commitments in every subsector of the construction and related engineering services, distribution services, educational services and environmental services sectors. Moreover, China's actions have often surpassed its commitments to market access in environmental services. For example, China has only committed to allowing foreign capital to operate environmental services in China's domestic market in the form of joint ventures, but in practice the country has allowed some sewage treatment plants and waste-power generation plants to operate in the form of wholly foreign-owned enterprises.

China has further liberalized its trade in services in the process of regional economic integration. On June 30, 2003, the People's Republic of China signed the Closer Economic Partnership Arrangement with the Hong Kong Special Administrative Region. One of the most important objectives of the agreement is to phase in the liberalization of trade in services, a commitment that has been reinforced in four supplementary agreements signed in October 2004, October 2005, June 2006 and June 2007. The mainland has opened more of its service sectors to Hong Kong. Compared with China's commitments under the WTO, the Closer Economic Partnership Arrangement has relaxed practitioner qualifications and business limitations to varying degrees across the sectors, including legal, medical, computer and related services; real estate; market research; services related to management consulting; public utilities; temporary employment; building cleaning; photography, printing, translation and interpretation; conventions and exhibitions; telecommunications; audiovisual services; distribution; environmental services; insurance; banking; securities; social services; tourism; culture; sports; maritime transport; air transport; road transport and individually owned stores. For example, in the case of legal services, China committed at WTO accession to allowing foreign law firms to provide legal services only in the form of representative offices. But under the Closer Economic Partnership Arrangement, a Hong Kong law firm is allowed to set up a representative office on the mainland to operate in association with a mainland law firm.

In January 2007 China signed an agreement on trade in services with the Association of Southeast Asian Nations. According to the agreement, investors from member countries could set up wholly foreign-owned enterprises to operate in the sectors of software implementation, data processing, real estate, translation and interpretation, environmental, computer reservation systems and freight transport agency services. In addition, China has also expanded its commitments to sectors such as market research services; project management services other than for construction; personnel placement and supply services; building cleaning services; printing of packaging materials on a fee or contract basis; recreational, cultural and sporting services; maintenance and repair services of motor vehicles; and passenger transportation.

3.2 Trade in Services

China's trade in services is developing very rapidly and is becoming more and more important worldwide. According to WTO statistics, China's service trade exceeded US\$190 billion in 2006, 2.7 times its size in 2001 (Table 3.4). The sector's exports reached US\$91.4 billion, accounting for 3.3 per cent of the total exports of international commercial services and ranking eighth among WTO members. Its imports reached US\$100.3 billion, accounting for 3.8 per cent of total worldwide imports and ranking seventh among WTO members.

Table 3.4: Rank of China as exporter and importer of commercial services among WTO members in 2001, 2003 and 2006. "Annual percentage change" refers to change from the previous year.

Year	Exports				Imports			
	Rank	Value (US\$1 billion)	Share of world (%)	Annual percentage change	Rank	Value (US\$1 billion)	Share of world (%)	Annual percentage change
2001	12	32.9	2.2	3.1	10	39.0	2.6	8.9
2003	9	46.4	2.5	18.0	8	54.9	3.1	19.0
2006	8	91.5	3.3	23.7	7	100.3	3.8	20.6


Source of data: WTO.

China is a net importer of service products, and its deficit has been expanding. In 2006 the deficit in China's service trade exceeded US\$8.8 billion, nearly US\$3 billion higher than in 2001. (Even so, some perspective is needed here, as the trade deficit in services represents approximately 4 per cent of China's total services trade.) The deficit is mainly attributable to the sectors of transportation, insurance services, and royalties and license fees (Table 3.5), which is perhaps not terribly surprising given that these are non-labour-intensive activities taking place in a relatively labour-abundant country. In comparison, tourism and other business services generated large surpluses.

Table 3.5: China's trade in services in 2001 and 2006, in billions of US dollars.

Sector	2001				2006			
	Total	Export	Import	Balance	Total	Export	Import	Balance
Total	72.60	33.34	39.27	-5.93	192.83	92.00	100.83	-8.83
Transportation	15.96	4.64	11.32	-6.68	55.40	21.02	34.37	-13.35
Tourism	31.70	17.79	13.91	3.88	58.27	33.95	24.32	9.63
Telecommunications	0.60	0.27	0.33	-0.06	1.50	0.74	0.76	-0.03
Construction	1.68	0.83	0.85	-0.02	4.80	2.75	2.05	0.70
Insurance	2.94	0.23	2.71	-2.48	9.38	0.55	8.83	-8.28
Finance	0.18	0.10	0.08	0.02	1.04	0.15	0.89	-0.74
Computer and information	0.81	0.46	0.34	0.12	4.70	2.96	1.74	1.22
Royalties and license fees	2.05	0.11	1.94	-1.83	6.83	0.20	6.63	-6.43
Consultancy services	2.39	0.89	1.50	-0.61	16.22	7.83	8.39	-0.56
Advertising and publicizing	0.54	0.28	0.26	0.02	2.40	1.45	0.95	0.50
Movies and audiovisual services	0.08	0.03	0.05	-0.02	0.26	0.14	0.12	0.02
Other business services	13.03	7.28	5.74	1.54	30.95	19.69	11.26	8.43
Government services, n.i.e	0.67	0.43	0.24	0.19	1.09	0.58	0.51	0.07

Source: China's State Administration of Foreign Exchange.



The structure of China's trade in services is shifting. The proportion composed of traditional industries such as transportation and tourism is decreasing, but these industries still account for quite high shares. In 2006 their total proportion reached 59 per cent, 16 percentage points lower than in 2001. The proportions of higher-end sectors of the service industry, such as computer and information services, communication and consultation services, and so on, have increased somewhat.

The growth of China's trade in services displays three notable characteristics. The first is that China's trade in services has entered a stage of rapid development. Its annual growth rate has increased year after year since the beginning of the new century. In 2001 Chinese imports and exports of services increased by 8.9 and 3.1 per cent, respectively, compared with the previous year, and by the middle of the decade both growth rates had accelerated to 20 per cent. The service sector trade deficit had expanded to between US\$8 billion and US\$9 billion by the middle of the decade and is a stated concern of some analysts.

The second is that the growth of China's trade in services is faster than that of its service industry. From 2001 to 2006 the annual average growth rate of China's trade in services was 21.6 per cent, and that of the service industry was 10.5 per cent. The tripling of China's total service sector exports from 2001 to 2006 indicates that Chinese service sector firms are increasingly meeting world standards.

The third is that China's trade in services is growing at a speed above the world average level. From 2001 to 2006 the annual average growth rates of China's service imports and exports were 20.8 and 22.7 per cent, respectively, which were both over eight percentage points higher than the world average levels (12.1 and 13.2 per cent). China's status in international trade in services is being enhanced. But quantitative growth of China's trade in services does not necessarily indicate qualitative improvement. Some of the tensions (such as over trade surpluses) that have arisen in the development of China's goods trade seem to have been avoided when China started to develop its trade in services.

3.3 Foreign Direct Investment Flowing into China's Service Industry

Since China joined the WTO, the newly added foreign direct investment utilized in the service sector has increased every year. In 2006 the utilization of foreign direct investment in the tertiary industry reached US\$19.5 billion (Table 3.6), growing by 34 per cent over the previous year and accounting for 31 per cent of the total utilization of foreign capital that year. The business services sector absorbed the largest share of foreign direct investment—a share that exceeded 70 per cent of the foreign capital utilized in the tertiary industry. Transport and distribution services utilized about US\$2 billion and US\$1.6 billion, respectively, ranking second and third.

Table 3.6: Foreign direct investment in China's service sectors in 2006, in millions of US dollars. The sectoral classification used here is that used by the WTO since 2007.

Sector	Project counts		Utilization of foreign capital		Proportion of total (%)	
	Number	Annual change (%)	Value (US\$1 million)	Annual change (%)	Count	Utilization
Total	15,024	7.04	19,503.90	33.87	100	100.0
Business services	8,785	-0.86	13,760.02	36.39	58.5	70.6
Communication services	23	9.52	19.29	-70.67	0.2	0.1
Construction and related engineering services	352	-22.98	688.01	40.35	2.3	3.5
Distribution services	3,804	59.63	1,641.94	84.81	25.3	8.4
Finance services	52	30.00	293.69	33.68	0.3	1.5
Transport services	665	-9.28	1,984.79	9.25	4.4	10.2
Tourism and travel-related services	1,068	-12.03	842.14	33.96	7.1	4.3
Educational services	27	-47.06	29.40	65.63	0.2	0.2
Health-related and social services	20	-9.09	15.17	-61.36	0.1	0.1
Recreational cultural and sporting services	223	-11.51	225.57	-23.72	1.5	1.2
Environmental services	5	150.00	3.88	-82.92	0.03	0.02

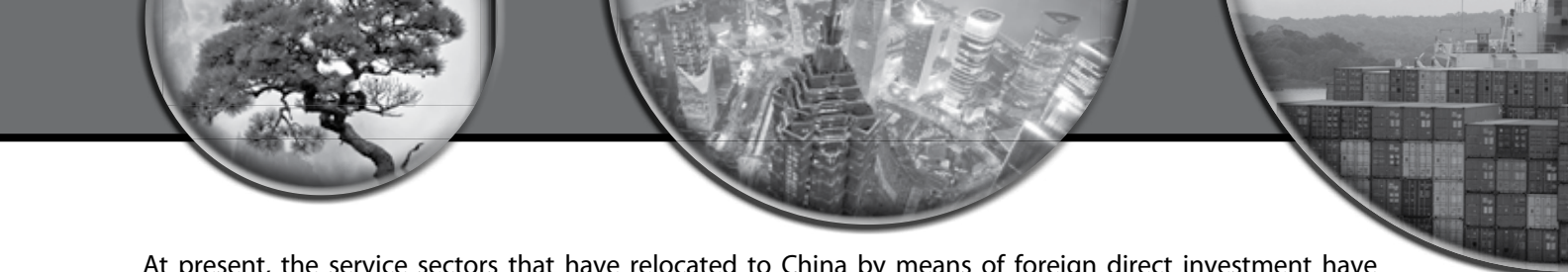
Source of data: Ministry of Commerce of the People's Republic of China (MOFCOM, n.d.).

Among business services, geological prospecting and water conservancy was the fastest-growing sector in terms of utilization of foreign capital, which increased by 279.19 per cent over the previous year. The second- and the third-fastest were the other social services and the maintenance and repair of transport and communication facilities, up 207.72 and 151.41 per cent, respectively.

The statistics for environmental services only cover sanitation. Newly added projects utilizing foreign direct investment in this sector increased by 150 per cent over the previous year, but the actual utilization of foreign capital decreased by 80 per cent, which indicates that the scale of these projects is smaller than before.

Foreign capital is a very significant means by which the service sector relocates to China. Much of the foreign direct investment flowing into China's service industry has been associated with producer services, including business, distribution and transport services. These sectors are closely related to the manufacturing industry, which indicates that the producer services are relocating to China alongside the labour-intensive manufacturing industries or sectors transferring from advanced economies.

According to statistics from the Chinese Ministry of Commerce, the foreign-invested enterprises (FIEs) in the transport, storage and postal industry and the manufacturing industry are the main bodies on the balance sheet of FIEs' trade in services. From 2001 to 2006 the services trade income of the FIEs in the two major industries rose from US\$2.4 billion to US\$15.2 billion, accounting for over half of the total income of FIEs' trade in services (MOFCOM, 2007).



At present, the service sectors that have relocated to China by means of foreign direct investment have not satisfied China's demands for developing its service sector and trade in services. With the growing international relocation of services, in which outsourcing is becoming more and more important, one of the main directions of China's foreign investment policies is to develop its international outsourcing business by taking advantage of foreign capital.

3.4 China's Policies and Measures for Promoting the Development of Service Industries and Trade

A range of existing government policies bear upon the Chinese service sector and upon the amount of trade conducted. In this section the principal policies and their effects are discussed.

3.4.1 Industrial Policies

In order to promote the optimization and upgrading of the industrial structure, the State Council of the People's Republic of China promulgated the Provisional Regulations on Promoting Industry Restructuring in 2005, which set out the following goals:

- Increasing the service industry's share of the national economy, optimizing its structure, and promoting its complete and rapid development.
- Vigorously developing the environmental protection industry and strengthening the protection of water resources, land, forests, grasslands, oceans and so on, with an emphasis on controlling the unreasonable exploitation of resources.
- Vigorously developing the trade in services, continuing to open the services market and accepting the international relocation of the modern services industry.
- Enhancing the quality and level of utilization of foreign funds, with an emphasis on introducing advanced technology, management experience and high-quality talent as well as assimilation and innovation of the introduced technology.
- Enhancing the production and manufacturing hierarchy, as well as actively exploring the sectors of research and development and logistics, etc., in the regions and development zones that have a strong capacity to attract foreign funds.

Meanwhile, the State Council publicized the 2005 Guiding Catalogue of Industrial Structure Regulation, which provided an important basis for directing investments as well as government managing investment projects, thereby establishing and implementing policies covering areas such as finance and taxation, credit, land, and imports and exports. With the rapid economic development of recent years, the National Development and Reform Commission started amending the catalogue and widely solicited opinions for the draft in 2007. At present, the new catalogue is being revised to incorporate those opinions. It will further detail the service industries encouraged for investment and add six new categories of industry, including "modern services," financial services, science and technology services, business services and commercial trade services as well as educational, cultural, health and sporting services. Environmental protection and

the conservation and comprehensive utilization of resources will be catalogued separately.²

3.4.2 Finance and Taxation Policies

Table 3.7 lists taxes on service enterprises operating in China, which include business taxes, taxes on city maintenance and construction, surcharges for education, stamp taxes, land-use taxes, property taxes, taxes for the use of vehicles and ships, and business income taxes. Enterprises also deduct and pay personal income taxes when paying their employees' salaries.


Table 3.7: Types and rates of business taxes in China.

Type	Items taxed	Rate (%)
Transportation and communications	Shipment by land, water, air and/or pipeline; loading and unloading	3
Building	Building, installation, repair, interior decoration and other building works	3
Banking and insurance		5
Postal and telecommunications services		3
Cultural and sports services		3
Entertainment	Bars with musical entertainment, ballrooms, karaoke lounges, discotheques, music teahouses, billiards clubs, golf clubs, bowling halls, and other amusement and entertainment facilities	5–20
Service trades	Agencies, hotels, restaurants, travel agencies, warehouses, rentals, advertising agencies, and other service trade businesses	5
Transfer of intangible assets	Transfer of land-use rights, patent rights, non-patent technology, trademarks, copyright and goodwill	5
Selling immovable properties	Buildings and other construction on land	5

Source: table adapted from State Administration of Taxation (2007).

The Chinese government also provides some financial supports and tax deductions and exemptions to encourage some service industries. For example, the following items are exempt from business taxes: the services provided by nurseries, kindergartens, homes for the aged, institutions for the benefit of the disabled, matrimonial agencies and undertakers; services provided by the handicapped; medical services provided

² Compared with the 2005 catalogue, the new one will list 72 more service sectors that are to be encouraged, including the technical development and application of heating balance and energy-saving control systems in urban buildings, vehicle refuelling stations using new-energy resources, ATMs, data processing and database services, third-party logistics services, public information platforms for logistical services, social and professional rehabilitation services, rural medical services, subcontracting of international service outsourcing, eco-tourism, environmental protection and recycling technology, and development of batteries such as lead-acid batteries, nickel-hydrogen batteries, nickel-cadmium batteries and lithium batteries, as well as the construction of recycling centres for waste electronics.



by hospitals, clinics and other medical institutions; educational services provided by institutions of learning and other educational institutions; services provided by students working part-time; booking office income from cultural activities conducted by memorial halls, museums, cultural centres, art galleries, exhibition halls, academies of fine arts and calligraphy, libraries, and institutions in charge of the preservation of cultural relics; and income from entrance fees for cultural and religious activities organized by religious institutions.

3.4.3 Foreign Trade Policy

The Chinese government has always actively supported the development of China's external trade in services. The Foreign Trade Law of the People's Republic of China (2004) obligates China to grant market access and national treatment to other signatories and participants in the international treaties and agreements to which China is a party. The law lists the reasons that restrictions or bans may be imposed on the international service trade, including:

- They are necessary because of national security, the public interest or public morals.
- They are necessary to protect the health or safety of the people or the life or health of animals, plants and the environment.
- They are necessary in order to establish or accelerate the establishment of certain domestic service industries.
- They are necessary to maintain the balance of foreign exchange payments.
- They are necessary due to other reasons in accordance with laws and administrative rules.
- They are provided for by the international treaties or agreements to which China is a party.

3.4.4 Foreign Investment Policy

In November 2007 China's National Development and Reform Commission and Ministry of Commerce jointly revised the *Catalogue of Industries for Guiding Foreign Investment*. The new catalogue expanded the restriction on foreign investment in the real estate industry and relaxed the restriction on finance services. Besides continuing to only allow foreign capital to develop tracts of land and to construct and operate villas, international exhibition centers, and high-end hotels and office buildings in the form of equity joint ventures and cooperative joint ventures, in real estate the new catalogue restricts foreign capital to secondary market transactions and intermediate or brokerage companies. In addition, ordinary housing development was deleted from the list of encouraged services.

In total, the catalogue of services where foreign investment is encouraged mainly includes eight sectors and 41 sub-sectors (Table 3.8). The new catalogue no longer encourages the use of foreign capital in development of rare or non-renewable mineral resources, and restricts or even forbids foreign capital from investing in projects with high material and energy consumption and high pollution. To deal with the huge trade surplus and foreign exchange reserves, the new catalogue no longer implements policies that purely encourage exports.



Table 3.8: Catalogue of service industries in which foreign investment is encouraged.

Sector	Subsectors
Transportation, warehouse management and postal services	<ul style="list-style-type: none"> • Construction and operation of main railway lines (the Chinese party shall have a controlling interest). • Construction and operation of branch line railways, local railways, and related bridges, tunnels, ferries and station facilities (limited to equity joint ventures and cooperative joint ventures). • Comprehensive maintenance of infrastructure for high-speed railways, railway lines specially for passenger traffic and intercity railways (the Chinese party shall have a controlling interest). • Construction and operation of highways, independent bridges and tunnels. • Highway freight companies. • Construction and operation of public dock facilities of ports. • Construction and management of civil airports (the Chinese party shall have a controlling interest). • Air freight companies (the Chinese party shall have a controlling interest). • General aviation companies for agriculture, forestry and fishery (limited to equity joint ventures and cooperative joint ventures). • International marine transport (the Chinese party shall have a controlling interest). • International container multi-modal transportation. • Construction and management of oil and gas delivery pipes as well as oil depots. • Construction and management of coal pipeline transportation facilities. • Construction and management of storage facilities related to transportation businesses.
Wholesale and retail	<ul style="list-style-type: none"> • Delivery of general commodities. • Modern logistics.
Leasing and commercial services	<ul style="list-style-type: none"> • Accounting and auditing (limited to equity joint ventures and cooperative joint ventures). • International economic, scientific and technical, and environmental protection information consultancy services. • Contract information technology and operation flow services, such as systems application management and maintenance, information technology support management, bank back-office services, financial settlement, human resource services, software development, call centres and data processing.

Table 3.8: Catalogue of service industries in which foreign investment is encouraged. (cont.)

Sector	Subsectors
Scientific research, technical services and geological exploration	<ul style="list-style-type: none"> • Biological engineering and biomedical engineering technology. • Biomass energy development technology. • Isotope, radiation and laser technology. • Ocean and ocean energy development technology, comprehensive utilization technology for marine chemical resources, marine medicine and biochemical product development technology. • Ocean-monitoring technology (monitoring tides, waves, weather and the environment). • Submarine detection and oceanic resource exploration assessment technology. • Technology for comprehensively utilizing the thick sea water left over from desalination, to produce salt and extract and deep-process potassium, bromine, magnesium and lithium, and technology for using other high-added-value seawater chemical resources. • Energy-saving technology. • Technology for recycling and comprehensive utilization of resources and for recycling the effluents discharged from enterprise production. • Technology for treating and monitoring environmental pollution. • New technology for saving energy and reducing waste in producing chemical fibre and for the disposal of waste gas, water and solids. • Technology for desertification prevention and desert treatment. • Integrated management technology for achieving balance in livestock utilization of grassland. • Applied technology for civil satellites. • R&D centres. • High- and new-tech and new-product development centres, and enterprise incubation centres.
Water conservancy, environmental services and public utility management	<ul style="list-style-type: none"> • Construction and operation of comprehensive hydroelectric projects (the Chinese party shall have a controlling interest). • Construction and operation of urban roads. • Construction and operation of urban subways and light rails (the Chinese party shall have a controlling interest). • Construction and operation of sewage and refuse treatment plants, hazardous waste treatment and disposal plants (incineration plants and landfills), and pollution treatment facilities.
Education	<ul style="list-style-type: none"> • Higher education institutions (limited to equity joint ventures and cooperative joint ventures).
Health, social security and community welfare	<ul style="list-style-type: none"> • Agencies providing services for the elderly, the disabled and children.
Culture, sports and entertainment	<ul style="list-style-type: none"> • Operation of performance places (the Chinese party shall have a controlling interest). • Operation of sports grounds, bodybuilding, performance contests, sports training and intermediate services.

Source of data: National Development and Reform Commission and Ministry of Commerce (2007).



3.4.5 Policies Related to Environmental Services

In order to realize sustainable development as the country enters the 21st century, the Chinese government has adopted various policies covering such areas as industry, foreign investment, finance and taxation, and pricing, so as to vigorously support the development of the environmental protection industry (Table 3.9). Besides the above-mentioned Guiding Catalogue of Industrial Structure Regulation and Catalogue of Industries for Guiding Foreign Investment, the country has implemented a series of important regulations and policies, including the Law on Promotion of Cleaner Production, Law on Environmental Impact Assessment, Program of Action for Sustainable Development in China in the Early 21st Century, Ordinance of Pollutant Discharge Fee Collection, Opinions on Accelerating the Marketization of Urban Utilities, Opinions on Pushing Forward Industrial Development for Municipal Sewage and Garbage Treatment, and the State Council on Strengthening the Work to Prevent Water Pollution in Urban Water Supplies and Water Conservation Notice. All these regulations and policies form a preliminary policy system to protect the environment, and have provided the basis for the treatment of municipal wastes and the prevention of pollution.

Table 3.9: Supporting policies related to the development of environmental services.

Policies	Main contents
Investment policy	<p>Opinions on Accelerating the Marketization of Urban Utilities (2002) encourages the social funding and foreign capital to participate in the construction of municipal public utilities, such as water supply, wastewater processing and garbage processing, by adopting multiple forms of wholly owned investment, joint ventures and cooperation.</p> <p>Opinions on Pushing Forward Industrial Development for Municipal Sewage and Garbage Treatment (2002) encourages enterprises with different ownership to actively invest in and operate wastewater processing and garbage disposal, as well as to construct utilities for urban wastewater and garbage processing in the form of buy-operate-transfer (BOT) or by cooperating with those enterprises authorized by government.</p>
Finance and taxation policy	<p>The State Council on Strengthening the Work to Prevent Water Pollution in Urban Water Supplies and Water Conservation Notice (2000) stipulates that sewage fees charged to localities are exempted from value-added taxes, and urban water suppliers and sewage treatment works can accelerate depreciation of equipment purchased.</p> <p>The Law on Enterprise Income Tax (2008) stipulates that enterprises' income from engaging in qualified environmental protection and energy and water conservation projects may have their business income tax reduced or waived, and their investment in special facilities for environmental protection, energy and water conservation and safe production may be subject to an offset tax.</p>
Price policy	<p>Opinions on Pushing Forward Industrial Development for Municipal Sewage and Garbage Treatment (2002) requires that the cities that have already constructed utilities for wastewater and garbage processing charge fees for these services. The fees must be able to cover operation costs and produce reasonable returns for the processing plants.</p>



4.0 Imperatives and Challenges for the Sustainable Development of Chinese Trade in Services

The future growth of the Chinese service sector will not happen in a vacuum; other domestic and international developments will condition the business environment and ought to shape the advice that analysts provide policy makers. Looking a little forward as well as at current developments, this section seeks to do this.

4.1 Imperatives

This section describes the 11th Five-Year Guidelines and establishes their centrality in shaping policy initiatives towards the Chinese service sector.

4.1.1 The 11th Five-Year Guidelines: Benign Internal Policy Environment

The 11th Five-Year Guidelines state that China should accelerate the development of its service sectors and trade in services, build a resource-saving and environmentally friendly society, and realize sustainable development, in so doing constructing a better-off society.

The major targets in developing the service sector and trade in services during the period of the 11th Five-Year Guidelines are that, by the year 2010, the service industry's share of GDP should have grown by 3 per cent compared with 2005, the percentage of workers engaging in the service sector should have grown by 4 per cent, and the total trade in services should have reached US\$400 billion. In addition, an industrial structure giving priority to the service economy should have been formed in qualified large- and medium-sized cities, and the growth rate of the service sector's added value should have exceeded those growth rates of GDP and the secondary industry.

By 2020 the transition to an economic structure that gives priority to the service economy should have been accomplished, meaning in practical terms that the service sector's added value as a proportion of GDP should exceed 50 per cent, the sector's employment capacity should be notably augmented, market competitiveness should be markedly strengthened and the overall level of development should basically satisfy the requirements for the full construction of a better-off society.

The major targets in developing a recycling economy and strengthening environmental protection are that by the year 2010, both sulphur dioxide and carbon dioxide emissions will decrease by 10 per cent; all cities in China will have sewage treatment facilities, with at least 70 per cent of urban sewage being treated; total capacity for urban sewage treatment across China will reach 100 million tonnes per day; and the collection and incineration rate of urban refuse will be no lower than 60 per cent. The major environmental protection indicators are listed in Table 4.1.

Table 4.1: Major environmental protection indicators during the 11th Five-Year Plan period.

Indicator	2005	2010	Change in target (%)
Carbon dioxide emissions (10,000 tonnes)	1,414	1,270	-10
Sulphur dioxide emissions (10,000 tonnes)	2,549	2,295	-10
Water bodies under the national monitoring program failing to meet the Grade V National Surface Water Quality Standard (%)	26.1	22	-16
Percentage of China's seven largest water bodies under the national monitoring program meeting the Grade III National Surface Water Quality Standard (%)	41	43	+5
Number of days in which urban air quality in key cities is superior to Grade II National Air Quality Standard exceeding 292 days (% of remaining 67 days)	69.4	75	+8

Source: The National 11th Five-Year Plan for Environmental Protection (2006–2010).

In 2008 China's State Council publicized its Opinions on Implementing Some Policies and Measures for Accelerating the Development of the Service Sector. According to the opinions, the government is taking many policies and measures to promote the development of the trade in services, including deepening the reform of the service sector, further opening the service sector to the outside world, increasing monetary input into the service sector, vigorously cultivating leading enterprises and famous brands in the service sector, and further expanding preferential tax policies.

Some current initiatives related to the development of environmental and health services are entrusting the operations of water, heat and gas supplies; public transportation; sewage disposal and waste disposal; and similar services to franchises. They are also increasing central government expenditures on things such as social security, health, education, energy savings, emission reductions and housing security. These expenditures focus on increasing the level of public services for rural areas, underdeveloped regions, and urban residents of moderate and low income, and on supporting health system reform as well as other major reforms.

4.1.2 Rapid Development of the Service Industry and Trade: Positive Internal Economic Conditions

To realize the targets of the 11th Five-Year Guidelines, the service industry and trade must sustain rapid development in the future. If the service industry's share of GDP is to reach 43 per cent in 2010, its annual average growth rate must be about 1.7 percentage points higher than that of GDP during the period of the 11th Five-Year Plan (see Table 4.2). And if the total volume of trade in services is to reach US\$400 billion, its annual average growth rate must reach 20 per cent. The rapid development of the service sector and trade would guarantee sustainable development in China's economic model. And in the process of this rapid development, the social and environmental issues with which the sustainable development of trade in services is confronted can be dealt with more easily.

Table 4.2: Estimated annual average growth rates of the service industry (%).

Possible nominal annual average growth rate of GDP	11.00	12.00	13.00	14.00	15.00
Required annual average growth rate of the service industry to meet Five-Year Plan goals	12.65	13.67	14.68	15.70	16.71

Source: calculated by the authors.

The market scale of environmental services is constantly enlarging, and the development of environmental services has a promising future. The statistics show that investment in anti-pollution projects increased continuously during the 10th Five-Year Plan period, rising from over 110 billion yuan in 2001 to over 238 billion in 2005, for an annual average growth rate of 21 per cent (see Table 4.3). Investment will keep increasing during the period of the 11th Five-Year Guidelines, allowing environmental services to grow faster. Some studies predict that environmental services will grow at a rate of 15 to 20 per cent a year in China during the period of the 11th Five-Year Guidelines. In 2010 the total income of environmental services will be about 100 billion yuan (see Table 4.4).

Table 4.3: Investment in the treatment of environmental pollution, 2001 to 2006 (billion yuan).

	Total	Urban environmental infrastructure	Industrial pollution source treatment	Investment in environmental protection components of "three-simultaneity" construction projects*
2001	110.66	59.57	17.45	33.64
2002	136.72	78.97	18.84	38.97
2003	162.77	107.24	22.18	33.35
2004	190.98	114.12	30.81	46.05
2005	238.80	128.97	45.82	64.01
2006	256.60	131.49	48.39	76.72

* According to the Environmental Protection Law of the People's Republic of China, installations for the prevention and control of pollution at a construction project must be designed, built and commissioned together with the principal part of the project. This requirement is referred to as "three-simultaneity."

Source of data: *China Statistical Yearbook of the Tertiary Industry 2007*, National Bureau of Statistics of China.

Table 4.4: Predicted demand for environmental services during the period of the 11th Five-Year Plan.

Sectors	Total income in 2004 (million yuan)	Predicted annual growth rate (%)	Predicted total income in 2010 (million yuan)
Research and development of environmental technology	130	5–10	174–230
Design and construction of environmental projects	1,437	15–25	3,324–5,482
Operation of pollution treatment infrastructure	727	25–35	2,774–4,401
Environmental monitoring	169	15–20	391–505
Environmental consultation	178	20–30	532–859
Total	2,641	15–20	7,195–11,477

4.1.3 Liberalization of Global Trade in Services is Deepening


The liberalization of trade in services is strengthening, principally in bilateral and regional agreements. Trade in services is one of the key parts of the Doha Round negotiations. Although these negotiations have met unexpected difficulties and the deadline to close the negotiations has been postponed again and again, some improvements have occurred. Since the end of March 2003, 69 countries and regions have submitted “offers” to liberalize their measures, and 30 countries and regions have submitted their revised offers since May 19, 2005. Whether the Doha Round will reach a successful conclusion in the near term is unclear.

In the area of regional integration, it’s relatively clear there is considerable scope for improvement in the liberalization of trade in services. With the trade in services playing more and more important roles in the global economy, more and more regional economic groups regard agreement on trade in services as key and wish to mutually open the service industry so as to extend the intra-trade in services. As of April 15, 2008, there were 51 regional trade agreements related to Article V of the General Agreement on Trade in Services (GATS).

4.1.4 The International Relocation of the Service Industry Continues Apace

The international relocation of the service industry—in the principal form of outsourcing—is developing very fast. Although at present, no comprehensive statistics for international outsourcing of services exist, all the available evaluations suggest that this area has enormous potential for development. McCarthy estimated that, in 2007, the value of global services that could be outsourced offshore might be US\$465 billion. Of these, the information technology applications, business processing, information technology infrastructure, and design and research and development could be US\$90 billion, US\$170 billion, US\$85 billion and US\$120 billion, respectively. And the Chinese Ministry of Commerce has estimated that the total potential market will hopefully increase up to US\$600 billion by 2010, while less than 10 per cent of services have been offshored at present (MOFCOM, 2007). UNCTAD has predicted that the outsourcing of international services will keep on growing at a rate of 30 to 40 per cent in the future.

The international relocation of the service industry is directly influencing the service trade in the modes of cross-border supply and commercial presence. Developing economies, as the main receivers of the offshoring of services, can expand their service exports by taking an active part in the relocation of the service industry.



Even that part of the service industry that has relocated to target the domestic market also plays a role in promoting the service exports of the host country by improving the competitiveness of local service firms.

4.2 Challenges

While expectations are high as to the potential contribution of the service sector to China's future economic performance, that contribution is by no means assured. Specific hurdles need to be overcome, and this section describes them.

4.2.1 The Development of China's Service Industry Has Lagged Behind

Compared with countries with similar development levels, much room exists for the development of China's tertiary industry. According to country-wide statistics, the tertiary industry's average share of GDP of medium-income developing countries in 2005 was 53 per cent, while that in China was just 40 per cent.

In addition, concerns exist about the low quality and high price of the service sector in China. According to one relevant study (Jian and Pei, 2004), it is common in China that the supply of services cannot satisfy consumer demand in terms of both quantity and quality, and the prices of service products on the domestic market are much higher than those on international markets. The underdevelopment of the service industry probably undermines the prospects of China's trade in services.

4.2.2 China's Trade in Services Needs to Further Liberalize

China made commitments in nine service sectors and 84 subsectors when entering the WTO, accounting for 54.2 per cent of the total 155 subsectors, lower than the commitments of Japan (73.5 per cent) and Korea (67.7 per cent). As far as the specific sectors are concerned, China has made commitments in all the subsectors for construction and related engineering services, distribution services, educational services and environmental services.

Table 4.5 lists the sector coverage rate of China's commitments under the GATS (the percentage of sectors in each industry for which China has made commitments), and the liberalization index for each sector. The WTO's sectoral classification for services lists 12 sectors and 155 subsectors. According to the WTO, if a government commits itself to allow foreign investments to operate in its domestic market, this is a market-access commitment. These commitments can be distinguished from those that are not limited, those that are limited, and those that are unbound.

Table 4.5: Sector coverage rate of China's commitments under GATS, and the liberalization index for each sector.

Sector	Sector coverage rate of commitments	Liberalization index			
		Mode 1	Mode 2	Mode 3	Mode 4
Average	54.2	0.36	0.54	0.28	0.06
Commercial business	60.9	0.55	0.60	0.32	0.06
Communication services	62.5	0.38	0.63	0.31	0.06
Construction and related engineering services	100.0	0.10	1.00	0.50	0.10
Distribution services	100.0	0.54	1.00	0.50	0.10
Educational services	100.0	0.10	1.00	0.50	0.10
Environmental services	100.0	0.50	1.00	0.50	0.10
Financial services	76.5	0.44	0.65	0.44	0.08
Health services	0.0	0.00	0.00	0.00	0.00
Tourism and travel-related services	50.0	0.50	0.50	0.25	0.05
Entertainment services	0.0	0.00	0.00	0.00	0.00
Transport services	20.0	0.19	0.26	0.12	0.05
Other services	0.0	0.00	0.00	0.00	0.00

Source: calculated by the authors based on the schedule of China's specific commitments in services.

The liberalization index is calculated by adding the sector coverage rate of non-limitation commitments to one-half of the sector coverage rate of limitation commitments and one-tenth of the sector coverage rate of unbound commitments. The index ranges between 0.1 and 1.0. The larger the index, the more liberalized the sector. Mode 1 represents cross-border supply, mode 2 represents consumption abroad, mode 3 represents commercial presence and mode 4 represents the cross-border movement and presence of persons.

A liberalization index is designed to reveal the extent of liberalization of China's trade in services. According to the index, China's trade in services for modes 1 and 2 is more liberalized than for the other two modes, indicating that China tends to take a more cautious attitude toward liberalization of modes 3 and 4. Except for the sectors for which China has not made any commitments (including health services, entertainment services and other services), the liberalization level of producer services, including transport, communications and business, is relatively low, which is not conducive to China's developing its service industry by taking advantage of the international relocation of the service industry.

4.2.3 The International Competitiveness of China's Trade in Services is Weak

Compared with its main trading partners, China has few sectors with comparative advantages in the services trade, as measured by a revealed comparative advantage (RCA) index.³ China only has comparative advantages in tourist services and construction services, which are resource- and labour-intensive. By comparison, developed countries have more sectors with comparative advantages, which are exhibited in technology-intensive and modern service sectors such as finance, computer and information services, and patents (see Table 4.6). Moreover, as is shown in Table 4.7, the comparative advantages enjoyed by China in the tourism and construction service sectors are on a downward curve. In the sectors of transportation services and computer and information services, although no comparative advantage is evident, the RCA indexes exhibit an upward tendency.

³ RCA index = X_{ij}/X_{iW} , where X_{ij} refers to the share of service i in country j 's total service exports, and X_{iW} refers to the share of service i in total worldwide service exports. If the RCA is larger than one, service i of country j has a comparative advantage. If the RCA is less than one, service i of country j does not have comparative advantage.

Table 4.6: RCA indexes of China and major advanced countries, 2004.

	China	South Korea	USA	UK	Germany	France	Japan
Transportation services	0.89	2.50	0.75	0.72	1.08	1.07	1.52
Travel	1.50	0.50	1.01	0.56	0.71	1.34	0.42
Communications	0.35	0.48	0.68	1.02	1.12	1.37	0.23
Construction	1.26	0.05	0.47	0.12	2.56	1.56	3.77
Insurance	0.23	0.06	0.69	2.44	0.96	0.52	0.42
Finance	0.03	0.48	1.17	2.87	0.71	0.24	0.82
Computer and information services	0.74	0.02	0.55	1.64	1.57	0.38	0.30
Royalties and license fees	0.07	0.83	2.96	1.27	0.69	0.88	3.08
Other business services	1.36	0.86	0.88	1.20	1.20	0.97	0.96
Personal, cultural and recreational services	0.05	0.25	1.78	1.50	0.54	1.66	0.06
Government, n.i.e	0.22	1.22	1.99	0.75	2.06	0.28	1.00

Source: calculated by the authors using IMF statistics.

Table 4.7: RCA indexes of China's trade in services, various years.

	1999	2003	2004
Transportation services	0.42	0.79	0.89
Travel	1.73	1.31	1.50
Communications	1.06	0.65	0.35
Construction	1.54	1.37	1.26
Insurance	0.38	0.22	0.23
Finance	0.07	0.06	0.03
Computer and information services	0.42	0.60	0.74
Royalties and license fees	0.06	0.04	0.07
Other business services	1.25	1.53	1.36
Personal, cultural and recreational services	0.02	0.05	0.05
Government, n.i.e	0.11	0.27	0.22

Source: calculated by the authors using IMF statistics.

Another index that can be used to measure comparative advantages is the trade specialization index (TSI).⁴ As demonstrated by this index, in addition the sectors mentioned above, China also enjoys comparative advantages in communications services and computer and information services. The comparative advantage of communications services is tending to decrease, while that of computer and information services seems to be on the rise (see Table 4.8).

⁴ $TSI = (X_{ij} - M_{ij}) / (X_{ij} + M_{ij})$, where X_{ij} refers to exports of service i by country j , and M_{ij} refers to imports of service i into country j . If the TSI is larger than zero, service i of country j has a comparative advantage. If the TSI is less than zero, service i of country j does not have comparative advantage.

Table 4.8: TSIs of the various trades in services sectors in China, various years.

	1999	2003	2004
Transportation services	-0.46	-0.32	-0.28
Travel	0.22	0.15	0.22
Communications	0.57	0.28	0.04
Construction	-0.13	0.13	0.12
Insurance	-0.77	-0.85	-0.87
Finance	-0.11	-0.13	-0.12
Computer and information services	0.17	0.11	0.20
Royalties and licence fees	-0.80	-0.93	-0.89
Other business services	0.10	0.33	0.25
Personal, cultural and recreational services	-0.60	-0.28	-0.58
Government, n.i.e	-0.72	-0.03	-0.10

Source: calculated by the authors using IMF statistics.

Although the TSIs indicate that China enjoys comparative advantage in computer and information services, the advantage actually exists more in the processing part of the service outsourcing of the information technology industry, which is also labour-intensive. China does not enjoy many advantages in research and development, where added value is relatively higher. Overall, the RCA indexes and TSIs reveal that the competitiveness of China's trade in services, especially that of producer services, is weak.

4.2.4 The Foreign Direct Investment Flowing into China's Service Industry Mainly Aims at the Domestic Market

Most of the foreign direct investment that enters China's service industry aims at occupying the domestic market. Such investment can be helpful in improving the quality of the services in some service sectors through competition, and the consumer's welfare can be improved as well. However, it has limited effects on China's accepting the international relocation of the service industry or on promoting the development of the service industry and exports when compared with foreign investment aimed at developing offshored business.

4.2.5 Offshoring and Outsourcing in China is Underdeveloped

Business process outsourcing has afforded some developing countries substantial opportunities to expand service exports. India figures prominently in this field, having experienced export growth rates of 25 per cent per year from 1995 to 2005. Technological developments, most notably the improvements in information technology and the reductions in international communications costs, plus a shift in management thinking toward focusing on the activities that firms are supposed to be best at, has created a large and growing demand for cheap suppliers of business process outsourcing. Data entry and other back-office activities were first outsourced by industrialized country firms, typically to developing countries that shared similar languages. Since then some companies in developing countries have migrated up the value chain to providing direct customer care and management, human resource management, certain analyses of medical evidence (such as x-rays) and product development. Hoekman and Mattoo (2008) argue that India's migration up this value chain has allowed other developing countries (they specifically mention China) to establish themselves in the lower-value-added stages of business process outsourcing.



5.0 Lessons from Comparative Analyses and International Experience

Earlier we argued that the growth of China's service sector should be seen as part of the structural transformation of the Chinese economy. In this section we present comparative and international evidence that sheds light on the relative performance of China's service sector and, more importantly, on the determinants of the service sector's size and its impact on national economic performance.

First it is useful to reflect further on Chinese and Indian service sector performance. Bosworth and Collins (2008) compare, sector by sector, the performance of both China and India. They start by noting that "India has attracted considerable attention for the rapid expansion of its service sector; however, the expansion of this sector has also been very strong in China" (p. 55). In fact, they report that the average annual growth rate of the Chinese service sector's output exceeded that of India from 1987 to 2004, though the differences in the growth rate narrowed between 1993 and 2004 (see their Table 3, p. 54). So if anything, the Indian service sector's performance has only narrowed the gap with China's, rather than overtaking it. When it comes to generation of employment in services, Bosworth and Collins report that China's growth rate is at least one percentage point faster than India's. These findings may go some way in countering the pessimism concerning the Chinese service sector.

In contrast, the contribution of total factor productivity growth to service sector growth is higher in India than it is in China, especially for the period from 1993 to 2004 (the most recent period in the Bosworth and Collins study). The comparable average annual growth rates are 3.0 and 0.9 per cent, respectively. Even though capital per worker in the Chinese service sector grew more than three times as fast as in India, output per worker in the Indian service sector still grew faster than in China. In interpreting their results, Bosworth and Collins stated that they were suspicious about their estimates of Indian total factor productivity growth. Even so, there may be a concern here for Chinese policy makers, especially as total factor productivity in Chinese agriculture and manufacturing grew much faster than in the service sector.

Another comparative study of Indian and Chinese service sector performance was conducted by Wu (2007). Wu presents evidence on the composition of the service sector in China, India and some industrialized economies. The major difference between China and India and the industrialized economies (that Wu fails to mention) is that the richer economies have real estate sectors that are double the respective shares of total service sector output of China and India. In China, the share of total service sector output accounted for by education, health and research is larger than that of India and the industrialized country counterparts (though the breakdown between education, health and research was not presented for the rich countries). As a share of total service sector output, finance and insurance is actually larger in China than in all of the other countries Wu examines—including the United States and United Kingdom! So-called traditional services (wholesale, retail and catering services) account for one-quarter of total Chinese service sector output, less than in India. These statistics call into question whether Chinese services are really that hidebound.

Another contribution from Wu was to estimate, province by province for China and state by state for India, the determinants of the share of services output in provincial (or state) total output. Wu hypothesized that income per capita was correlated with a larger service sector share because richer consumers spent more and more of their income on services. Moreover, he examined whether urbanization was correlated with larger service sector shares. Interestingly, Wu found that the impact of income-per-capita growth on the service sector's share was similar in India and China, suggesting that demand-related factors cannot account for differences in each country's service sector performance. Where a clear difference emerged was in the impact of urbanization on the service sector's share; in India a higher urbanization rate translates into a



greater increase in the service sector's share than in China. Wu also presents evidence that greater service sector exports lead to a higher share of total output accounted for by services. Interestingly, while Wu does comment on the policy implications relating to service sector exports (greater openness), he does not discuss the policy implications of his findings concerning urbanization. Fortunately, Au and Henderson (2005) provide evidence that may help operationalize the link between urbanization and service sector size.


Au and Henderson were not interested in what factors determined the size of the Chinese service sector. Instead, they asked the question, "Are Chinese cities too small?" Drawing from the economic geography literature, they hypothesized that there is an inverted-U relationship between real income per worker in a city (a measure of productivity) and the number of employees in the city (a measure of city size). At first as city size grows, the argument goes, the benefits of agglomeration, thick labour markets, and increased specialization associated with the reorganization of firms and the development of higher-end business services dominate and raise per capita incomes. Then at some point the negative impacts of city size (congestion, environmental degradation and so on) reduce productivity and welfare. Using data on Chinese city size and other variables, they seek to estimate how large Chinese cities are compared with the size that would maximize per capita income.

Au and Henderson note that internal migration policies in China effectively constrain city size. In 2000 China only had nine cities (metropolitan areas) with populations over 3 million. In contrast, 125 cities had populations of 1 million to 3 million. These proportions are substantially out of line with international benchmarks, with fewer large Chinese cities than the international norm. Au and Henderson assembled data on 225 prefecture-level cities and reported that the manufacturing-to-service ratio tended to decline over time, especially after market reforms were introduced in the early to mid-1990s. Their econometric estimates imply that between one-half and two-thirds of Chinese cities were undersized (p. 35), whereas no more than 6 per cent of cities were oversized (p. 36). For the undersized cities the unweighted average loss in output per worker was 30 per cent. Au and Henderson conclude their paper as follows:

Allowing migration to these cities, as is now starting to happen, will allow them to operate in much more efficiently. But that of course is only the tip of the iceberg. The gains to migrants relative to their current wages in the rural sector would be enormous. (p. 36)

The Au and Henderson study is relevant to this paper for several reasons. First, one of the principal mechanisms through which increased city populations translate into higher per capita income is through the development of specialized, higher-quality producer services. This was an explicit feature of their approach. Second, although they did not examine the impact of variations in the infrastructure of the cities they studied, the logic they develop implies that greater infrastructure investment will raise the threshold level of population above which increased city populations lead to congestion, etc., and lower per capita incomes. Third, while Au and Henderson recommend relaxing the migration restrictions, their results are consistent with a joint policy recommendation of relaxing migration restrictions into China's smaller cities and increasing investment in those cities to stave off the point when congestion, environmental degradation and the like lower per capita incomes. Evidence such as this points the way to expanding the service sector without compromising environmental sustainability.

Turning from comparative studies to country-wide evidence, in recent years robust connections between service sector development and economic growth have been established by researchers (see Hoekman and Mattoo, 2008, for an overview). Different service sectors contribute to the growth process in different ways, and not just through the direct exports of services. More elaborate financial services can reduce transaction



costs and risk and better allocate resources across competing activities (Levine, 1997). Low cost and reliable telecommunications sectors can help diffuse knowledge and are often a prerequisite for firm membership in global supply chains. Transportation, retail and distribution services all affect the costs of shipping and supplying goods, including exported goods (Francois, 1990). The availability of specialized service sectors facilitates the further division of labour as well as generating better-paying jobs. Services, then, implicate economic performance through a number of channels.

Moreover, given that the upgrading of the Chinese manufacturing industry and the search for cost economies, including resource-based ones, are stated objectives of China's sustainable trade strategy, it is noteworthy that a growing body of research advances evidence that supports the benefits of intensifying competition in national service sectors (see, for example, Arnold, Javorcik and Mattoo, 2006a; 2006b). Such competition could come from domestic or foreign sources, foreign taken here to include the subsidiaries of foreign firms operating in China. Taken at face value, these research findings call for the removal of all impediments to competition in service sectors when there is no compelling public policy rationale not to do so. Evidence from both developing and industrialized economies suggests that many service sectors remain sheltered from the full force of competition and that substantial rents are created for incumbents, highlighting the scale of both the potential economy-wide benefits and the likely opposition to reform.

The links between openness, service sector performance and growth are now better understood too. Mattoo, Rathindran and Subramanian (2001) present evidence that countries whose financial and telecommunications sectors are more open to foreign competition experience faster rates of national economic growth. These findings suggest that service sector development objectives need not come at the expense of openness, and that commercial policy making might be able to play a role in service sector development. However, experience at the WTO and in accessions to the European Union demonstrate a marked reluctance of governments to undertake liberalization of their service sectors in trade agreements; at most they seem only willing to bind preexisting reforms (Eschenbach and Hoekman, 2006). Even so, 25 of the regional trade agreements signed by governments in the East Asian region contain non-trivial service sector provisions, a finding that may be of particular interest to Chinese policy makers (Fink and Molinuevo, 2007).

Developing a competitive service sector, though, is not easy. Much of the literature on the service sector in the industrialized countries is concerned with its slow productivity growth, especially compared with agriculture and manufacturing (Baumol, 1967; Oulton, 2001; Pugno, 2006). Worse still, government policy is thought to have often held back the development of more efficient service sectors in certain developing and industrialized economies; here, employment objectives have tended to take priority over competitiveness considerations. Indeed, in France, Germany and India, restrictions on shop size and the entry of new shops are supported by incumbent firms wanting to avoid further competition, especially from large-scale retailers, and by governments that fear job losses will result. Such interventions may appear to save jobs, but only in sectors, such as local retailing, that are shielded from international competition. The development of an internationally competitive services sector must proceed on a different basis (Inklaar, Timmer and van Ark, 2007; Baily, Remes and Farrell, 2006).

The comparative and international evidence has pointed to a number of findings. First, that service sector development, especially as it relates to business or producer services, is intricately linked to urbanization. Policies that restrict the size of national cities are likely to hold back the development of critical mass and complementarities between firms. Second, that steps to limit competition or the exploitation of service sector capabilities (like restrictions on shop opening hours) or economies (such as shop size) will likely constrain productivity growth in the service sector.



6.0 Options for Chinese Policy Makers

The service or tertiary sector is already the largest economic sector in the Chinese economy. The sheer scale of this sector ensures that its trajectory will have significant implications for economy-wide performance in the years to come. This fact alone should focus policy makers' minds. However, in this paper the goal is not just better economic performance but also compatibility with a Chinese sustainable trade strategy that incorporates several policy goals.

The starting point for formulating policy recommendations is to recognize that the development of high-quality services that are internationally competitive has been associated with the spatial and organizational transformation of national economies. The demand for high-quality business services has to come from somewhere. Typically such demand is concentrated in urban areas, where firms can afford to specialize in specific tasks and functions because they know they can hire external expertise to perform the tasks that the firm does not have a competitive advantage in completing. Moreover, once certain cities and locations are known for specific types of services, they attract ambitious persons seeking to make a career supplying those services. This deepens the labour pool, creating more options for firms and allowing for even greater specialization. Competition intensifies not only in the labour market but also in the market for specialized talent; the result is greater innovation and higher standards. This cumulative dynamic has been studied in depth by economic geographers, and we presented some of the evidence relating to China in the last section.

While the forgoing argument links living standards to service sector development and employment growth, the link to environmental sustainability may be unclear. Once it is appreciated that the principal constraints on the size of urban and suburban areas are infrastructure- and amenities-related, then the outlines of a win-win-win policy recommendation emerges. One option for Chinese policy makers would be to relax controls on migration to cities of skilled personnel likely to work in manufacturing or the service sector. This would set off the employment and productivity growth dynamics (one win) and ultimately lead to higher-quality business services that can be exported (another win). Simultaneous investments in infrastructure that reduces congestion and transit times and improvements to amenities will raise the threshold beyond which living standards in cities begin to diminish. As environmental amenities are an important part of a liveable city, this would be the third win.

In addition to improving the productivity and quality of business services, policy makers need to give attention to the more traditional forms of services, namely transportation and distribution. If anything, the lessons for Chinese policy makers from foreign experience are negative, in the sense that policy makers would not be advised to pursue some of the policies undertaken elsewhere. Some countries have effectively used their retail sectors as the employers of last resort, thereby limiting shop size and competition from larger stores and foreign investors. This has proved to be a recipe for poor choices, slow service and, ultimately, relatively lower wages. In general, attempts to restrict competition and to avoid using information technology have not been successful. Instead the policy recommendation, even if it is accomplished slowly over time, is to increase competition from domestic and foreign sources in the service sector.



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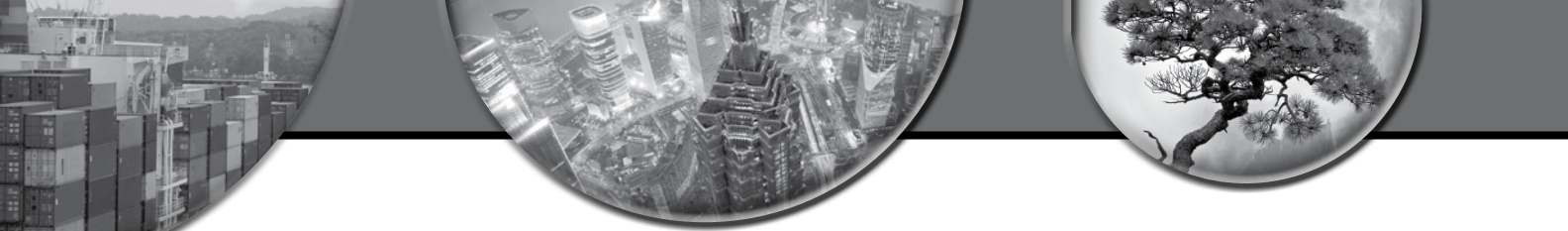
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7

What Commercial Policies Can Promote China's Sustainable Trade Strategy?

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1.0 Introduction

The purpose of this paper is to consider the implications for China's commercial policies of a decision to adopt a sustainable trade strategy, the motivation for which was described in Long (2010), the overview paper for the Sustainable China Trade Project. The assumptions underlying that strategy and its design appear to take account of developments within the world economy, the reaction of trading partners, and the existing web of international trade agreements and related institutions. The implementation of such a strategy must do the same, and here we give due attention to the relevant developments. Overall, in this paper we seek to identify possible trade policy options that China may wish to consider as it pursues a sustainable trade strategy.

For the purposes of this project the following five objectives compose China's so-called sustainable trade strategy:


1. Promote the rebalancing of the Chinese economy away from its currently unsustainable path.
2. Promote added value in economic activities, not just sales.
3. Promote services, not just manufacturing.
4. Promote Chinese firms (including multinationals), brands and intellectual property rights. (Nationality matters.)
5. Support a harmonious, sustainable architecture for international trade.

These objectives represent an adaptation of the traditional notion of sustainable development to the current circumstances facing China, reflecting not just environmental notions of sustainability but also social and economic aspects. Not every reader may be comfortable with each of these five objectives, but we take them as parameters for the purposes of this paper. Moreover, the current global economic downturn, which has adversely affected Chinese exports, may influence the speed with which the country implements measures that seek to attain these five objectives.

The desire to shift away from low-value-added manufacturing exports, which are thought to offer limited prospects for long-term improvements in standards of living as seen in terms of wages and environmental quality, combined with the enduring need to create a large number of jobs every year for those entering the labour force and migrating toward urban and coastal areas, appears to have been an important motivation for the shift in Chinese thinking toward commercial policy making. So has the recognition that existing export growth rates are provoking greater opposition to trade in China's trading partners. In this respect, the adoption of a sustainable trade strategy can be seen as an attempt to reorient China's domestic and international commercial trajectory.

Since this paper is part of a larger project and the contributions will be published together, we will not repeat material here that others have comprehensively covered. We have also mentioned Long's overview of a sustainable trade strategy for China (Long, 2010). That paper also provides an informative summary of the evolution of recent Chinese trade growth and its integration more generally into the world economy.

Likewise, Song, Cosbey and Savage's (2010) paper for this project describes the numerous connections among international trade and the environmental, social and economic aspects of the traditional concept



of sustainable development. Song et al. also draw on a wealth of China-related evidence in support of their argument that these connections are of importance to policy making.

The focus, then, of this paper is specifically on the various commercial policy options that could advance the objectives of a Chinese sustainable trade strategy. The choice of the phrase “policy options” rather than “trade agreement” was deliberate, because the latter is only a subset of the former. Even so, much of the emphasis here is on what China can accomplish through traditional trade policy instruments and venues such as the World Trade Organization (WTO). Moreover, as the scope of trade agreements, in particular regional or bilateral trade agreements, has grown over time, in some cases to include non-commercial matters, arguably the strict distinction between trade agreements and other international accords has diminished.

Throughout, this paper is informed by practice, not just principle or theory. The recent global economic downturn plus long-standing difficulties in concluding the Doha Round of multilateral trade negotiations must surely inform policy makers’ choices. The looming threat of a return to the protectionism of the 1930s, to an era of competitive devaluations of currencies, sharp falls in exports and imports, and the like, has no doubt influenced perceptions of national priorities and the appetite for international cooperation on commercial policy and other economic policy matters. In addition, the current crisis has brought to the fore a new forum, the Group of 20, where China has played an active and growing role. These considerations cannot be ignored, at least in terms of shorter-term prioritization of initiatives.

Moreover, countries’ growing resort to bilateral and regional trade agreements implies that careful consideration must be given to such options too. As will become clear, there are differences in the speed with which progress is likely to be made in various forums where trade-related accords are negotiated, and this may call for different potential priorities in the near term as well as over the medium to longer term. Yet we recognize that the further into the future the analyst proceeds, the more qualification and circumspection any forward-looking assessment requires.

This paper is divided into six sections. Section 2 will briefly discuss what can be reasonably expected of traditional trade policy instruments, based as they are on reciprocity, non-discrimination and rules, in contributing to the implementation of a sustainable trade strategy, a program with multiple objectives. Section 3 accounts for the adjustments and evolution of China’s foreign trade policies after China’s accession to the WTO and analyzes strategies that China has used to develop multilateral, regional and bilateral economic cooperation.

Section 4 discusses several of the major challenges facing China in terms of its sustainable development in foreign trade and coordination of relations with its trading partners. Section 5 studies the policy options for China to use to change its foreign trade development strategy and to strengthen trade cooperation. Section 6 contains a conclusion and summary remarks.

2.0 Commercial Policies and the Goals of a Sustainable Trade Strategy

The five objectives of China’s sustainable trade strategy, as outlined in the introduction to this paper, are broad and far-reaching. The question naturally arises as to what outcomes traditional trade policy instruments can realistically be expected to deliver, should China adopt this strategy. This question is not just of theoretical interest, as policy makers driven by results need realistic assessments of what each type of tool can deliver.



Getting expectations wrong can do much to discredit an important initiative over the longer term. Arguably the adoption of the noble-sounding “development objectives” in the Doha Round has, because of their lack of specificity as well as doubts that many trade policies can make first-order contributions to macroeconomic aggregates, done much to discredit the WTO in recent years. It is important to resist the temptation to oversell what trade policy tools can deliver. Indeed, some commercial policy instruments may be better at attaining certain objectives than others, and some objectives are best met by state measures other than trade policies.

For the purposes of this discussion, the following instruments of Chinese commercial policy will be considered: reciprocity-based binding trade agreements in their various forms, non-binding (or soft-law) initiatives, state-to-state dialogues, and unilateral measures, which by definition do not require the agreement of a trading partner. Given the penchant of many trade negotiators and officials for reciprocal, binding trade agreements, the following discussion starts by assessing the potential contribution of this form of commercial policy.


The question, then, is in what ways traditional reciprocity-based trade agreements that contain so-called rules on non-discrimination and provisions on market access advance the five objectives of China’s sustainable trade strategy. The first reason for asking this question is that some of the five objectives might best be dealt with by policy instruments other than reciprocal trade accords.

For example, if the rebalancing of the Chinese economy requires a shift from dependence on export-related sources of demand toward greater reliance on domestic consumption growth, then measures that reduce the need for Chinese households to save as much of their income as they currently do are likely to be far more effective than any single trade agreement. It is quite unclear how trade policy instruments can contribute in this regard, since savings decisions are driven by precautionary motives as well as expected rates of return, which are variables not typically affected by trade agreements.

Moreover, questions might arise as to whether trade accords have any further role in advancing some of the stated objectives. The desire to promote upgrading of Chinese firms into segments of markets where industrialized country firms currently dominate may be accomplished by lowering tariffs on higher-end products. If, however, these tariffs are already zero or close to zero, negotiated as they were as part of previous market-access exchanges among industrialized countries and then multilateralized through the most-favoured nations requirement, then few trade barriers may need to be removed in future negotiations.

Tariffs on manufacturing items of interest to industrialized countries tend to be lower than those on labour-intensive manufactured goods made in developing countries. The process of upgrading is likely to shift more Chinese exports into tariff lines that already have very favourable tariff treatment, in which case there may be few tariff barriers to negotiate away in the future. Of course, if foreign technical standards and associated qualification procedures remain an important barrier, then something to negotiate may still remain.

The presumption that all reciprocity-based trade agreements must advance these five objectives should be dispelled too, and the current disadvantageous tariff treatment afforded to low-end manufactured goods helps make this point. Should China negotiate a free trade agreement (FTA) or a multilateral trade accord that lowered or even eliminated the tariff peaks on low-end manufactured goods in a number of major export destinations, in effect the incentive to expand low-value-added manufacturing in China would be enhanced, which is directly at odds with the second objective of a sustainable trade strategy. This observation is significant, as the liberalization of manufactured (that is, non-agricultural) products is central to most bilateral, regional and free trade agreements. Moreover, since many industrialized countries are concerned about liberalizing tariffs on low-end manufactured products (to prevent inefficient firms from facing the full force of international competition), should China decide not to pursue the abolition of these tariffs in trade



negotiations, it may find it easier to conclude the other, associated accords in the first place.

The service sector presents one area where seeking improvements in market access abroad is consistent with one objective of the sustainable trade strategy. To the extent that access to foreign markets is an important trigger of domestic service sector development, then the priority afforded to seeking market opening abroad for Chinese firms rises. Taking this observation about services together with the previous discussion on goods suggests that Chinese priorities concerning which market access concessions it seeks from trading partners may need to evolve from goods to services.

The last example of upgrading raises a further, distinct point. If the Chinese authorities are determined enough to create strong incentives to upgrade products, they could introduce a system of export taxes that are related to unit values of production.¹ Leaving aside any problems that may well arise with falsification of unit values, a sliding scale of export taxes that is inversely proportional to unit value could substantially reduce the profitability of exporting low-end goods. The broader lesson here is that the Chinese government may well take some unilateral trade policy measures to attain some of the five objectives identified earlier. Arguably, the expansion of China's service sector may be facilitated by certain trade policy measures, but the policies with first-order effect are likely to be domestic ones, such as the removal of any barriers to entry or reviewing restrictions on land use, which tend to hold back retailing.

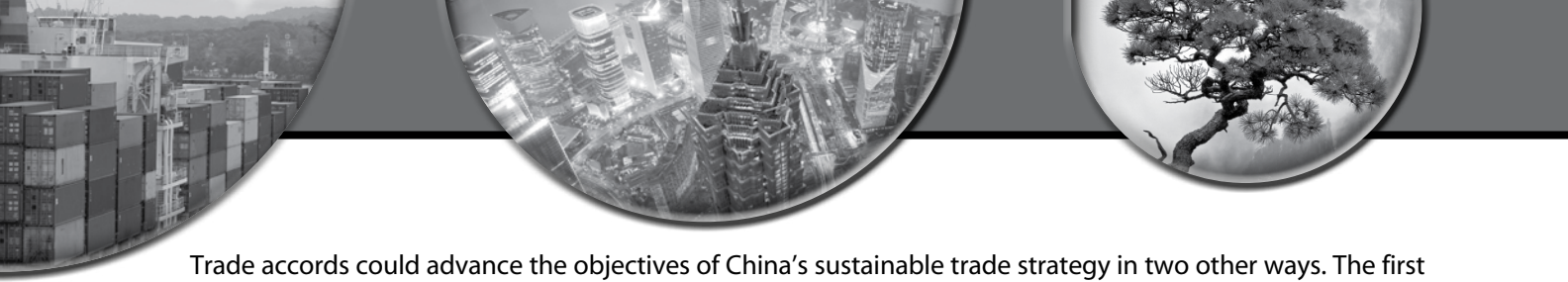
To the extent that the overseas expansion plans of Chinese firms or their intellectual property are compromised by foreign governmental practices, there may well be additional challenges that new reciprocity-based trade accords can tackle. Rules strengthening the transparency of foreign regulatory practices and obligations to provide national treatment would follow as negotiating priorities.

However, the requirement for reciprocity allows trading partners in the negotiations to make demands for the reform of comparable Chinese regulatory institutions. Of course, the negotiating clout of trading partners may vary considerably, and China could diplomatically rebut the demands of certain trading partners. Still, before putting new matters on the negotiating table, the Chinese authorities ought to consider carefully the extent to which it is prepared to alter its domestic regulatory regimes in response to foreign requests. In sum, reciprocity is a two-way street.

Acute concerns about infringements on domestic sovereignty may limit what China can reasonably accomplish for its internationally active firms through reciprocity-based trade accords. This in turn raises the alternative of supporting soft-law initiatives that seek to advance non-discrimination principles in national regulatory regimes. While these soft-law approaches may have the attraction of being non-binding, should China use them as a tool for advancing its interests abroad then Chinese regulators would be expected to adhere to the same international standards. Foreign criticism of lapses would not be avoided just because an international regulatory initiative is non-binding.

Consideration of what reciprocity-based trade accords can deliver requires examining the basis of any potential deal or agreement. The considerations above suggest that negotiations centred on improving market access in services and the extension of transparency and non-discrimination into regulatory areas are interests that follow from the five objectives of a Chinese sustainable trade strategy. What trading partners want in return for any concessions to their Chinese colleagues, and the sensitivity of those demands, will have to be taken into account as well. If foreign demands, in particular in the areas of agricultural trade liberalization and the opening up of financial services, are seen as too far-reaching, this will limit any realistic assessment of what reciprocity-based accords can contribute to China's sustainable trade strategy. As indicated earlier, the success of the latter strategy is, fortunately, not wholly contingent on traditional reciprocity-based trade agreements.

¹ One indicator could be average export revenue per unit sold.



Trade accords could advance the objectives of China's sustainable trade strategy in two other ways. The first concerns improvements in environmental policy and the enforcement of environmental objectives. Whether included or not as part of a reciprocal FTA or multilateral trade accord, trade agreements can be used to entrench shared goals (such as the progressive improvement in environmental standards) and to commit to enforcement of associated laws and regulations. Precedents exist where nations have taken on commitments to enforce domestic regulatory laws in trade agreements and to appropriately fund enforcement bodies, posing the question of whether those precedents can be adapted to promoting sustainable development. We return to this matter in Section 5.

Because one of the objectives of China's sustainable trade strategy is to promote a harmonious, sustainable architecture for international trade, the question arises as to what stance China might take concerning the evolution of the multilateral trading system. This is not just a matter of completing the Doha Round and any other existing initiatives, though those may well be particularly important, especially as concluding the Doha Round would lock in many of the reforms that have taken place in many countries over the past fifteen years and discourage protectionism during the current global economic downturn. It will also be a matter of managing the disputes that will inevitably arise, as well as establishing future negotiating agendas, be they as part of any future multilateral trade round or, more likely, in the context of alternative plurilateral or "critical mass" accords.² Such accords can be used to address important sector initiatives, such as those relating to the environment. In addition, it may be possible to make more progress on the opening of service sector markets in WTO accords that do not require every WTO member to be a signatory.


A final important strategic consideration concerns the ongoing climate change negotiations and their relationship to the multilateral trading system. The potential for a climate change accord to induce significant restructuring of national economies raises the question of the relationship between any specific climate change proposals and the five objectives of China's sustainable trade strategy. Trade-offs among these objectives, and between these objectives and the goal of slowing climate change, may have to be considered. In short, international initiatives outside of the multilateral trading system may well implicate the manner in which trade policy instruments are used to advance China's sustainable trade strategy.

The purpose of the discussion in this section has been to highlight the manner in which several commercial policy tools available to the Chinese government vary and how that variation might influence the choice of which policy tools will best help attain the objectives of China's sustainable trade strategy. Certain deductions (such as promoting service sector market-opening objectives over goods market-negotiating objectives) follow from consideration of these objectives and the present state of the multilateral trading system.

Other deductions point to the fact that there may be limits to what can be achieved through reciprocity-based trade accords, unless China is in a position to deflect any awkward demands from trading partners. (China may be better positioned to do this in certain negotiations than in others.) Furthermore, some objectives may best be pursued by unilateral trade measures and even by state measures not typically associated with trade policy. Indeed, these observations suggest that trade policy should not be expected to contribute to each of the five objectives of China's sustainable trade strategy, or ultimately be judged by such contributions.

It is not a matter of whether a trade policy instrument can influence economic, social or environmental targets associated with any given objective, but whether the trade policy instrument is the best policy instrument available to attain that objective. In this regard, the first objective (rebalancing the Chinese economy)

² A plurilateral accord is an accord between a subset of the WTO members concerning a matter of common interest. The benefits of membership of such an accord need not be shared with other members. A critical mass accord is an accord among a subset of the WTO membership that comes into effect when a pre-specified agreement threshold is met. A characteristic of critical mass accords is that the reforms undertaken as a result of them are shared with all WTO members, irrespective of whether a trading partner is a signatory to the critical mass accord.



seems to be best accomplished with macroeconomic tools, not trade policy. Trade policy instruments are likely to make some contribution to the second through fourth objectives, but unilateral state measures may contribute more. Finally, trade policy initiatives will be at the centre of discussions for meeting the fifth objective (promoting a harmonious multilateral trading system) and will figure prominently in many discussions on other significant international initiatives, such as negotiations over an accord to slow climate change, that implicate the multilateral trading system and China's overseas commercial interests.

To better root suggestions and recommendations for Chinese policy makers in the appropriate context, the next two sections consider at some length the objectives and recent experience of Chinese commercial policy making.

3.0 China's Trade Strategy and Policy since Entering the WTO

The purpose of this section is to describe the factors underlying China's current trade strategy and the initiatives that have followed from that strategy. As will become clear, China has tailored its approaches to different matters and trading partners, assembling a wide portfolio of tools. This discussion provides the point of departure for suggestions for reorienting China's commercial policies to the objectives of a sustainable trade strategy, the subject of Section 5 of this paper.

3.1 The Adjustment of China's Foreign Trade Policy since Entering the WTO

Some of the main factors influencing the formation and implementation of China's foreign trade and economic policy are as follows:

Political factors. The Communist Party of the People's Republic of China has put forward a "people-oriented" policy, which since the 16th National Congress has aimed to comprehensively implement a scientific outlook on development and build a "harmonious society." Compared with the traditional outlook on development, the scientific outlook on development is a step forward and sets new and higher standards for domestic development planning, opening to the outside world, promoting the coordinated development of the national economy and foreign trade, resolving all internal and external conflicts, and ensuring China's peaceful rise. Through this new outlook, China hopes to establish an "internal and external, interactive, mutually beneficial and win-win, safe and efficient open economic system and form new competitive advantages in participation in international cooperation and competition under the conditions of economic globalization" (Hu, 2007).

Economic factors. Since China's accession to the WTO, China's national economy and foreign trade have developed rapidly, and China has become the world's fourth-largest economy and third-largest trading country. At the same time, problems such as domestic and international economic imbalances, relatively weak domestic demand, extensive dependence on foreign trade growth, intensified constraints on foreign trade from resources and the environment, an excessive trade surplus, currency appreciation pressures and conflict with major trading partners have become increasingly prominent. Foreign economic and trade policies should be adjusted to take these issues into account; otherwise, the country's continuous growth in both imports and exports will not be sustained.

WTO rules. As a new member of the WTO, China needs to open up its domestic market in accordance with its commitments and WTO rules, clean up and revise laws and regulations that do not comply with WTO rules, and improve the transparency of policy formulation and administration. The principles of market access,



national treatment and transparency initiated by the WTO have become the consensus. At the same time, China hopes to make improvements and innovations in multilateral trade rules to better balance the interests of all parties and uphold fair international trade and competition.

International patterns. As China's international status improved, the international community became increasingly concerned about China's role in international affairs, including international economic relations, and hoped that China would assume more responsibilities. In this period, bilateral and regional cooperation of various kinds was actively carried forward. However, for various reasons, the Asia-Pacific region has not yet formed mature regional economic cooperation organizations like the European Union or the region covered under the North American Free Trade Agreement. China started by creating an external environment favourable to its own development, hoping to strengthen regional economic cooperation with surrounding areas and to strengthen bilateral economic and trade cooperation with more partners to seek common future development.

3.2 Trends in China's Commercial Policy Strategy

China's accession to the WTO resulted from the country's implementation of reforms and opening policies, the establishment of the socialist market economic system and active integration into the world economy. After its accession to the WTO, China's foreign economic and trade policies placed more stress on opening up and cooperation and paid more attention to the coordination of growth. Opening up, cooperation, identifying win-win situations and sustainable development are China's long-term goals for the future development of its foreign trade.

More emphasis on opening up means that China is becoming increasingly aware of the fact that the world of today is an open world, economic globalization is developing rapidly, and the international division of labour has become deeper and more extensive. China's accession to the WTO makes its market more open, allowing it to merge with the world market into an organic whole. China must face up to more intense competition with foreign enterprises and commodities while at the same time, through integration into the global economy and through international industrial transfer, gaining more opportunities to give play to its own advantages and accelerate its own development.

More emphasis on cooperation means that China earnestly follows all the international trade rules in its foreign trade and economic activities, fulfills its obligations to expand market access, actively participates in and promotes bilateral, regional and multilateral cooperation, strives to achieve mutual benefits and win-win situations, and shares the development results with trade partners. China must take the interests of partners, particularly developing countries, into account while achieving national development. It must also consider all parties concerned in the face of various contradictions and conflicts and, as far as possible, find a way out through consultation and negotiation. China will never harm others to benefit itself.

More attention to the coordination of growth means that China has made the scientific outlook on development a guideline for economic work in the new era. In light of new problems concerning the internal and external economy, China will place more emphasis on balance and coordination among external and domestic demands, foreign and domestic capital and investments, imports and exports (including growth rates, quality and efficiency), the relationship between foreign trade and resources and the environment, and the relationship between foreign trade and the national economy. China is trying to realize comprehensive and coordinated sustainable development and develop resource-saving and environmentally friendly trade.



3.3 A New Player in the Multilateral Trade Regime

Over the six years since China's accession to the WTO, China has strictly abided by WTO rules and conscientiously fulfilled various obligations and commitments. First, China has significantly reduced its import tariffs, reducing the average tariff from 15.3 per cent in 2001 to 9.8 per cent at present. Of this, the average tariff on industrial products dropped from 14.8 per cent prior to accession to 8.9 per cent after; the average tariff on agricultural products decreased from 23.2 to 15.2 per cent, and both were much lower than those in Japan and the European Union.

Second, China has reduced non-tariff barriers and abolished import quotas, trade permits and other non-tariff measures, so enterprises no longer need government approval for getting engaged in foreign trade. Third, China has actively opened up its service trade market and made specific opening commitments in nine out of the 12 fields in the service trade and 102 of the 160 subfields, much higher than the commitment level of the general developing countries and actually higher than some developed countries for service areas such as banking, insurance, telecommunications and transportation. Fourth, China has strengthened the protection of intellectual property rights, setting up a two-pronged administrative and judicial protection system with Chinese characteristics, and has intensified law enforcement for the protection of intellectual property. The Chinese legal system for intellectual property rights has reached the protection standards required by the WTO council on trade-related aspects of intellectual property rights. Finally, China is improving a unified and transparent legal system in line with WTO requirements. The country has cleaned up or abolished 2,300 rules and regulations in its administrative departments.

From April 19 to 21, 2006, the WTO reviewed China's trade policies for the first time since China's accession to the WTO. In this deliberation, all the representatives of participating WTO members thought highly of China's performance on its commitments. They believed that China's accession to the WTO not only promoted China's reform and opening-up process but also brought opportunities to the world. They also believed that China's fully abiding by its commitments was a major contribution to the multilateral trading system. Of course, some members put forward proposals on specific aspects of China's trade policies that need to be revised and improved, as well as on such issues as strict implementation, timely communication and transparency of policies. The Chinese government attached great importance to the views of members and made some improvements after the conference. Sun Zhenyu, Chinese ambassador to the WTO in Geneva, said, "Three Director-Generals of the WTO all fully affirmed China's great efforts and achievements, and the Director-General Pascal Lamy ranked China A-plus" (www.china.com.cn, January 23, 2008).

From May 21 to 23, 2008, the WTO reviewed China's trade policies for the second time, in Geneva. Before the review, 19 parties, such as the United States, European Union, Brazil and India, put forward over 900 questions about specific aspects of China's trade policies. China gave printed answers to most of these. During the review, some parties raised more questions about the rising prices of grain, balance of international payments, transparency of the trade regime, technical barriers to trade, subsidies, limits to exports, law enforcement for intellectual property rights, industrial policies, governmental purchases and service sector opening. The Chinese delegates answered these questions. The chairman of the review meeting praised China for its efforts.

3.3.1 Participation in the Doha Round

China places great emphasis on participating in and promoting the Doha Round negotiations and has presented more than 40 proposals and position papers covering many areas of the negotiations. In the Cancún meeting, held in September 2003, China, together with 19 other members, including India and Brazil, jointly formed the famous "20-Nation Coordination Group" (G20), which played an important role in pushing



the negotiations toward the direction of balanced development. In the WTO mini-ministerial meeting held in Dalian, China, in July 2005, China coordinated in-depth discussions on the difficult problems of the negotiations. During the WTO ministerial conference held in Hong Kong in December 2005, China addressed the general assembly as well as participating in all seven “green room meetings” with more than 30 major WTO members, conducting bilateral talks with 21 ministers of the member countries, and participating in dozens of senior official meetings and consultative group discussions. China played a positive role in promoting the meetings to achieve results in terms of reducing agricultural subsidies and providing the least developed countries (LDCs) with tariff- and quota-free treatment.

In late July 2008 the WTO held a mini-ministerial meeting, attended by major members in Geneva, to negotiate solutions to the last critical problems. Some members, including China, made certain compromises and concessions on issues such as reductions in overall trade-distorting domestic support for developed members, sensitive products, special safeguards and anti-concentration clauses. However, the negotiations broke down because of the differences between the United States and India over special safeguards for agricultural products. Chinese officials regard this as a serious setback to the Doha Round and fear the failure will have a serious negative impact on the fragile multilateral trading system (Chen, D., 2008).


3.3.2 Resolution of Disputes with Main Trading Partners

With the rapid growth of foreign trade after joining the WTO, China’s trade disputes and frictions with its major trading partners are increasing rapidly. The relatively well-known concerns are the Sino-EU and Sino-U.S. textile disputes, as well as disputes over such issues as steel products, intellectual property, trade balance, the yuan exchange rate, auto parts, food safety and Sino-Japanese agricultural products.

Objectively, the trade disputes facing China are to a certain degree inevitable and long-lasting. The rapid take-off of China and other emerging economies, and the dramatic changes in the pattern of international division of labour, will inevitably lead to changes in the distribution of interests, resulting in a game between the countries with vested interests and the large emerging countries. Therefore the current trade disputes are, in general, the product of global economic and trade development. As long as the established dispute settlement procedures are followed and the interests of all parties are taken into account, current disputes are not likely to lead to all-round confrontation and conflict.

The Chinese side has always believed that the best way to resolve various trade disputes is through consultations and negotiations within the WTO rules and system, with good intentions toward others, instead of through confrontation and sanctions. In 2005 China reached a textile trade memorandum of understanding with the United States and European Union. China has exchanged views on trade disputes with the United States, Europe, Japan and other major trading partners, reached understandings or consensus, and avoided the intensification of disputes using tools such as the Sino-U.S. strategic economic dialogue and U.S.-China Joint Economic Committee, the EU-China Joint Economic and Trade Committee, and high-level economic dialogue with Japan, as well as by strengthening high-level visits between the two sides concerned. China reformed its mechanism for setting the exchange rate, gave up the mechanism pegged to the U.S. dollar, and expanded the floating flexibility of the yuan according to market supply and demand. It also put in order the domestic market operations, intensified law enforcement for the protection of intellectual property rights, and severely cracked down on infringement and piracy acts. Finally, it actively adopted measures to curb excessive growth of exports and expand imports.

Naturally, not all the trade disputes between China and its trading partners can be resolved through consultations and negotiations. Many cases have been brought under the WTO dispute settlement mechanism. For example, in 2002 eight members, including China, the European Union and Japan, brought



a case against the United States' protective tariffs on steel products. In 2004 the United States brought a case dealing with China's discrimination against imported semiconductor products. In 2006 the European Union, the United States and Canada filed a case against China's tariff on imported auto parts. In 2007 the United States brought a case against China's trade subsidies and lodged a complaint against China's failure to crack down on copying and restrictions of U.S. movies, music, and books. In April 2009 China filed a case against the United States over Clause 727 of the 2009 General Finance Bill, which placed barriers on China's poultry exports to the United States. Some of these cases were settled because disputing parties made some compromise, and some were arbitrated by the WTO. On the whole this did not affect the overall development of economic and trade relations between China and its major trading partners. China has also learned lessons from these experiences. However, the Chinese government's stand is that "dialogue is better than confrontation, and cooperation is better than pressure" between governments, and that governments should make efforts to resolve conflicts through negotiations (www.people.com.cn, May 25, 2007).

3.3.3 China's Position toward the Multilateral Trade Regime and Doha Round

China is a firm defender of the multilateral trade system. China introduced the policy of reform and opening up in 1978, and since then it has been rapidly integrated into the global economy. China went through 15 years of tough negotiations before formally entering the world's multilateral trade system. After its accession to the WTO, China strictly fulfilled its commitments, fully demonstrating China's persistence and seriousness under the system. Currently, economic globalization is deepening, but it is raising various new contradictions for economics and trade. These must be settled within the framework of the multilateral trading system. A reasonable and effective multilateral trading system is conducive to the sustained and stable growth of the world's economy and trade, as well as to China's peaceful rise and its sustainable development of foreign trade.

China respects the results achieved so far by the negotiations within the multilateral trading system, and it complies with WTO rules. At the same time, Chinese officials believe that the WTO needs reform and improvement, and they advocate the establishment of a more equitable, secure and non-discriminatory multilateral trading system. The new round of multilateral trade negotiations must take into account the balance of interests among countries at different levels of development and respect the economic development objectives and opening-up modes of developing countries. Without the full participation of developing countries, economic globalization is unfair and incomplete.

At the very beginning of the Doha negotiations, China put forward the proposal of "four musts"; any new trade agreement must:

1. Give full consideration to the development levels of the relevant industries in the developing countries and give special treatment in terms of the degree and speed with which those sectors are expected to open up.
2. Take practical and effective measures to ensure the implementation of the Uruguay Round agreements.
3. Ensure the full and effective participation of the developing members and that negotiations be conducted on the basis of equal consultations.
4. Negotiate in a balanced and coordinated approach to guarantee that the outcome of the negotiations embodies an overall balance of the interests of all parties. (Shi, 2001)



The Sixth WTO Ministerial Conference was held in Hong Kong in December 2005. Chinese Commerce Minister Bo Xilai said at the meeting that the Doha Round negotiations were a “development round,” and the international community had reached a consensus to help developing countries gain more. As the world’s largest developing country, it is China’s inescapable responsibility to actively participate in the development round of negotiations. Despite the fact that China still faces many difficulties as a developing country, its government and economic circles are willing to actively promote the facilitation and liberalization process of global trade as well as to play a constructive role in the current round of negotiations (www.sina.com.cn, December 14, 2005). Driven by the world’s major economies, the Hong Kong conference eventually reached compromise on such issues as abolishing agricultural subsidies, which gave the Doha negotiations new momentum. China took the initiative to promise to offer tariff- and quota-free market access and trade aids to the LDCs and made a positive contribution to the success of the conference.


As the biggest target of anti-dumping and special safeguard measures and similar provisions, China is against the trend of abusing various trade relief measures. In the Doha negotiations, China was always supportive of clarifying and improving the existing agreements. China also strongly urged all the key members, especially the developed countries, to recognize China’s full market economy status as soon as possible to enable the Chinese enterprises and goods to participate in international market competition on an equal footing.

3.4 China’s Regional Economic Cooperation

China adheres to a foreign policy of making friends with its neighbours and always making them partners, strengthens good-neighbourly relations and practical cooperation with them, and energetically engages in regional cooperation in order to jointly create a peaceful and stable regional environment featuring equality, mutual trust and cooperation. The content added to Article 5 of the Foreign Trade Law, revised in 2004, provides evidence of this: “The People’s Republic of China shall promote and develop trade relations with other countries and regions based on the principles of equality and mutual benefit, conclude or accede to regional economic and trade agreements, such as agreements on tariff alliances and free trade zones, and participate in regional economic organizations.” Active participation in and promotion of regional economic integration is China’s long-term strategy to develop good-neighbourly and friendly relations and create a stable and harmonious environment for foreign trade.

China does not seek special status; instead, China upholds equality and mutual benefit for regional economic cooperation. The historical, cultural, political and economic barriers and differences among the economies in China’s neighbouring regions have existed for a long time, and their relations are complex. It is necessary not only to coordinate the relations among major powers but, more importantly, to pay attention to the interests of the small and less developed countries, win their trust, and gradually form a common political will in order to push forward cooperation and the establishment of a free trade zone encompassing China and its neighbouring countries and regions. In promoting this goal, it is more important for China to have patience, pay attention to maintaining diversity, and uphold flexible and pragmatic principles. China is willing to fully participate in various regional cooperation mechanisms and hopes to explore with Asian countries the establishment of various forms of free trade arrangements and, finally, an Asian free trade cooperation network. At the same time, China stands for open regionalism and is willing to make the non-discriminatory principle the basis of trade liberalization. In other words, China will actively expand exchanges and cooperation with countries outside the region while deepening regional economic cooperation.

In recent years the rapid development of regional economic cooperation and integration has become an important trend for various major economies in promoting free trade and enhancing trade competitiveness. China works hard to strengthen regional economic cooperation while actively upholding and participating in



the multilateral trading system. Currently the regional economic cooperation arrangements in which China has taken part include:

Asia-Pacific Economic Cooperation. China formally joined in 1991. In addition to the annual informal leaders' meeting, Asia-Pacific Economic Cooperation has already formed multilevel working mechanisms, including the financial and trade ministerial meetings, Senior Officials Meetings, committees and working groups, and the secretariat. The leaders' meeting in 1994 determined the "Bogor Goals" of trade and investment liberalization, that is, that the developed and developing members should achieve trade and investment liberalization and facilitation in 2010 and 2020, respectively. The leaders' meetings in 1995 and 1996 adopted the "Osaka Action Agenda" and the "Manila Action Plan," respectively, to implement the goals of trade and investment liberalization. Asia-Pacific Economic Cooperation is a coordinating forum, and its conference resolutions and member countries' commitments are not mandatory to the members.

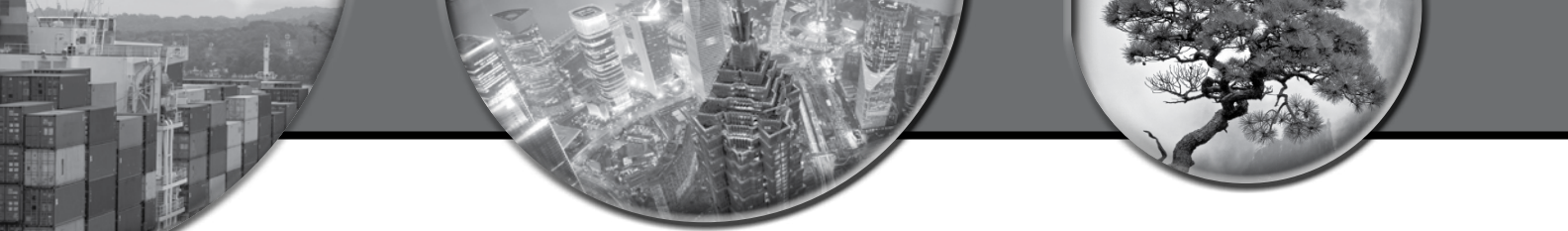
China-ASEAN free trade zone. China has signed agreements on trade in goods and services in the China-ASEAN Free Trade Area with the Association of Southeast Asian Nations (ASEAN), and the Agreement on Trade in Goods has been in effect since July 2005. At present China has reduced tariffs on 5,375 kinds of products for the ASEAN countries, and the average tax rate has dropped from 9.9 per cent to 5.8 per cent. At the same time, the ASEAN countries' average tariffs on China's exports have decreased to different degrees ("China mulls curbs," 2007). Over the past two years, China and ASEAN have enjoyed accelerated growth of bilateral trade, deepened economic integration and enhanced business links, which benefit their populations. China-ASEAN trade volume reached US\$160.84 billion in 2006 and US\$202.55 billion in 2007, an increase of 23.4 and 25.9 per cent, respectively, over the preceding year. ASEAN has become China's fourth-largest trading partner.

Shanghai Cooperation Organization. In May 2003 this organization officially launched the meetings for economic and trade ministers and the trade and investment facilitation negotiations. Its long-term goal is to gradually realize the free flow of goods, capital, services and technology, and its medium-term goal is to make stable, predictable and transparent rules and procedures, implement trade and investment facilitation and conduct large-scale economic and trade cooperation. Its short-term task is to make multilateral agreements and a list of legal measures for various nations to take in accordance with its Outline of Multilateral Economic and Trade Cooperation, determine the preferred areas for economic and trade cooperation, and demonstrate cooperation projects and put them into practice.

Asia-Pacific Trade Agreement. China joined the Bangkok Agreement in 2000. This is the first regional trade agreement with substantive preferential arrangements to which China has acceded. In November 2005 its first ministerial council was held in Beijing. The parties signed a revised version of the Bangkok Agreement and renamed it the Asia-Pacific Trade Agreement, which reserved a comparatively large space for carrying out investment, services and trade facilitation negotiations.

Greater Mekong Subregion Economic Cooperation. China, Cambodia, Laos, Myanmar, Thailand and Vietnam are the sponsor members. It was established in 1992, aiming to strengthen economic ties, eliminate poverty and promote development. The Asian Development Bank is its initiator, coordinator and major financier. Focusing on the five key strategic points of infrastructure construction, cross-border trade and investment, private sector participation, human resources development, environmental protection and sustainable use of natural resources, it developed cooperation for over 180 projects in the nine major fields of transportation, energy, telecommunications, environment, agriculture, human resources development, tourism, trade facilitation and investment, and raised funds worth more than US\$10 billion.

In addition, the regional economic cooperation China is now actively promoting or negotiating for includes



the Tumen River subregional economic cooperation and the China–Gulf Cooperation and China–Southern African Customs Union FTAs. Promoted by the China-ASEAN FTAs, the mechanism for regional cooperation among China, Japan, South Korea and ASEAN is deepening.

3.5 China and Free Trade Agreements

There has been a substantial increase in the number of regional trade agreements signed in the past 15 years. These agreements have been actively pursued and promoted by the overwhelming majority of WTO member countries, including developed and developing ones. FTAs have been widely regarded by China's major trading partners and some neighbouring countries as an important way to improve the trade and investment climate and accelerate China's economic growth.


Regional economic integration has aroused general concern in China's economic circle since the 1990s. Most scholars agree that regional economic integration and liberalization conform to the trend of economic globalization and act as a beneficial complement and driving force in the multilateral trade system (Chen, W., 2008). FTAs will increase the trade and investment opportunities among the member countries, but will also have a trade discrimination effect against non-member countries. So countries will benefit if they participate and suffer losses if they do not. China has been actively involved in regional economic integration and has established closed economic mechanisms (including FTAs) with its major trading partners. This will help to improve China's international division of labour and competitiveness and bring about a sustained and stable development in its foreign trade. At the same time, FTAs will help to strengthen the cooperation between China and neighbouring countries and achieve good-neighbourly relationships, partnerships, common development and prosperity.

For the time being, China's bilateral and regional preferential trade agreements have had good economic and political effects both at home and abroad. They have become a new form of China's opening up to the outside world and a new platform for achieving mutually beneficial progress with its trade partners (Yi, 2007). For example, a sustained and rapid growth was seen in China's trade with ASEAN in recent years, which can be largely attributed to the China-ASEAN FTA and the implementation of the Early Harvest Plan. Against this background, the October 2007 report to the 17th National Congress of the Communist Party of China clearly put forward a "strategy of free trade areas and expanding bilateral and multilateral trade and economic cooperation." At present, around 30 bilateral and regional FTAs are under process of negotiation or feasibility study. China will have a more active and open attitude toward bilateral and regional FTA negotiations.

3.5.1 Main Considerations Influencing China's Bilateral Free Trade Negotiations

The Chinese government actively promotes the development of bilateral economic and trade relations as well as conducting bilateral free trade negotiations to promote the following strategies:

To cope with the challenges of regional economic integration and bilateral free trade negotiations. Facing economic globalization and intense competition in trade and investment, both the developed and developing economies hope to get more reliable and preferential conditions for access to important markets through free trade negotiations, thereby creating commercial opportunities. By June 2008 the WTO had been notified of about 300 regional trade agreements, 247 of which were in force. Most of these agreements were in the form of free trade areas. It is estimated that the trade volume by the various regional trade groups accounts for more than 50 per cent of the global trade volume. Since the 1990s Asian countries have accelerated the process of regional trade liberalization. The ASEAN, China-ASEAN, India-ASEAN, Japan-ASEAN and South Korea-ASEAN free trade zones and the South Asia free trade zone were set up one after another.



During the same period, many bilateral FTAs sprang up in succession. Singapore formally signed bilateral free trade agreements with New Zealand (2000), Japan (2002), the European Free Trade Association (2002), Australia (2003), the United States (2003) and Jordan (2003), and is negotiating with Canada, Mexico, India, Sri Lanka, South Korea and other countries. Thailand formally signed bilateral FTAs with India (2003) and Australia (2004), and bilateral free trade negotiations with New Zealand and Japan are underway. Korea signed the first bilateral FTA with Chile in 2003 and has conducted bilateral negotiations with Singapore and Japan. Pakistan signed a bilateral FTA with Sri Lanka in 2005. Singapore, Chile and New Zealand also officially started trilateral FTA negotiations in October 2002. Japan's bilateral FTAs with Mexico, Singapore, Malaysia, Chile, Thailand, Indonesia and the Philippines entered into effect in April 2005, August 2005, July 2006, September 2007, November 2007, July 2008 and December 2008, respectively. If China does not attach importance to and strengthen the bilateral FTA negotiations, it will be in a disadvantageous position to expand export markets and attract and utilize foreign capital in the future.

To coordinate in the foreign policy of good-neighbourly and friendly cooperation with neighbouring countries. China's surrounding environment is generally stable and friendly, but there are also some local historical barriers and disputes over territory and territorial waters. Some countries and regions keep a wary eye on China's peaceful development. China has controversies with some neighbours about the East China Sea and the South China Sea. China has always maintained that joint development is the priority and disputes can be set aside for the time being. China sees strengthening bilateral economic and trade cooperation, achieving mutual benefits and sharing development as the most effective ways to reduce conflict, establish mutual trust and maintain regional peace. It is helpful for China to create peaceful, stable, good-neighbourly and friendly relations with its neighbouring and extended regions by signing bilateral FTAs to achieve freer flow of commodities, capital and personnel.

To create a mutually promoting situation with regional economic integration and a multilateral trading system. China's push forward with bilateral free trade areas does not exclude attempts at regional and multilateral trade liberalization. The FTAs China has signed with some countries and regions can enable China to accumulate experience in opening its domestic market and integrating into the global economy while also learning lessons related to regional economic integration and multilateral trade liberalization. Bilateral trade liberalization can further mutual promotion and can develop simultaneously with regional economic cooperation and the improvement of multilateral trading systems.

To break through prejudices and restrictions by some trading partners against China's foreign trade development. China's accession to the WTO left it with the so-called non-market economy status (Article 15 in China's Protocol of WTO Accession). This status becomes a means for some members to abuse trade relief as a weapon to limit China's exports. This is unfair to China. Therefore, in all its bilateral FTA negotiations, China has insisted on the recognition of its market economy status. Such a request not only conforms to the reality of China's economic reform process but is also conducive to breaking down prejudices and restrictions imposed by some of China's trading partners, as well as to curbing trade protectionism and maintaining an international trade order that features fair competition.

To promote the further opening of the domestic market and the reform of the governmental administration system. Both bilateral and regional FTAs involve the issue of opening up China's domestic market. For example, the two Closer Economic Partnership arrangements between the Chinese mainland and Hong Kong and Macau further opened up part of the service trade market in the mainland, the Sino-ASEAN FTA substantially increased China's imports of agricultural products from the ASEAN, and the Sino-New Zealand FTA will gradually open the imports of New Zealand's dairy and livestock products. In the past, all of these fields had met with the most resistance to opening on the mainland. Through bilateral free trade negotiations, China opened itself up first to some countries and regions, thus encountering less domestic resistance. This process



is conducive to gaining experience and promoting greater opening of the domestic market, and will move forward the reform of governmental functions and administration systems.

3.5.2 Bilateral Free Trade Negotiations: The Record

In addition to the multilateral and regional economic cooperation mechanisms, the Chinese government attaches great importance to bilateral communication and exchange in economic and trade fields with all the countries and regions in the world. China has established economic and trade mixed (joint) committee mechanisms with more than 140 countries and regions. These bodies hold regular consultations to discuss bilateral economic and trade situations and resolve contradictions and problems in order to guarantee coordinated and healthy development of economic and trade relations.


So far, in addition to the FTA signed with ASEAN, China has signed the following bilateral FTAs:

- The Closer Economic Partnership Agreement signed between the mainland and Hong Kong in June 2003.
- The Closer Economic Partnership Agreement signed between the mainland and Macau in October 2003.
- The Agreement on Free Trade in Goods and the Agreement on Free Trade in Services signed between China and Chile in November 2005 and April 2008, respectively.
- The Agreement on the Early Harvest Program for the FTA signed between China and Pakistan in August 2007.
- The FTA between China and New Zealand signed in April 2008, which is China's first FTA with a higher-income OECD member.
- The FTA between China and Singapore signed in October 2008.
- The FTA between China and Peru signed in April 2009.

China is currently negotiating bilateral free trade with countries including Australia, Iceland, Norway and Costa Rica. In addition India, Switzerland and South Korea all plan to conduct free trade negotiations with China, and some of them have officially initiated feasibility studies on free trade zones.

3.6 Sino-U.S. Strategic Partnership Relations

Sino-U.S. relations remain the most important issue in China's foreign affairs. As the largest developing country and the largest developed country in the world, China and the United States share common strategic interests, although divergences do exist. Mutual cooperation is the focus of improving bilateral relations. China and the United States are each other's second largest trading partners, and their economies share strong complementarities. In recent years, apart from the traditional Chinese exports to the United States, such as textiles, garments, footwear, furniture and toys, exports of mechanical and electrical products and high-tech products, such as automatic data-processing equipment, machinery and electronic products, have increased rapidly. Meanwhile, China is one of the major buyers for U.S. airplanes, mechanical and electrical equipment, fertilizer, grain and chemical products. Both China and the United States have benefited tremendously from this trade and economic cooperation.



Frictions always exist in Sino–U.S. trade and economic relations. Noteworthy issues in recent years include intellectual property rights, anti-dumping, China’s trade surplus, trade policy, the yuan exchange rate and U.S. export controls against China. Some issues were applied to the WTO dispute settlement mechanism, since neither side was ready to yield. However, the two countries are interdependent and each has a stake in the other, so these problems can only be solved through negotiations and consultations. China’s robust development has raised some doubts and prejudice in the United States and the international society, which has led to an over-politicization of disputes and divergences. This will harm the normal development of Sino–U.S. trade and economic relations. China advocates the idea of “business is business,” focusing on the overall interest of China–U.S. relations, strengthening cooperation and seeking common ground while reserving differences and achieving win-win results.

3.7 China’s Special and Preferential Trade Policy toward the Least Developed Countries

China’s position on helping the LDCs is to engage in active participation and promotion. Over the years China has been providing assistance to some developing countries, in particular LDCs, to the best of its capacity. This has included debt relief, preferential loans and economic assistance. One significant measure is to apply preferential trade arrangements to LDCs that have diplomatic relations with China.

China has applied zero tariff rates to some imports from Cambodia, Laos and Vietnam since January 1, 2004, and to the 25 LDCs in Africa since January 1, 2005. In September 2005, on the 60th anniversary of the founding of the United Nations, Chinese president Hu Jintao promised that China would adopt five measures to help the developing countries, in particular the LDCs, accelerate their growth. Among these is the application of zero tariff rates to unfinished goods from LDCs that have established diplomatic relations with China. Since July 1, 2006, China has fulfilled its commitments. The number of export items from the LDCs in Africa that have diplomatic ties with China receiving zero-tariff treatment has increased from 190 to over 440. Through July 1, 2008, 42 LDCs had diplomatic ties with China. The majority of these countries’ exports to China have received zero-tariff treatment.

4.0 Four Major Challenges Likely to Shape China’s Future Trade Relations

Although the focus of this paper is the commercial policies that might support the adoption of a sustainable trade strategy for China, we must take due account of the other challenges that China faces in the conduct of its trade relations. Interestingly, many facets of these challenges are related in some degree to the objectives of a sustainable trade strategy. Arguably, others are not; still, they may present alternative challenges to policy makers in China.

4.1 A Rising Number of Bilateral Trade Disagreements: Going beyond trade defence instruments to regulatory policies and other forms of protectionism

From 1995 to 2008 China was the country subjected to the most anti-dumping investigations in the world. One out of seven anti-dumping cases involved China. The scope of the exports involved continues to expand, and they are mainly concentrated in light industry, textiles, electrical and mechanical items, and other labour-intensive products in which China has a competitive advantage. While the trade conflicts between China and developed countries are growing, China’s trade conflicts with developing countries are also on the rise.



In addition to the anti-dumping, countervailing and safeguard measures and the special safeguard measures, barriers set up by many countries against China's technical standards, health and safety inspection, environment and labour protection, and other standards also grew, and their forms were increasingly diverse, comprehensive and overt. They were gradually extended from trade in goods to trade in services, investment, intellectual property rights, the yuan exchange rate and so on. China remains vulnerable here, especially in light of its WTO accession protocol, which allows trading partners to take certain measures, in violation of the WTO's most-favoured nation clause, against Chinese commerce for a specified number of years.

Concerns about worldwide misapplication of trade defence instruments and regulatory policies are coupled with the new, murkier forms of protectionism that have appeared during the current global economic slowdown. Discrimination in government procurement practices, which have assumed importance because of the large fiscal stimulus packages adopted by certain nations to bolster aggregate demand, has received particular attention. So-called green protectionism and the conditions applied to subsidies and bailouts received by firms headquartered in trading partners have provided another source of concern (see Baldwin and Evenett 2009 for an overview).

In recent years Chinese firms have invested abroad and developed commercial operations in greater numbers. These operations seek new ways to sell to foreign markets and can tap foreign technology and expertise. Their treatment by foreign governments is likely to be of growing concern to China. Already China has expressed concern about the restrictions certain industrialized countries have placed on the acquisitions of Chinese-owned firms, for example. This type of dispute is likely to grow in number and will probably increase Chinese interest in the behind-the-border policies of its trading partners.

Existing multilateral disciplines and regional accords do not provide for fast redress against foreign regulatory malpractice, and in some cases do not ban the use of certain types of discrimination against firms headquartered in other countries. While concerns about these forms of protectionism may lead to disputes (including warnings about "trade wars"), the medium- to longer-term consequence is that the forms of discrimination resorted to during this global economic downturn will define in part the negotiating agenda of future multilateral trade negotiations and regional trade agreements. There is historical precedent here, as the Uruguay Round's negotiating agenda was influenced by the forms of protectionism employed in the global economic downturn of the early 1980s.

These newer forms of protectionism go well beyond tariffs and often implicate domestic policies, such as those toward subsidies and industrial policy, government procurement policy, environmental policy, national standard-setting regimes and associated certification policies, and competition law (as this can be used to frustrate the mergers or acquisitions of firms). The question arises as to whether a sufficient constituency of nations, including China, are willing to constrain some of their discretion in the implementation of these policies in return for assurances that other trading partners will do likewise. The size and location of that constituency will define whether any viable initiative is regional, sectoral or multilateral in nature.

The experience of the Doha Round, in particular the rejection of the Singapore issues (which related in large part to policies other than tariffs) by a large proportion of the WTO membership, must raise questions about the appetite for signing binding rules on these policies. Of course, the reasons for rejecting negotiations in the past need to prevail in the future (especially in light of the recent increase in protectionism); still, the question arises as to whether there are alternatives to binding accords, and this is where soft-law, non-binding alternatives come in.



4.2 Potential Dispute Settlement Cases Concerning WTO Accession Obligations

Even though China's trade policy reviews have been positive, not every trading partner may share this assessment of the implementation of China's WTO accession obligations. Moreover, some trading partners have expressed concern about governmental measures implemented since China joined the WTO. In 2007 and 2008, for example, criticism from abroad could be heard about China's new competition law, which, some assert, disadvantages non-Chinese firms. The national treatment obligations of the GATT and GATS can be interpreted very broadly, and this may result in disputes between China and its trading partners.

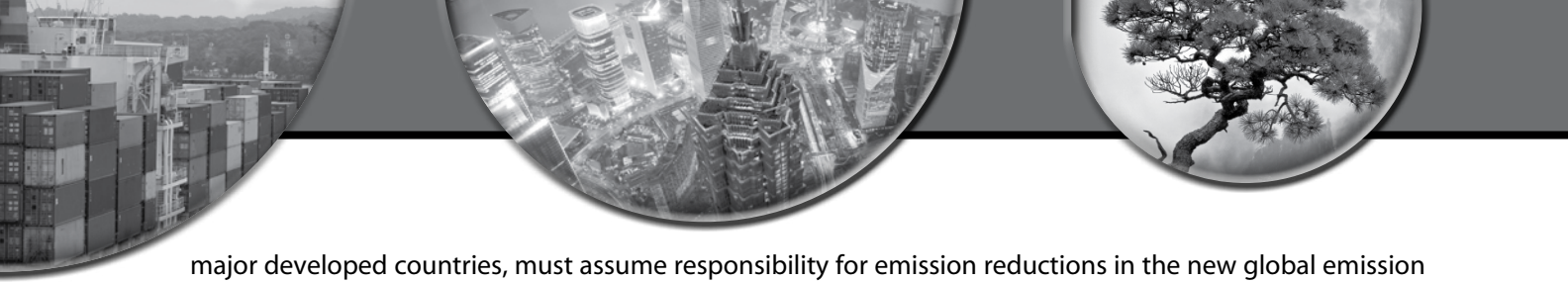
While China's record of settling disputes with trading partners is encouraging (as noted earlier), some matters have been taken to WTO dispute settlement. Moreover, there are no guarantees that other matters will not be taken to the WTO for adjudication in the future. Managing such disputes has both a diplomatic and a legal dimension and, should cases be lost, a domestic political dimension, as compliance or non-compliance could implicate different Chinese interests. Bilateral dialogues and the like arguably have a role to play here, especially with larger trading partners such as the United States and the European Union.

China is entering into the late-middle stage of industrialization, namely, the stage of accelerated growth and increased production by the heavy and chemical industries. From 2001 to 2006 the average annual growth rate of the output value of China's heavy and chemical industries increased by about 16.0 per cent, 2.8 percentage points higher than light industry's rate over the same period. This is actually the result of the transfer of the international heavy and chemical industry to China and will inevitably lead to rapid growth of China's energy demand and carbon emissions.

According to calculations by Professor Wang Zheng, director of the Policy Simulation Research Centre of the Sci-Tech Policy and Management Science Institute at the Chinese Academy of Sciences, China's carbon emissions increased by 131.15 per cent from 1990 to 2005, with an average annual growth rate of about 5.8 per cent and an increased rate since 2002. In comparison, the average annual growth rate of China's GDP in the corresponding period reached 10.2 per cent. This shows that China's energy-use efficiency has been gradually improving, and GDP per unit of carbon emissions is gradually increasing (www.ycwb.com, December 6, 2007).

Nevertheless, the estimates show that China has exceeded the United States in total carbon emissions to become the world's biggest carbon emitter, releasing up to 6 billion tonnes in 2007. And China's carbon emission per capita has increased rapidly. According to International Energy Agency estimates, in 1990 it was 50.3 per cent of the average global level, rising to 60.5 per cent in 2000 and 92 per cent in 2005. Now it is equal to the world average. Although China's carbon emissions are still only one-third of developed countries' average level, they are 1.7 times higher than the average for the developing countries, and the pressure to cut its emissions is increasing ("Outlook Weekly," 2009).

The growth of China's carbon emissions has received international attention and criticism. China has a large population base, and even though its carbon emissions per capita are not high, according the International Energy Agency's estimate in its *World Energy Outlook 2007*: "China may replace the U.S. in 2007 and become the world's largest carbon emitter, and India will become the world's third-largest carbon emitter around 2015." The agency said that if China and India kept their current policies unchanged, the global annual emissions of energy-related carbon dioxide would rise from 27 billion tonnes in 2005 to 42 billion tonnes by 2030, and the economic development of the two countries will become the main driving factor. At the United Nations Climate Conference held in Bali, Indonesia, in December 2007, some industrialized countries shined the spotlight on China and India, going further to argue that China and India, like the



major developed countries, must assume responsibility for emission reductions in the new global emission reduction framework.

In terms of trade policy, much depends on the manner in which any climate change treaty is implemented. In particular, concerns have been raised about so-called border tax adjustments—a form of border tax, just like a tariff—that might be imposed on imports from countries with “low” or “unacceptably low” national carbon taxes. The potential for abuse in the application of these border taxes, plus the paperwork and costs associated with even a fairly implemented regime, would fall on exporters, especially exporters from countries, like China, with high carbon emissions.

In principle, global measures to slow down climate change are not inconsistent with the underlying goals of a sustainable trade strategy for China. Nevertheless, there may be some tension between the instruments used to implement any climate change accord and some of the specific objectives of the sustainable trade strategy. Assuming China prioritizes the latter in coming years, then the sustainable trade strategy’s objectives may shape the position China takes on climate change negotiations. There may well be potential complementarities (or “win-win”) opportunities to be tapped here. For example, the upgrading of Chinese manufacturing industries toward higher-value-added, less-carbon-intensive goods and production processes could be substantially facilitated by technology transfer and funds negotiated as part of a climate change accord.


4.3 Until Recently, the Import Prices of Resources and Energy Have Continued to Rise Sharply

From 2002 to 2007 the prices of primary commodities on the international market rose consistently. Since 2008, however, there have been substantial increases the volatility of commodity prices, which have been a disruptive influence. For example, the international oil price has risen from US\$20 per barrel in early 2002 to US\$148 per barrel in mid-2008, subsequently falling to approximately US\$50 per barrel. Similar fluctuations have been found in the prices of copper, aluminum, nickel, lead, zinc and tin. The annual price increase of iron ore has fluctuated between 8.9 and 71.5 per cent since 2003.

At present China is a net importer of primary products and the largest importer of bulk resource commodities. Consequently, the continuously rising prices of resources and energy have brought about a series of adverse effects on China’s economy and trade. First, import-based inflation pressures are growing—China’s consumer price index reached 4.8 per cent in 2007 and further increased to 8 per cent in the first quarter of 2008. Second, the terms of trade have deteriorated, meaning that China can buy fewer imports with its export revenues.

The price of imported resources and energy is not the only consideration—access to such resources in the first place is also important. This is of particular concern given that some resource-selling companies and jurisdictions enter into long-term contracts, limiting the amount of resources available to “second movers” or later developers. In recent years China has signed accords with a growing number of countries and firms to supply raw materials. These accords have been the subject of scrutiny in some quarters, raising concerns about the knock-on effects for other countries’ sustainable development.

There is a broader, systemic implication of this discussion of resource use and the adoption of a sustainable trade strategy. Arguably the Chinese contribution to a more sustainable trajectory for global development would be mitigated if unsustainable or less-sustainable activities in China were not eliminated but were transferred to other developing countries. For example, if the abandonment by China of energy- and raw material-intensive production of low-end manufactures meant that such production expanded in Vietnam



and Cambodia, then the ultimate benefit to the global environment would be less than if all East Asian nations updated their production processes together. Quite understandably, Chinese policy makers may take the view that their primary concern is with Chinese sustainable development. Even so, any Chinese aspirations to lead the world or their region on sustainable development will require a view of resource and energy use that is not confined to within its borders, and may call for international, or at least regional, initiatives to complement national implementation of a sustainable trade strategy.

5.0 Which Chinese Commercial Policy Options Would Support a Sustainable Trade Strategy?

In this section we attempt to draw together the pertinent factors, mentioned in previous sections, that shape the options available to Chinese policy makers as they consider implementing a sustainable trade strategy. In the discussion that follows, the policy options identified are related to each of the five objectives of that trade strategy. Readers interested in a brief summary of the principal suggestions should refer to the summary table at the end of this paper.

The first objective of the proposed sustainable trade strategy for China is to rebalance the economy away from a substantial dependence on export demand, toward domestic sources of demand, such as consumption. Of course, this matter has taken on greater importance given the recent global economic downturn and proposals that the major economies of the world, in particular the countries with large current account surpluses, engage in coordinated fiscal policy expansion. In the Chinese context, the sharp export slowdown experienced in 2008 and early 2009 testifies to the Chinese economy's vulnerability to foreign macroeconomic shocks.

Despite the importance of this first objective, it is unclear whether the traditional tools of commercial policy (unilateral, reciprocal and multilateral initiatives) are the most effective instrument to rebalance this aspect of the Chinese economy. State measures that encourage Chinese households to limit their savings and expand spending on goods and services are the prescription that follows from standard macroeconomic analysis. Increased government spending on infrastructure projects and further measures to redistribute income to poorer people (who typically spend more of their incomes and save less) will reinforce the rebalancing of demand in the Chinese economy.

Indeed, the stimulus package announced by the Chinese authorities in 2008 as well as other, prior measures are moves in this direction. They may well have to be reinforced by further steps, especially if the global economic downturn persists. Another caveat, of course, is that steps to reorient aggregate demand in China provide incentives to business to reorient supply; however, the former does not guarantee the latter. Existing state measures that slow down or impede the reallocation of resources across sectors of the Chinese economy will frustrate rebalancing too. To summarize, there is much to the rebalancing of the Chinese economy that does not implicate Chinese commercial policy.

The second objective of the sustainable trade strategy is to promote the shift of Chinese export activities into higher-valued-added goods and services, reducing the volume of Chinese commerce that foreign trading partners need to absorb but without lowering Chinese export revenues. To the extent that higher-value-added goods and services involve production and distribution stages that are "greener," progress along the environmental and economic dimensions of sustainable development may be possible.

Upgrading of goods, services, and associated production and delivery processes is seen as key to attaining this objective, and another paper in this project describes the national measures that China might take



in this regard (Pan and Evenett, 2010). Our concern here is with the implications for Chinese commercial policy making. As is well known, added value tends to be higher in the design and distribution stages of commercial activities as compared with the production stages. In commercial policy terms, then, an emphasis on market access must be broadened to include greater protection abroad for Chinese intellectual property and for subsidiaries established abroad to supply higher-end Chinese goods and services. Moreover, higher-end products tend to face stringent standards (quality, health, safety and so on), and these can be implemented in a way that effectively discriminates against non-domestic suppliers.


In sorting through the policy options here, there are a number of key choices. Perhaps the most important factor is whether China might seek binding measures regarding a given regulatory policy implemented by a trading partner. Binding disciplines on a regulatory policy or standard-setting regime backed by a serious dispute settlement regime covering transparency, due process and non-discrimination would have clear advantages to Chinese firms trying to upgrade. However, in each case China's trade policy makers will have to assess whether negotiating partners are ultimately willing to take on binding obligations and, just as importantly, whether other Chinese ministries and government agencies will be willing to accept their discretion and practices being influenced by a trade agreement. Many jurisdictions must face such an assessment when deciding whether to seek binding obligations on regulatory or other behind-the-border matters.

If binding approaches are unacceptable or unlikely to be effective, then attention turns to soft-law initiatives. In many areas of regulatory policy there are already internationally recognized soft-law initiatives. The question would then arise as to whether China's interests are best served by an existing soft-law initiative or whether a new initiative could be created on terms that better suit both China's needs and those of the trading partners in question.

One particularly attractive feature of a Chinese-led soft-law initiative with East Asian partners on the various regulatory policies of interest here is that it could build on a solid foundation of existing cooperation within the region. Any regulatory standards and best practices could be better tailored to East Asian circumstances. Moreover, concerns about any adverse cost implications that improved regulations would have for firms would be mitigated by the fact that other countries in the region, which are often the most aggressive competitors for the same global customers, will be undertaking the same reforms.

Another important choice facing Chinese policy makers is whether to pursue reforms in other countries' regulatory policies through an FTA or other cooperative instrument that enables more than one regulatory policy to be addressed at the same time. An issue-by-issue approach to seeking improvements to regulations may allow for greater specificity, whereas a broader initiative may allow for common disciplines to be applied across a wide range of policies of interest to Chinese firms.

Experience in the European Union and between Australia and New Zealand suggests that progress in aligning and reforming regulatory policies seems to be possible between geographically proximate neighbours. Given China's extensive cooperative arrangements with countries in the East Asian region, perhaps the most promising vehicle for aligning foreign regulatory policies with Chinese interests in the near-to-medium term lies in a series of regional initiatives or a single cross-cutting regulatory initiative. With respect to both options, the steps taken by the Asia-Pacific Economic Cooperation nations on regulatory measures may provide some food for thought. Finally, a time may come in the medium-to-longer term where further progress on regulatory reform is possible at the WTO; however, in the near term, initiatives in East Asia or in selected FTAs outside of East Asia probably offer the greatest scope for progress on the second objective.



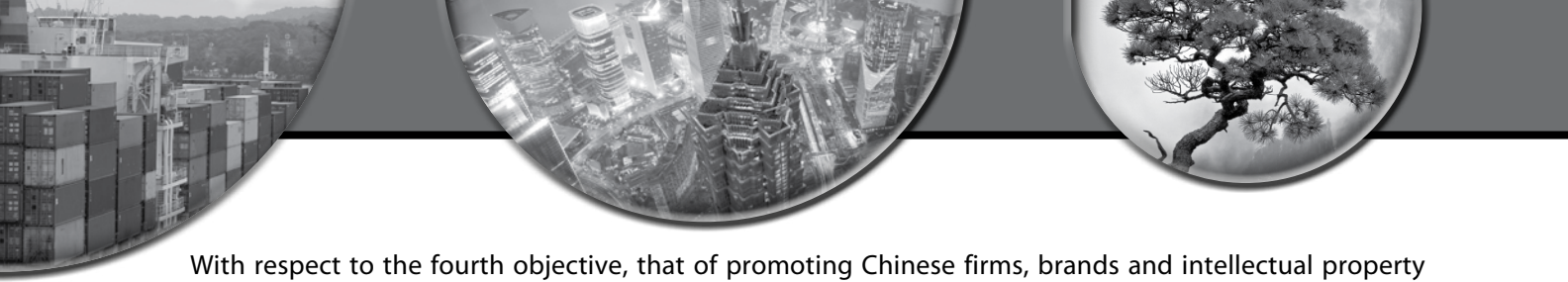
The sustainable trade strategy's third objective is to promote the development of China's service sector, potentially even at the expense of the manufacturing sector. Another paper in this project examines this objective in greater length (Zhang and Evenett, 2010); here we are concerned with what Chinese commercial policy can contribute toward this objective. Even if service sectors could be identified where foreign direct investments or foreign personnel could make a substantial contribution to the development of the respective Chinese service sector, the question arises as to whether China should open this market unilaterally or as part of a reciprocal trade agreement, possibly to a select group of trading partners. There may well be some service sectors where foreign investment has a positive track record in China or in other developing countries, but where domestic sensitivities limit the amount of market opening. Of course, opening a service sector to firms in a foreign nation with no expertise in a given service may effectively shield Chinese rivals from any competition, but this hardly helps improve the Chinese sector either.

With respect to opening unilaterally or opening to a subset or all of China's trading partners, in reality little may differentiate these two options. (The implication being that preferential opening to a select group of trading partners may not limit competition, in large part for the reason given next.) The so-called rules of origin of service sector firms in FTAs, say between two countries, A and B, often refer to service firms that have a base in trading partner A having, in this case, access (through exporting, the right to establish a subsidiary and so on) in country B. A firm headquartered in a non-signatory to the FTA between A and B may have an established commercial presence in country A and therefore be entitled to supply services under the FTA to country B. For this reason, experts on service sector liberalization tend to argue that little is gained in terms of shielding domestic service sector firms from foreign competition by signing an FTA of this type.

The previous paragraph suggests that market opening is essentially a choice between unilateral or multilateral reform. Of course, given that the latter accords deal with commitments to measures such as market access, it would be possible for China to progressively liberalize foreign market access on a unilateral basis while retaining the "negotiating chip" of not locking in that reform until a sufficiently attractive multilateral trade deal is obtainable. Therefore, in the near-to-medium term Chinese policy makers might progressively and unilaterally liberalize service sectors where additional foreign competition and managerial practices could trigger improvements by Chinese rivals. Over the longer term such unilateral opening may be reinforced by negotiated multilateral commitments, which offer better access to foreign services markets and greater certainty.

The development of Chinese service sector firms that can supply foreign markets while being based in China, for example, with back-office services, is another potential goal. The trade policy contribution to this subsidiary objective would take the form of making sure that the temporary movement of Chinese service sector experts into foreign markets to advise and consult with clients was not unduly permitted and to making sure that the liability laws of trading partners are not changed so as to effectively preclude the international outsourcing of services.

In this regard the experience of India is significant and could be studied in greater detail. In recent years industrialized country restrictions on temporary movement of persons and liability law changes have been concerns of Indian service sector providers, especially in their dealings with the U.S. market. More generally, the growing number of developing countries that effectively established themselves as providers of back-office and software services could become allies of China in any international initiative to keep industrialized countries' service sector markets open. The worsened limitations on the access to visas for foreign workers in a number of countries over the past 12 months as a result of the global economic downturn suggest that this is not a hypothetical consideration.



With respect to the fourth objective, that of promoting Chinese firms, brands and intellectual property in the world economy, to the extent that there is a direct role for Chinese commercial policies, that role relates to limiting the costs faced by Chinese firms and discrimination from foreign regulatory processes. Those processes relate to foreign investments (that condition commercial presence); protection of copyrights, trademarks and other forms of intellectual property; merger and acquisition laws and the like. The considerations raised in the discussion above of the potential contributions of binding, reciprocal agreements and soft-law alternatives to attaining the second objective apply with equal force here.

The fifth objective of a sustainable trade strategy, supporting the development of a harmonious, sustainable multilateral trading system, may have a number of implications for Chinese commercial policy making. Several aspects relating to this objective are discussed here, but nothing should be inferred from the order in which we discuss them.

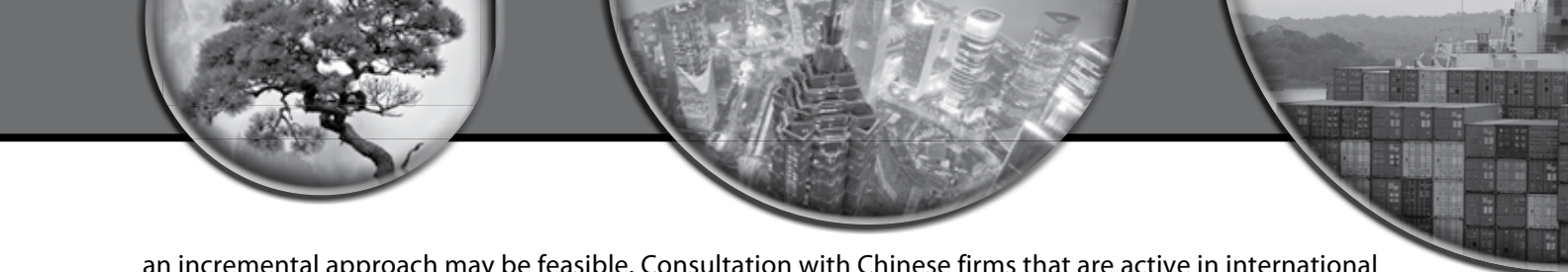
It is highly likely that several of China's trading partners will continue to raise complaints against what they perceive as infractions of WTO accords. In the past 12 months the United States and the European Union have raised the profile of their trade disputes with China, in some cases joining other countries in bringing formal disputes to the WTO's Dispute Settlement Understanding. It seems that the patience of China's trading partners is running out.

As far as managing these almost inevitable disputes, one option available to Chinese authorities is to strengthen the bilateral dialogues underway with its major trading partners and potentially create dialogues with other trading partners. Dialogues are, of course, two-way processes and would enable China to raise concerns about regulatory and trade policies in trading partners. If successful, dialogues would forestall the development of formal legal trade disputes and dissipate criticism.

In deliberations during the Doha Round, Chinese officials have indicated a desire to see the multilateral trading system evolve in a manner that better favours developing countries. This is a distinct matter from managing trade disputes and relates much more to the agenda-setting and decision-making processes of the WTO. Of course, in the near term the matter of completing the Doha Round on terms that China finds agreeable will be the first priority.

Over the medium to longer term the extent to which China's WTO membership can be used to advance the objectives of any sustainable trade strategy will depend on whether the WTO membership decides the multilateral trading system is a useful place to develop further multilateral rules. Typically there is a several-year hiatus between the conclusion of one round and the start of another. This does not preclude China's advancing elements of its sustainable trade strategy through plurilateral and critical mass agreements at the WTO, but even these initiatives would require the assent of the entire WTO membership at the beginning and end of any such negotiation. Progress at the WTO, then, is hostage to the entire membership's views.

Given that many of the elements of China's development trajectory are shared by other developing countries (such as having a growing number of national firms that are expanding abroad for the first time), developing country constituencies may coalesce behind WTO initiatives that limit impediments to upgrading (such as inappropriate technical barriers to trade and sanitary and phytosanitary standards), condition policies affecting the overseas expansion of Chinese firms (such as investment rules and competition laws), open service sector markets and ensure that environmental protection does not become a form of protectionism. Again, much will depend on whether countries that seek improvements in trading partners' regulatory regimes are prepared to take on binding obligations for their own regulatory policies and practices. The willingness to take on binding obligations may grow over time, so



an incremental approach may be feasible. Consultation with Chinese firms that are active in international markets may reveal which foreign regulatory policies are of greatest concern, facilitating the prioritization implied by an incremental approach.

Deliberations at the WTO are likely to be dominated by the Doha Round for the foreseeable future, and any conclusion of these multilateral trade negotiations followed by a likely hiatus of five years or so, so the international initiative of greatest relevance to sustainable development in China may be that relating to climate change. Indeed, the international and national measures taken in light of any climate change accord are likely to be a more promising near- to medium-term vehicle for advancing a sustainable trade strategy than China's WTO membership. Ensuring compatibility between that strategy and any global climate change accord will be a central priority for Chinese policy making.

6.0 Conclusion

In this paper we outlined the objectives of a Chinese sustainable trade strategy along with a number of recent trade-related and other developments that are likely to affect Chinese trade policy priorities. Ultimately the purpose has been to sketch out the different commercial policy initiatives that could advance a sustainable trade strategy. Table 1 relates each of the five objectives of a sustainable trade strategy to potential commercial policy initiatives; it follows this section and summarizes the key findings of this study.

The commercial policy options identified in this study indicate how Chinese trade policy making could be aligned with the objectives of sustainable development in China. Having said that, we stressed that not every trade policy instrument will significantly contribute to each objective of the sustainable trade strategy and, indeed, one of those objectives (the first) is probably best addressed through macroeconomic and other non-trade policies. Our discussion, then, seeks to shed light on what can be reasonably expected of commercial policies in advancing sustainable development in an economy of growing global significance.

One consideration that recurred throughout this study was the extent to which China and its trading partners were willing to take on binding commitments in trade agreements with respect to regulatory policies that are most implicated by the sustainable trade strategy. Of course, willingness to take on binding commitments may change over time, and incremental, confidence-building soft-law initiatives may have particular appeal in the near-to-medium term.

With respect to the role that China's WTO membership can play in advancing its sustainable trade strategy, the legacy of the Doha Round of multilateral trade negotiations cannot be overlooked, and suggests that the potential for new initiatives in that forum are only likely in the medium-to-longer term. Ensuring that the outcome of any global accord on climate change is aligned with Chinese priorities for sustainable development is a more pressing priority.

Taken together, these observations indicate that China's sustainable trade strategy is likely to be advanced by bilateral and regional dialogue-driven and soft-law measures in the near-to-medium term, complemented possibly by a global climate change accord. The development of binding obligations on the regulatory matters of direct interest to a Chinese sustainable trade strategy is a far longer-term and worthwhile enterprise.

Table 1: Relation of each of the five objectives of a sustainable trade strategy to potential commercial policy initiatives.

Objectives of China's sustainable trade strategy	Recommendations for choice of trade policy instruments
<p>1. Promote the rebalancing of the Chinese economy away from its currently unsustainable path.</p>	<p>1. Use macroeconomic tools and reforms to public services and the welfare state that decrease the need for Chinese households to save so much.</p> <p>2. Fulfillment of this objective is not suited to trade policy tools.</p>
<p>2. Promote added value in economic activities, not just sales.</p>	<ul style="list-style-type: none"> • Do not prioritize reciprocal trade agreements (bilateral, regional and multilateral) that seek lower tariffs on low-end manufactured goods. • If upgrading of exports is frustrated by inappropriate use of foreign standards, seek obligations on transparency, non-discrimination and process rights in binding accords (assuming foreign demands are acceptable to China) or soft-law accords.
<p>3. Promote services, not just manufacturing.</p>	<p>1. Prioritize reciprocal trade accords (bilateral, regional, multilateral, plurilateral or critical mass) in service sectors of interest to China.</p> <p>2. Place less emphasis on securing access to foreign markets for manufacturing.</p>
<p>4. Promote Chinese firms (including multinationals), brands and intellectual property rights. (Nationality matters.)</p>	<p>3. Seek changes and improvements to relevant foreign national laws and enforcement processes, and obligations on transparency, non-discrimination and process rights in binding accords (assuming foreign demands are acceptable to China) or soft-law accords.</p>
<p>5. Support a harmonious, sustainable architecture for international trade.</p>	<p>4. Establish and reinforce bilateral processes to limit trade disputes.</p> <p>5. Once the Doha Round is completed, advance multilateral initiatives in the policy areas associated with upgrading, the overseas expansion of Chinese firms (such as competition law), service sector reform and environmental protection at the appropriate time and if China is prepared to take on binding commitments in these policy areas.</p> <p>6. Monitor climate change negotiations to ensure that the likely impact of any accord is consistent with China's sustainable trade strategy.</p>



Acknowledgements

Both authors thank the participants in this project for their comments and suggestions. All remaining errors are our own. The views expressed here are personal and do not reflect those of any government or official organization.

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8

Advancing the Sustainability Practices of China's Transnational Corporations

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1.0 Sustainability, Soft Power and Competitiveness

For China to maintain a fast pace of economic growth, it must forge international competitiveness strategies underpinned by increased resource efficiency and harmonious development. This is relevant both internally and in relation to the needs and perspectives of other communities and nations. Chinese business and government roles in promoting sustainable development are increasingly important in the global economy and global trade (Goklany, 1995).¹ Assuring the international community of the consistent and balanced application of the two-fold, interdependent pathway of economic growth and sustainable development requires that China's increasingly visible business community consistently and demonstrably follow such a path.² Failure to achieve global recognition of China's commitment to develop sustainably will accentuate the negative and threatening aspects of Brand China, which will in turn lead to restrictions in the scope of China's business community in global markets, thereby limiting China's economic success and its harmonious development at home and internationally.

Credible and demonstrable sustainable development practices are, in short, a prerequisite for China's transition to a role as a major economic and political global player. The Chinese business community must therefore, at minimum, demonstrate compliance with environmental and social performance criteria enshrined in both intergovernmental agreements and the national legislation of those countries in which Chinese businesses operate. But compliance with international and national law, while necessary, is not sufficient for Chinese transnational corporations (CTNCs) to succeed in global markets or for China to establish an acknowledged, benign presence and global role. Beyond these traditional legal frameworks is a more complex and dynamic category of rules evolved on the basis of norms, expectations and interests articulated by a wide variety of global citizens such as consumers, employees, investors and active participants in more formal political processes. These interests are increasingly voiced through blended market signals and political processes that can be unfamiliar and uncomfortable for Chinese business. These blended processes can impact a business's financial bottom line and are also part of a wider evolution of the role of business in society, and thus of the relationship among business strategy, public policy and citizen action. Pascal Lamy, director general of the World Trade Organization (WTO), summarizes the essence of this new trading environment: "Responsible competitiveness...blends forward-looking corporate strategies, innovative public policies and engaged and vibrant civil societies. It is about creating a new generation of profitable products and business processes underpinned by rules that support societies' broader social, environmental and economic aims" (quoted in MacGillivray et al., 2007).

Many of the rules that Mr. Lamy refers to are non-statutory sustainability standards that have been negotiated between businesses seeking to stabilize their operating environment and civil society organizations seeking "civil regulation" to govern international businesses beyond the scope within which governments are willing or able to legislate (Zadek, 2007a). Governments and other public institutions are often involved, but play convening, mediating and financing roles and do not act as statutory agents overseeing the application of the law. Despite much debate, the WTO Committee on Technical Barriers to Trade has no guidelines on how such voluntary international standards bodies should seek to influence market conditions through non-statutory means (Marinus Huige, chair, WTO Committee on Sanitary and Phytosanitary Standards, Sustainable Trade Strategy Geneva meeting, November 2008). The WTO has so far not reacted to such standards, with some scholars suggesting the WTO and members should create "a norm of leaving 'transnational regulatory space'" for sustainability standard-setting (Bernstein and Hannah, 2008).

1 Several publications focus on the importance of sustainable development in specific areas. These include Chinese Academy of Science Sustainable Development Strategy Research Group (2007; 2008).

2 For a discussion on talent, see Tung (2007).




Most prominent are those sustainability-related standards developed through the International Organization for Standardization (ISO), including the ISO 14000 environmental standards and the ISO 26000 Social Responsibility Guidelines, the latter of which are currently in development (Conway, 1996). But over the last decade, a new generation of sustainability standards has emerged to cover everything from the global tea trade to extractive industries, carbon emissions, labour standards and sustainable forestry. The institutions that created and often subsequently steward these standards are mostly governed by coalitions of businesses, civil society organizations and public institutions. Because of their growing scale and wide convening power, these standards bodies increasingly play gatekeepers in deciding the legitimacy of international businesses seeking to operate profitably in global markets (Litovsky, Rochlin, Zadek and Levy, 2008). For example, accessing consumer markets, especially higher-value segments; purchasing premium-branded foreign companies; and securing natural resources or international capital through public listings or private equity all depend in no small part on a company's ability to demonstrate its visible support of and adherence to these bodies' standards. And many of those standards have moved out of the margin into the mainstream of global markets. Forestry, fisheries, textiles, mining, pharmaceuticals, finance and chemicals are but a few of the sectors that now embed such standards in the heart of their respective international markets in pursuit of one or another aspect of sustainability.

Voluntary sustainability standards, often developed and stewarded by business with civil society, labour organizations and the state, are in this sense a primary route through which businesses and the nations they are associated with exercise "soft power" in global markets in pursuit of international competitiveness and broader societal goals.

This paper focuses on how CTNCs can best engage in these "soft" dimensions of international operations, and specifically on how to deal with voluntary sustainability standards in securing competitiveness in global markets and fulfilling China's broader policy aims. The "harder" dimensions of China's competitiveness, such as finance, information, technology and infrastructure, are perhaps better researched and understood, and are clearly necessary enablers of success in international markets and in furthering sustainable development objectives. However, the softer dimensions and, crucially, their relationship to the harder dimensions are less well-understood, not only for their potential for enhancing competitiveness, but also for their potential restrictive impacts.

Most Chinese businesses currently choose the path of avoiding adherence to voluntary sustainability standards. In many instances Chinese businesses see these standards as inappropriate or difficult to adopt, given the residual markets open to Chinese latecomers. For the most part, however, most Chinese businesses do not engage because of unfamiliarity with the rules of the game, weak networks with the relevant organizations and a lack of guidance from the Chinese government, especially in the case of state-owned enterprises. Furthermore, these initiatives are perceived by Chinese businesses as barriers to entry to global markets (see, for example, Xing, n.d.). And indeed, while generally not designed to prevent a new generation of emerging-nation businesses from establishing themselves as global players, these standards have been developed and are in the main stewarded by Western businesses acting with largely European and North American civil society organizations and public institutions. So while seeking, for example, to protect workers or forests, or to reduce drug prices in poorer communities, standards systems are in practice dominated by incumbent institutions and, ironically, could become—or in some cases may already be—actual impediments to sustainable development.

Emerging-economy companies from nations other than China are increasingly gaining knowledge and overcoming suspicion about voluntary sustainability mechanisms and the organizations behind them. For example, Bolivia offers key lessons with its 12 years of using the Forest Stewardship Council standard to enforce its mandatory legal forest management, motivated by robust and credible verification, access to new



markets and reputational gains (Carey, 2008a). The island of South Georgia works with the Marine Stewardship Council to certify the sustainability of its fish products, largely in response to an international campaign by international NGOs that effectively convinced U.S. restaurants to stop serving fish from this region (Carey, 2008b). Increasingly, some emerging-economy companies are becoming players in the design of new sustainability standards, notably in the case of the ISO 26000 standard, but also in the field of sustainability reporting and assurance through their engagement in the development and promotion of the Global Reporting Initiative's G3 Sustainability Reporting Guidelines and AccountAbility's AA1000 Sustainability Assurance Standard. Chinese businesses are, however, at a significant disadvantage in comparison with their emerging-economy competitors in this regard. Compared, in particular, to companies in Brazil, India or South Africa, Chinese businesses lack experience domestically in engaging with civil society, creating active community partnerships that go beyond philanthropy in shaping market conditions.

Overall, avoidance of engagement in standards initiatives is not considered a strategic option but a default. As a result, Chinese businesses often automatically adopt immature strategies for themselves and China's broader good.

China's global prominence requires that it make clear and visible decisions as to how to deal with sustainability standards. But a decision whether to engage in any specific standards initiative must be informed by a broader strategic framing that places each initiative in relation to one of three possible pathways that China pursues in aligning its approach to sustainability, economic growth and associated competitiveness drivers:

- *Normalization (compliance)*, where it serves China's interest to comply with prevailing sustainability standards, indicating a strategy of engagement on terms already established in international markets.
- *Exceptionalism (opting out)*, where China's optimal strategy is, in the short or longer term, to avoid compliance with prevailing international standards, relying instead on its own standards tailored to its own needs and preferences.
- *Transformation (engaging and influencing)*, where China's interests are best served by seeking to reshape international sustainability standards, whether by becoming active participants in existing initiatives or by promoting alternatives as new international norms.

In other words, China's response to specific sustainability standards should not be based on preconceived judgments, but should be a response to each standard according to its merits, in relation to one or more of these pathways.

In this paper, we conclude that

- Sustainability standards are a means of offsetting competitive disadvantages or creating competitive advantages when businesses and nations such as China choose to develop more sustainably.
- Chinese businesses, supported by enabling public policies, will pursue varied approaches among differing standards, but over time will become a force in shaping the next generation of sustainability standards in global markets as a competitive strategy aligned with China's broader interests.
- Becoming such a force requires deeper understanding and engagement in existing standards initiatives and the players behind them, and a more prominent Chinese role among the communities that have developed and now govern the initiatives.



We set out practical means for realizing this last step as both strategic options for businesses and policy options for the Chinese government. The paper has been organized into the following sections. Section 2 briefly outlines salient aspects of the broader historical and policy context of CTNCs. Section 3 summarizes major opportunities and threats facing the Chinese business community as it emerges onto the world stage. Section 4 discusses “responsible competitiveness” and the place of sustainability standards in global markets. Section 5 presents a framework for strategy and policy by analyzing specific sustainability standards, and Section 6 draws broad conclusions and gives specific recommendations.

The significance of this topic for China and the global community cannot be overestimated. China’s development will require access to technology and raw materials, as well as the continued will of the international community to maintain open markets for China’s products, services and international investment flows. Sustaining this will require factions of the international community to overcome perceptions of a “China threat.” This in turn requires that Chinese business engage fully in advancing a more responsible competitiveness. For China and the broader global community, the increasingly apparent weaknesses in intergovernmental, multilateral frameworks pose huge risks to the world’s efforts to secure a sustainable development path for one and all. Sustainability standards developed by state and non-state actors are essential to overcome both this governance failure and the inability of the capital markets to provide adequate market-based solutions.

2.0 Globalizing Chinese Business

Competition between MNCs [multinational corporations] has already transformed from hard competitiveness to soft competitiveness, from simple reliance on technology and product competitiveness to reliance on concepts like CSR [corporate social responsibility] and social ethics. Advanced corporate responsibility ideas and practices already constitute the heart of business competitiveness.


—Wei Jiafu, President, China Ocean Shipping Company (COSCO, 2007)

2.1 China’s Competitiveness Challenges

CTNCs are becoming a major influence on China’s next stage of development. The formative stages of this development occurred over the last three decades, which witnessed the growing importance of Chinese businesses accessing global markets by exporting domestic production, taking advantage of China’s underlying cost advantages but also constrained to this strategy by the country’s severe foreign exchange shortages. Since the late 1980s, however, China’s situation has shifted to one characterized by both excess production capacity and growing foreign exchange reserves. These factors, combined with a growing unwillingness of communities around the world to absorb an ever-increasing flow of “Made in China” products despite corresponding consumer gains, have underpinned a “go global” strategy of Chinese businesses investing abroad, first articulated explicitly by the Chinese government in 2001.³

In short, China’s pace of economic development would be difficult if not impossible to sustain without an effective “go global” strategy to gain improved access to international markets, technology, raw materials and talent. At the same time, actual or perceived threats to employment and apparent links to falling real

³ Additional studies and notes on the history and effects of China’s “go global” strategy can be found in Zhang, K. (2005a). A second study was done by the Foreign Advisory Service and the Multilateral Guarantee Agency, in collaboration with the University of Beijing and the World Bank (Battat, 2006), and a third study was completed by the IBM Institute for Business Value (Beebe, Hew, Yueqi and Dailun, 2006). Accenture (2005) provides other examples.



incomes of lower-income communities in Europe and North America have combined to create unfavourable circumstances for maintaining exports as the primary growth engine. Fluctuating commodity prices compound China's pain, as does the basic fact that nominal wages are increasing in Chinese principal economic regions, and the effects of real wages in the composition of export product costs are also increasing while, simultaneously, the Chinese yuan appreciates against the currencies of China's major trading partners and competitors.

China's challenge—and imperative—is to move up the value chain, increasingly capturing a greater portion of total product value through deepening engagement in research and development, ownership of intellectual property, upgrading labour value-added through the application of greater technical and managerial expertise, and securing a higher proportion of brand value through brand acquisition and development. Such moves, while essential, come with risks. Notably, domestic employment growth, particularly at the unskilled levels, has to be sustained at the same time as unskilled labour value-added falls as a proportion of exported value.

Furthermore, the conditions for competing effectively in premium markets require that the reputation of individual Chinese companies and the broader Brand China be aligned. Achieving this reputation lies in part in areas of traditional business excellence, such as technical features, product quality, and effective marketing and distribution. However, an aligned reputation also requires that broader expectations be addressed, in particular the discerning attitudes toward social and environmental issues increasingly prevalent in premium markets. This need is all the more important where Chinese business strategies require partnerships with existing global businesses seeking to protect their own premium brands, access to international capital that discounts opportunities in the face of social and environmental risks, or the mobilization of global talent to build expertise and secure long-term competitive advantage in knowledge-driven markets.

Securing reputations aligned to premium market expectations requires, however, considerable investment in improved conditions of production and distribution, both at the enterprise and governmental levels. Such investments not only require considerable resources but also must develop along with existing enterprises whose competitiveness will for some time continue to depend on low-cost factors of production, including labour and environmental resources, both for domestic production and for accessing, for example, natural resources in Africa, Latin America and elsewhere in Asia. To some degree, premium reputations can be individualized to specific enterprises. Increasingly, however, they are “collective” in their nature. Diageo, the world's leading alcoholic-beverage company, has sought to advance “responsible marketing” practices across its industry, believing the industry has a collective reputation that it must protect to secure its own freedom to operate. National business communities face similar concerns; U.S. businesses suffered collectively in the face of the collapse of WorldCom and Enron. Capital markets imposed a risk premium, in turn driving the enactment of the Sarbanes-Oxley Act, which has since imposed significant costs on all enterprises based in the United States. Similarly China's own reputation, and in turn foreign consumers' confidence in Chinese products, has suffered because of product- and food-safety scandals.

China's challenge is therefore to pursue a strategy for securing a greater portion of value-added in global markets while not undermining the existing generation of Chinese enterprises that are needed to sustain existing employment and absorb the huge annual numbers of low-skilled entrants into domestic labour markets. Crucially, strategic choices and decisions aimed at sustainable development and meeting the challenges of securing sustainable trade need to be formulated with a very clear understanding of this context.

2.2 China's Internationalization Experience to Date

The Chinese business community is already well into the “go global” phase, increasingly focused on establishing international operations both as a means of bypassing growing restrictions to trade and also as a means of upgrading technologies, establishing global brands and accessing raw materials. By the end of 2006 China's non-financial investments totalled US\$73.33 billion, spread over more than 160 countries.

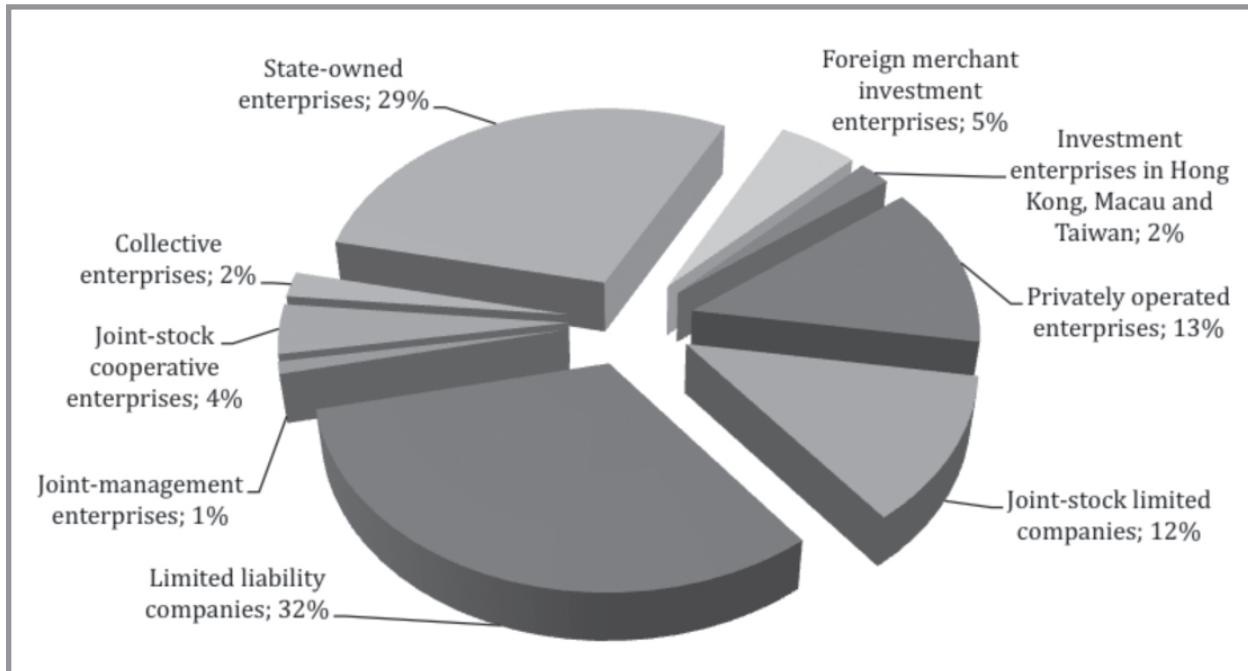
Table 2.1: Trade distribution of Chinese overseas investments through 2006.

Industry	Value (million US\$)	Proportion of trade (%)	Main trades
Business services	194.6	21.5	
Mining	179.0	19.8	Mining and selecting of petroleum, natural gas, ferrous metal and non-ferrous metal
Finance	156.1	17.2	
Wholesale and retail	129.6	14.3	Import and export trade
Transport and communication; storage and postal services	75.7	8.4	Water and air transport
Manufacturing	75.3	8.3	Communication equipment, computer and other electronic equipment, textiles, transport and communications equipment manufacturing, medicine manufacturing, ferrous metal smelting and pressing, non-ferrous metal smelting and pressing, electrical equipment, machinery and apparatus manufacturing
Real estate	20.2	2.2	
Architecture	15.7	1.7	
Information transmission; computer services; software	14.5	1.6	Telecom and other information transmission service industries
Resident and other services	11.7	1.3	Other services
Technical service and geology surveying	11.2	1.2	Professional technology services
Water conservancy, environment and communal utility management	9.2	1	
Agriculture, forestry, animal husbandry and fisheries	8.2	0.9	
Others	5.3	0.6	

Source: 2006 Statistical Bulletin of China's Outward Direct Investment.

Sectoral characteristics. Chinese overseas direct investment touches upon regional trade, production and value-added, resource development, transportation, contracted engineering, agricultural production and related development, healthcare and sanitation, tourism, hospitality consulting and other services (see Table 2.1). Of these, business services, extractive industries, and wholesale distribution and sales account for 70 per cent of investment. In 2006 the flow of investment in extractive industries and business services accounted for 40 per cent of total overseas investment.

Figure 2.1: Distribution of Chinese foreign investment through 2005.



Ownership. Chinese overseas direct investment is being undertaken by private and public enterprises (Figure 2.1). Large companies such as CNPC, Sinopec, COSCO, Sinochem, Haier, Kangjia, China Construction, New Hope Group, Wangxiang Group, Zhongxing, Huawei, Huafan, Chuangwei and TCL are leading the way, demonstrating strong ability to open new markets. Private and limited liability stock companies based in provinces such as Guangdong, Fujian and Zhejiang make up the majority of foreign-invested companies. Small and medium-sized enterprises, while expanding internationally, make up only a sliver of overall overseas investment.

Investment diversity. Chinese overseas investment has transformed over the last two decades from being mainly trade based to now focusing largely on manufacturing and production. China's transnational businesses today can be divided into four primary groups: (1) professional trade companies, (2) industries with specific strength in manufacturing, (3) overseas finance companies, and (4) international construction and engineering companies.

2.3 Competitiveness Strategies Driving Chinese Internationalization

CTNCs invest abroad and acquire foreign companies for four main reasons:

Expanding market access. Opening up international markets is without a doubt the main motivation for Chinese overseas investment. Chinese companies, through buying or investing in factories, gradually create ways for China to gain the necessary experience in international distribution channels. For example, TCL, through purchasing the French company Thomson, became the world's biggest producer of televisions and in one stroke acquired massive distribution channels in Europe and North America. Lenovo Group, by buying IBM's personal computing division, did the same in North America. Overseas investment brings export opportunities, and, according to World Bank statistics, from 2000 to 2004 Chinese overseas investment resulted in exports of equipment, preassembled parts and other materials from China worth over US\$75



billion. According to Chinese Ministry of Commerce figures from 2004, the income of Chinese subsidiary companies reached over US\$148.7 billion that year. More importantly, China has made great strides in developing international distribution channels in this relatively short time, resulting in shared benefits with downstream service industries as well as even more opportunities.

Securing natural resources. Chinese companies have already made long-term energy and resource investments in more than 30 countries, including Russia, Kazakhstan, Saudi Arabia, Sudan, Australia and India, and have made great breakthroughs in long-term cooperation with Western Europe, North America, South Africa, the Middle East and Southeast Asia. For example, CNPC acquired Canada's PK Petroleum Company, while the CITIC Group invested in Canada's Nations Energy Company Limited and bought 94.6 per cent of the rights to Kazakhstan's Karazhanbas oil fields. Chinese companies also have overseas investments in steel, copper, aluminum, chromium, zinc and other types of minerals. In 2005 China imported 127 million tonnes of oil and 280 million tonnes of iron ore, of which 20 per cent was owned by Chinese companies. Additionally, Chinese companies have had success gaining rights to forest materials and fisheries industries.

Upgrading technology. From a developing-country perspective, improving technological innovative capacity is a major motivation for overseas investment. By buying overseas industries or building overseas research centres, Chinese companies are creating new sources of technology development and improving their own technical capabilities. For example, Shanggong Group's purchase of the German company DA, which was ranked third globally in industrial sewing machines, gained it global levels of technological sophistication. In 2003, by purchasing the thin-film transistor LCD business of a modern Korean enterprise, BOE greatly increased its own competitive power in this rising industry. Huawei established research centres in Sweden, Russia, India and the United States, among other places, and uses these global research resources to increase its core R&D competencies. Small and medium-sized enterprises, also through foreign investments, have improved their ability to innovate; for example, in the case of Siwei Johnson Company, which became a leading bank note transport company after merging with the United Kingdom's Johnson Company.

Establishing brands. Chinese companies have achieved considerable improvements through overseas investment, such that their international brands and competitiveness grow stronger by the day. In 2005, 16 Chinese companies were in the Fortune Global 500. Now, 49 Chinese companies rank among the world's largest 225 international contracting firms. Haier, Lenovo, Quidway, ZTE, TCL, Hisense and Wanxiang are all maturing CTNCs with growing global brands.

In addition to these four core commercial reasons, the Chinese government has also encouraged international investment as part of its own foreign policy, related to the spread of Chinese government aid abroad, to actively bring about corporate social responsibility (CSR) and develop win-win relationships between China and other countries. For example, the government encourages Chinese companies to share and use suitable technology in host countries and to strengthen manufacturing and bring about employment opportunities there. Chinese companies help host countries exploit resources and to quickly shift from being import oriented to export oriented, thus increasing the host country's foreign earnings potential. With mutually beneficial relations, this not only makes corporate globalization more effective but also improves China's relations with the host country. Foreign investment becomes an increasingly important method for China to develop and improve relations with developing countries.



Box 2.1 Investment priorities.

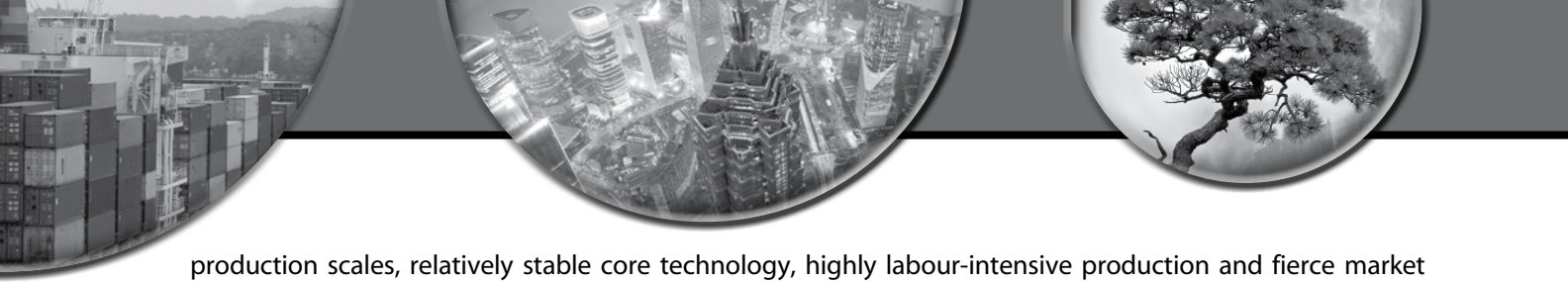
- In transitional economies, establish factories and facilitate entry into European markets.
- In Europe and the Americas, buy companies with brands and sales channels.
- In areas with large domestic markets favourable to spreading investments in developing countries, aim to develop markets within the countries in which investments are being made.
- Use developed markets that have special trade arrangements or a generalized system of preferences with low costs for setting up factories as a base for developing markets. (For example, invest in Mexico and enter North American markets.)
- Create sales networks. For traditional-style Chinese investment- and trade-oriented industries, spur Chinese exports. In burgeoning markets like Russia, firms can consider investing in or establishing chain stores and retail sites, such as large-scale supermarkets. In mature markets, companies should consider purchasing companies that already have distribution networks.

The World Bank provides an overlapping but distinct perspective on CTNCs, dividing ownership of these companies into the following categories:

- Large, resource-seeking state-owned enterprises fulfilling national goals with few cost considerations.
- Non-resource-seeking state-owned enterprises following the “go global” strategy.
- Publicly listed companies following stakeholder interests.
- Large or small private companies, such as Huawei, pursuing entrepreneurial and corporate strategies.
- The World Bank also uses a “strategic intent” methodology to categorize CTNCs by the goal of their investments:
 - Firms such as Lenovo, Huawei and Haier, focused on global expansion and domestic dominance.
 - Companies such as Nanjing Automotive, looking to offset competitive weaknesses.
 - Domestically oriented firms looking to compete with foreign multinational corporations in China.
 - Trade-oriented firms, such as Sinochem and Minmetal, that seek trade gains in the short term and possible production gains in the long term.
- Niche-market players that seek to expand in a certain market (Rui and Yip, 2008).

Taking these categories together, we can conclude that Chinese enterprises are likely to pursue one or more of the following international investment strategies as a means of enhancing international competitiveness and profitability:

Market-opening investments. Companies pursuing this category of investment often have large domestic



production scales, relatively stable core technology, highly labour-intensive production and fierce market competition in manufactured products. For example, for products such as household appliances, textiles and apparel, and toys, where China has the greatest comparative advantages, Chinese foreign investment is key. Similarly, large-scale retailing companies are the vanguard of China's key foreign-invested service industry.


Resource-seeking investments. Resource- and energy-sector investments or high energy- or resource-consuming companies focus on resource acquisition. Investments in energy include petroleum and natural gas extracting industries, forest resource industries, mining and coal, while resource-consuming companies include oil refining, steel processing, forest-product processing and similar industries. The former should focus on resource-rich countries, both stressing the host country's cooperative prospects and focusing on purchasing methods to acquire new resources. It is important to judge primary-grade products' long-term international price fluctuations and avoid price hazards, paying attention to dealing properly with host country governments and striving to achieve their support. Companies should pay special attention to relations with the media, civil society groups and competitors in international markets. Many host countries do not share China's stable governance system. Thus, companies must cautiously consider the host country's political situation and avoid country hazards, paying particular attention to political stability, harbour access and the investment environment for primary-material processing. Companies should consider ways in which investments help host countries' economic development and employment, assure domestic resource supplies, and spur sustainable development.

Innovation-seeking investments. For companies with strong manufacturing ability and weak research and development, such as those in the information technology, machinery and chemical sectors, the most important goal should be gaining technology and R&D capacity through foreign investment, combining this with Chinese domestic manufacturing capability and thereby raising domestic manufacturing levels and competitiveness. The most important methods are to create R&D centres, like the cluster of IT companies in Silicon Valley, to bring together technology, information and technical human resources; buy technologically oriented small and medium-sized enterprises in developed countries and coordinate their technical ability with domestic manufacturing capacity; and establish joint ventures with companies oriented to research and development.

Efficiency-oriented investments. Efficiency-seeking foreign investment accounts for a very low portion China's total foreign investment. With China's emphasis on low-cost production, and with the rapid increase in Chinese labour costs, some labour-intensive Chinese sectors will inevitably move to countries that simply have lower manufacturing costs. Others will seek other traditional efficiency-oriented gains from trade. When doing so, companies selecting countries to invest in should first pay attention to having good political relations. Second, the country should have a good, low-cost investment environment. Third, the company should enter the host country through cooperative relationships and technology transfer, improving government and business relationships. Fourth, the country should have signed trade agreements with China to protect investments and avoid taxes. Finally, especially for small and medium-sized enterprises, the country should support the construction of overseas economic and trade cooperation zones, which can be beneficial in reducing small and medium-sized enterprises' foreign investment risks.

3.0 Opportunities, Threats, Strengths and Weaknesses

Chinese enterprises face significant competitive challenges, as well as opportunities. These vary considerably over relatively short periods of time. For example, they vary significantly depending on prevailing economic and political conditions, sector, and ultimately the specific enterprise. Despite this diversity, it is worth spelling



out some of the prevailing opportunities and challenges facing CTNCs before overlaying the sustainability challenge.

3.1 Opportunities

Systems that open global markets to international investment are constantly improving. A basic enabling framework is provided by the multiple systems negotiated during the Uruguay round of the WTO Agreement on Trade-Related Investment Measures. Regional integration is unfolding, and there are already 200 free trade areas with cooperative systems, which greatly advances the system of international investment. Although countries such as the United States have recently strengthened security checks for foreign direct investment, on the whole, the foreign direct investment rules around the world are increasingly friendly. According to statistics from the United Nations' *World Investment Report*, about 80 per cent of policy adjustments have been beneficial for foreign investment (United Nations Conference on Trade and Development [UNCTAD], 2008). CNTCs increasingly operate globally within a framework developed by the Chinese government, which now includes bilateral trade committees covering 178 countries, 117 bilateral investment-protection accords and a range of associated intergovernmental agreements covering everything from mutual tax avoidance to social security agreements (UNCTAD, 2008).

Several trends in global cross-border investment have emerged recently. Research and development is globalizing, and changes in developing countries' foreign investment are coming to the fore. In 1998, 29 developing-country companies were in the Fortune Global 500, compared with 47 today (UNCTAD, 2008, Annex table A.1.8). Also notable is that investment of US\$5 trillion or more reached developing countries. Especially from 2005 to 2006, India and China's foreign investment nearly doubled. Of the 100 largest developing-economy companies, 78 are from Asia and 11 are from Latin America. Of those, Hong Kong (China) has 25, with 10 operating mainly in mainland China (UNCTAD, 2008, p. 29).

Finally, China's international investment opportunities have been accelerated by its growing foreign reserves, which reached US\$1.9 trillion in the fourth quarter of 2008. Indeed, Chinese companies have been encouraged to make use of these reserves for international investment, especially in the light of the internationalization of the domestic market, which has led to Chinese companies facing ever-stronger competition from foreign firms. The competitiveness of Chinese firms in tomorrow's markets will increasingly depend on the scale and quality of their overseas investments.

3.2 Threats

Chinese companies face considerable threats in their efforts to scale up their international investments. Overseas, Chinese firms often face disadvantages as latecomers to many markets. For example, China's most recent foreign investments have been heavily focused on acquiring energy and resources. Yet investment opportunities in lower-risk host countries have, in the main, already been locked in by developed-country multinational corporations, leaving Chinese companies with the options of either buying resources at a higher price from these companies or investing in countries or areas with greater risk, thus facing higher risks than other countries' multinationals. Moreover, there is no doubt that Chinese companies have and continue to face many barriers erected by potential host countries to entering these new markets.

Increasingly open avenues for cross-border investment should facilitate favourable conditions for Chinese overseas investors. But for many reasons, when Chinese companies invest internationally, they face discrimination. This is particularly the case in the United States, where, for example, CNOOC's US\$18.5 billion bid for Unocal, Haier's bid for Maytag or the 2007 attempt by Huawei to buy 3Com were all thwarted by a



combination of negative U.S. public and political opinion. CTNCs face unusual scrutiny as potential foreign investors. U.S. Securities and Exchange Commission chairman Christopher Cox pointed out that Chinese state-owned enterprises in particular face the hurdle of answering the question, Will the behaviour of this company be motivated strictly by economic considerations of profit and loss? Or will it instead be driven by political considerations? (Cox, 2005). Likewise, international political and civil-society groups attempt to thwart Chinese bank and mining industry activity on similar political grounds—that they “just don’t know” what criteria Chinese firms are using to finance loans or ensure social or environmental criteria, leading to ethical questions as well as questions of financial security (Newton, 2006). National oil companies, in particular, face skepticism about whether they’re part of government agencies or acting on behalf of governments or according to government policy, or whether they have political or geopolitical objectives (Xu, 2007).


These internal threats are exacerbated by the lack of knowledge and basic information available to CTNCs through traditional sources, such as the Chinese government’s foreign investment management and service systems. After years of reform, the Chinese government’s overseas investment management system has improved considerably, but still does not accord with firms’ current overseas investment management needs. Some of the information needed is fairly basic, for example, concerning tax law, corporate governance or basic risk areas across diverse potential investment target countries. But these government institutions are not well-suited to providing the more nuanced types of knowledge and expertise concerning culture, norms of behaviour, and who to make friends with and how. This of course is a central issue, to which we will return in our discussion of sustainability standards.

3.3 Strengths

Chinese overseas investors have many strengths. First, Chinese companies have relatively strong manufacturing capabilities, with China’s manufacturing and value-added manufacturing gross value representing a much higher proportion of the economy than in other countries. China has 170 product types that rank as the highest output in the world. In 2006 industrial products made up 94.5 per cent of exports. China’s 774 categories of product exports stand at number one in the world and make China a key product manufacturing and export country. Chinese companies have attracted top equipment. Product quality is generally quite high, and because of the high performance-to-price ratio in international markets, the proportion of Chinese goods in those markets has continued to grow.

Second, the Chinese can control costs. Chinese products have been successful because of low prices due to relatively low Chinese cost factors, such as labour costs that are much lower than in developed countries and productivity rates that are higher than in most other developing countries. Salary levels for mid-level R&D staff are still between one-eighth and one-tenth of those in developed countries. Chinese companies engaged in overseas investment are entirely capable of combining technological ability and low costs to pursue opportunities in developed markets that strengthen Chinese companies’ competitiveness in international markets. The Chinese Ministry of Commerce’s survey of several hundred foreign enterprises reveals that low costs are seen as one of China’s great overseas investment strengths.

Third, Chinese companies have a relatively strong ability to attract technology and learn. Chinese companies’ technology levels are still lower compared to cutting-edge international technology levels, and thus Chinese companies must attract new foreign equipment and technology to improve their own technology levels. In this process, Chinese companies have made gains by paying attention to the best management experience and technology innovations, clearly increasing their management levels and R&D capacity. Chinese companies show relatively strong research ability, but poor ability to bring this to market. Through overseas investment, they will be able to continue strengthening their R&D capacity and management levels, and to quickly improve their overall technology and management levels. This emphasis on research and development



correlates with the success identified by the Boston Consulting Group's analysis of "global challengers," which emphasizes the importance of research and development but does not explore how companies use voluntary standards and other networks or "clubs" to access international markets (Sirkin, 2007).

Last, Chinese companies have the advantage of a vast domestic market. China has already become the world's fourth-largest economic system and third-largest import market, with an immense domestic market scale for Chinese companies to master their own innovative and branding bases. With regard to resource development, China has a large domestic market for overseas resources. Domestic market scope helps encourage collaboration among Chinese and non-Chinese companies. Some resource-exporting countries welcome Chinese companies to exploit their resources. Some foreign countries are also willing to work with Chinese companies because of the attraction of China's domestic market.

3.4 Weaknesses

Chinese companies, in the main, lack overseas investment experience and international operations personnel. Chinese companies have only just started large-scale investments abroad and thus lack experience. Many companies understand very little about the laws, markets or business customs of countries that are investment destinations. At the same time, China lacks government and intermediary group information services, and many Chinese companies make rash decisions about international investments because they lack systematic analysis of professional organizations. After making overseas investments, Chinese companies face difficulties attracting international management talent and effectively coordinating domestic with international resources. Still, some companies with successful overseas operations, such as Lenovo, have effectively localized management talent. Research indicates that CTNCs lack comprehensive risk-management systems, and the World Bank reports that one-third of Chinese foreign joint ventures end in failure, with 85 per cent of managers listing management as the main cause (Bellabona and Spigarelli, 2007). Leading Chinese companies like COSCO have implemented comprehensive risk-management systems linked to third-party assurance and internationally recognized standards like the AA1000.⁴

Chinese companies' R&D ability is also relatively weak, lacking internationally competitive brands and international channels. Technological innovation in Chinese enterprises is not based on their own ability to research and develop, but is reliant on their ability to attract technology and equipment. Still, many large- and medium-scale enterprises have their own R&D departments, but Chinese corporate R&D expenditure still stands as a low percentage of revenue compared with international levels. The ratio of research and development to income has been as low as 0.76 per cent. In comparison, many multinationals' R&D expenditures stand at 8 per cent. Still, in 2005 Chinese large- and medium-scale industrial companies spent US\$125.03 billion on research and development, a 31 per cent increase from 2004.⁵ One World Bank report emphasizes how global competitiveness hinges on the ability to create and use technology: while China is good at processing technology, it lacks strong indigenous innovation capacity—India appears stronger—and China's R&D productivity is weak, as are links across government, business and university R&D institutions (Zeng and Shuilin, 2007).

Furthermore, Chinese companies' governance structures await improvement, as operations are not sufficiently up to standard. China is a developing country, so some state-owned enterprises, whether facing inadequate supervision by principals or bureaucratization through their leaders' fixed-term appointment system, can face short-termism, with the result that education about investment in long-term profit-making activities such as research and development, branding and accessing international channels lacks vigour. This is true especially as it relates to international investment, where inadequate inspection and control of foreign-

⁴ Comments by COSCO's risk management manager Ma Xinying at the launch of the Chinese version of the AA1000, December 2008.

⁵ For a comprehensive view of knowledge-economy-related issues facing Chinese firms, see Zeng and Shuilin (2007).



invested subsidiary companies can bring about hazards. Private firms are mostly run through clan network-style management systems, which do not suit multinational operations. Domestic market environments are not perfect. These issues, combined with non-standard operating procedures, can extend into host countries, where they can harm Chinese companies' ability to make long-term profits, cause disputes and harm the companies' images. Additionally, Chinese firms often focus too much on short-term profits, have a reputation for telling customers what they want instead of listening, lack a focus on quality and design (Harris and Moure, 2008), and are learning—through experiences like the recent milk scandals—that bad publicity can sour a brand forever.

Chinese cross-company cultural integration also needs to be strengthened. Buying foreign multinationals is increasingly the main vehicle for outward-facing Chinese investment, and a deciding factor for success is whether CTNCs can coordinate their resources to bring together new competitive advantages. From a global perspective, after-purchase integration success rates are not high. Chinese enterprises currently lack the international operational experience, human resources and cross-cultural coordination for post-purchase relations to work effectively, and thus they need to actively explore new methods. Research indicates that CTNCs lack comprehensive risk-management systems, and the World Bank reports that one-third of Chinese foreign joint ventures end in failure, with 85 per cent of managers listing management as the main cause (Bellabona and Spigarelli, 2007). These same companies often do not know how to work in more mature markets' tax, distribution and legal environments or across cultural or linguistic differences. Leading Chinese companies such as COSCO make extensive use of experts and consultants to implement comprehensive risk-management systems linked to third-party assurance and internationally recognized standards such as the AA1000.⁶

Finally, Chinese enterprises need to raise their guard against investment risks. Overseas investment carries political, legal, and business risks. Keeping a watch on overseas investment hazards is crucial. When Chinese companies invest abroad, large hazards abound, springing from the lack of investment-bank assistance, shallow understandings of host-country laws and markets, incautious decision making and, moreover, the high hazard of unstable political systems. The burning of Chinese shoes in Spain, workers' strikes in Latin America and Africa, and incidents in East Asia of attacks against Chinese, without exception lay bare the problem of the low ability for Chinese companies to manage overseas crises.

4.0 Responsible Competitiveness


The evidence is there to support the proposition that Environmental Safety and Governance (ES&G) risks are material to the performance of a company in our portfolio over the long run and that clients across all sectors and all markets that manage these risks will perform better from a credit perspective. This powerful data is what is driving our sustainability approach.

—International Finance Corporation (“Ask the experts,” 2006)

4.1 Sustainable Development and Competitiveness

Sustainable development is becoming a material factor in the competitiveness equation of companies and nations. The reasons for this are many, and the weight of each argument varies considerably over time, geography, market segment and sector. The implications for business are ultimately universal and profound, but are complex and contingent for any specific sector, market or enterprise. Businesses recognize that

⁶ Comments by COSCO's risk management manager Ma Xinying at the launch of the Chinese version of the AA1000, December 2008.



climate change affects financial performance, especially in sectors most affected by severe drought, rising sea levels and fierce storms, but also that a business opportunity exists making money anticipating a low-carbon economy (MacGillivray et al., 2006).

Many sustainability issues could have economic importance for businesses. Carbon emissions might count because of mitigation costs associated with regulatory enforcement or opportunities linked to clean development mechanisms. Labour standards, similarly, might count because of the threat of reputation damage associated with brand-linked negative media or because of the productivity gains that come with the improved labour-management relationships needed to satisfy the needs of just-in-time supply chain management. Sustainable water management might count because it enables beverage companies to gain licences to access community water resources, and demonstrable honesty in all transactions might create the conditions for technology licensing or reduce the costs of capital on international markets.

Box 4.1: Sustainability counts.

- *Products and services* can feature sustainability to meet changing customer expectations, regulatory demands and the potential cost-efficiencies and productivity enhancements that can be derived by embracing social and environmental factors.
- *Labour markets* are where more-talented and sought-after employees are increasingly taking account of the alignment of their employers' interests and actions to their own values.
- *Financial markets* are where investors are increasingly concerned about the downside risks of getting sustainability wrong and the upside opportunities that can be realized by smart companies and dynamic and forward-looking nations and communities.

Chinese companies such as the China Ocean Shipping Company, the winner of many United Nations Global Compact awards, are leaders globally. SASAC's guidelines on state-owned enterprise CSR implementation and the Ministry of Commerce's draft guidelines on CSR implementation for foreign-invested enterprises also signal the importance of this concept to China's future competitiveness.

With rising awareness of these shifting patterns has come a new generation of innovative business strategies and practices that deliver profits from more responsible behaviour. At minimum, they protect companies' reputations and brands, reducing the risks of consumer boycotts, recruitment bottlenecks in the face of bad press, or restricted or more expensive access to capital. Beyond this, companies have enhanced productivity through improved working conditions and driven product innovations by engaging with communities and better understanding their issues and needs. Global leaders like General Electric have built multi-billion-dollar businesses offering energy-efficient products, and last year British consumers alone purchased around US\$60 billion worth of goods and services marketed with ethical virtues such as child labour prohibitions, human rights protections and arms control.⁷

Although it is too early to see the full effects of these new business models and markets, some analysts make a clear case for social and environmental considerations. Company-level rankings like the Accountability Rating, or performance-aligned stock exchanges like the Shenzhen Taida Index, provide tools for analyzing the financial performance of companies against social and environmental concerns (Forstater et al., 2006).

⁷ This section draws from Zadek and McGillivray (2008).



Other Chinese contributors to this field include the WTO Tribune's Golden Bee CSR award and the China Entrepreneur Club's Green Companies List.

Sustainability—and responsibility—is not, furthermore, only an issue for developed, wealthier markets. Benefiting countries that are hosts to Chinese investment is imperative for sustaining these increasingly important but still fragile sources of competitive advantage. Investment-starved countries, and those with a history of relying exclusively on a small number of investment sources, can derive considerable advantages from having China as a new and competitive source of capital. Chinese investment can drive host-country manufacturing exports, which in turn generates domestic employment opportunities; such investment can stimulate value-added production through trade and establish value-added relationships linked to existing production processes within China. It can raise commodity prices, generate employment and wage income, and provide a route for host-country business communities to gain a deepening understanding of emerging markets and associated opportunities.

In addition, Chinese investment, whether through private or state-owned Chinese enterprises, can be and often is associated with broader developments in diplomatic relationships between China and host governments—relationships that for developing countries are increasingly linked to trade and investment agreements and intergovernmental financial arrangements. Chinese businesses and the Chinese government have choices about the degree to which these investments embrace sustainability or follow the old, developed-country model of exporting pollution to less developed countries. As China raises its labour standards and its population ages, the country must stem the flow of jobs to countries with lower labour costs. Delivering sustainability to China's partners is one way to avoid repeating the mistakes of colonialism.

Delivering on sustainability goals is a challenge, however. China's emerging transnational corporations, in common with other international business players, face a complex market environment. On the one hand, international markets are intensively competitive, especially in lower sections of the value chain where products are largely commoditized and offer slim margins at best. The economics of these markets, then, make it difficult for a company to ensure a responsible competitiveness that delivers acceptable conditions for workers, trusting communities that benefit from its operations, and world-class environmental standards. On the other hand, the much-sought-after higher margins are increasingly associated with demonstrable adherence to ever-more-challenging social and environmental rules of the game. Getting these standards of practice right, and visibly so, is a costly exercise that draws on scarce managerial and technical expertise. While few Chinese business managers would doubt the ultimate need to embrace sustainability standards, it is the pathway that is the challenge. Chinese enterprises are mostly still focused on opportunities lower on the value chain and so have to cope with intense competition, driven in no small measure by the demands of their Western multinational business clients, which are most visible in declaring their commitment to sustainable development. The challenge then is whether and how they can, in pursuit of strategic realignment that moves them up the value chain, embrace social and environmental performance issues without losing competitiveness along the way.



Box 4.2: Chinese companies—growth in Chinese sustainability standards, trends and consumer attitudes.

Growth in Chinese Sustainability Standards

Green Series. The Green Credit and Green Securities programs restrict investments to high-polluting industries and promote environmentally friendly investment. These programs reflect many international environmental criteria set out in the Equator Principles.

Awards and indexes. The Golden Bee CSR Roll Call, Green Companies and other indexes and awards seek to evaluate Chinese companies' ability to embed sustainability in their business practices.

Local standards. Many Chinese cities, provinces and ministries have developed guidelines on responsible corporate behaviour and encourage further internationalization, often in a bid to see which will be adopted by other localities. Shanghai's Pudong District is experimenting with responsible competitiveness strategies, and its Zhangjiang High Tech Park Innovation Index measures potential to innovate and is seeking to link to similar international indexes or responsible competitiveness. The Shandong Provincial Bureau of Commerce manages a CSR association and has developed metrics to evaluate members. Dozens of other provincial and local governments have developed standards and guidelines (MacGillivray, Yin, Ives, Wickerham and Shi, 2009).

Chinese sectoral standard. The CSC9000T is a Chinese management and CSR system for the Chinese textiles sector. It is China's first voluntary management system to be recognized by international standards groups and international buyers. The Chinese Banking Association has also issued guidelines on social responsibility in Chinese banking.

Green building standards. China's largest residential construction company, Vanke, recently built the first building in China to meet Leadership in Energy and Environmental Design (LEED) standards with energy-efficient materials sourced entirely from China (personal interview with Vanke representative).

Sustainability reporting. In December 2008 the Beijing-based consulting company Syntao published *A Journey to Discover Values 2008: China Corporate Sustainable Reporting*. Some key findings were that half of China's sustainability reports were done by state-owned enterprises, but reports by publicly listed companies grew. They found that there is also great potential for reporting using voluntary frameworks such as the GRI or AA1000. Finally, lack of management recognition remains an obstacle for companies in releasing reports (China Sustainability Reporting Resource Center, n.d.).

Trends

Form fatigue or fear of information disclosure? Based on personal interviews, researchers in the Chinese sustainability index space note that Chinese companies are less likely than multinationals to report facts.

Government still takes the lead in China. In the United Kingdom, real estate companies pushed to adopt the LEED certification for green buildings. Marks & Spencer pushes for higher labour and environmental standards because that's what their customers expect. China's government, while working with industry to develop green building standards, has largely done so out of the perceived need to create Chinese national standards.



Some local standards promote competitiveness, others glory. Japan's domestic forestry sector is well-protected by legal frameworks, but Japanese companies abroad have been accused of cutting wood unsustainably, often to the destruction of their brands. Also, despite Japan's strong domestic forestry standards, these do not link to international standards that allow Japan to be truly linked to the trade in internationally certified sustainable wood products (personal interview, Alistair Monument, Technical Director of FSC China, October 2008).

An international standard. Many Chinese scholars argue that the China Social Compliance 9000 standard for the textile and apparel industry (CSC9000T) improves Chinese competitiveness, but that it might also be able to boost China's competitiveness by raising international labour standards if it became the SC9000T, that is, an international standard recognized outside of China and applied by other countries.

Consumer Attitudes


Chinese consumers will pay for premium brands. Chinese consumers have very low recognition of sustainable development labels. Data on this is very scant. In traditional areas, as of September 2008, consumers were willing to pay premiums of about 2.5 per cent for branded products, compared with the United Kingdom's 20 per cent. But 63 per cent still have a list of "favourite brands" that they would like to buy when they go to a store. High-income earners are willing to pay premiums of up to 60 per cent (St.-Maurice, Süßmuth-Dyckerhoff and Tsai, 2008).

4.2 China's Emerging Responsible Competitiveness

Responsible competitiveness strategies by nations and regions, as well as at the enterprise level, is a relatively recent phenomenon, but is rapidly emerging as a significant lens through which to plan and implement policies designed to enhance competitive outcomes. Approaches taken at this early stage vary among countries depending on their economic structure and stage of overall development. In common is an appreciation of the competitive advantage afforded through improved social and environmental performance of enterprises, sectors and the economy as a whole. Cambodia, for example, is seeking to enhance its competitiveness in the garment and textile sector by advancing improved labour standards as a distinct competitive advantage in what is otherwise a relatively commoditized market (www.betterfactories.org). Saudi Arabia's stated "10x10" policy aim of placing itself among the top 10 most competitive nations by 2010 has as one key implementation platform, the Saudi Arabian Responsible Competitiveness Initiative, in recognition of the role of social and environmental performance in growing a generation of global businesses. Similarly, the European Community has declared its competitive strategy to remain and deepen its lead as the most energy-efficient developed economy and seeks to promote international agreements and technologies that will consolidate the competitive advantage of this position. China's economic success has to date been largely underpinned by exports made competitive by virtue of low labour costs, often poor working conditions and weakly enforced environmental regulations. The impact of this is captured and measured by AccountAbility's Responsible Competitiveness Index, which tracks the progress of 108 economies in embedding responsible business practices into their respective economies.⁸

The Responsible Competitiveness Index provides a data-driven view of the extent to which social and environmental factors are built into nations' economies. For example, higher-scoring economies might

⁸ The Responsible Competitive Index 2007 includes 21 data streams covering, for example, measures of corruption, environmental management, tax avoidance and the ability of civil society to effectively challenge corporate behaviour. The data is all drawn from authoritative sources as diverse as Amnesty International, the ISO, the International Labour Organization, Transparency International, the World Economic Forum and the World Bank.



be underpinned by stringent environmental regulations, high rates of business adoption of voluntary environmental management systems like ISO14000 and active environmental campaigners, whereas lower-scoring economies may have high levels of institutionalized corruption, a high incidence of tax avoidance, or restrictive regulations and norms preventing civil society organizations from challenging corporate misdemeanours. Such characteristics shape the manner in which businesses and entire economies function and, therefore, compete with each other. The Responsible Competitiveness Index 2007 therefore provides a means of assessing the extent to which responsible business practices are a factor in determining how any particular nation competes in global markets (Zadek, 2006).

China's comes in 87th in the most recent Responsible Competitiveness Index ranking. This low score, especially against other "BRICS" countries (Brazil, Russia, India, China and South Africa)—China lags the other four—should be a source of concern as China looks to move up the value chain. That is not to say that China is universally a poor performer on this index. China, for example, scores well on wage equality between men and women, above average for its class on occupational fatalities, just below average on the strength of auditing and accounting standards and staff training, and poorly on corruption and carbon dioxide emissions. Comparing China's performance against the other BRICS countries across the three principle domains (policy, business and society) reveals that it performs best in the policy domain and poorest on social enablers, while India and South Africa outperform the other BRICS countries in the business action domain. This low "social enabler" score turns out to be of critical importance when it comes to the matter of entering global markets, because it means that Chinese businesses are inexperienced in dealing with civil society organizations at home, and so are poorly prepared to deal with them in international markets, especially as these groups play increasingly bigger roles in shaping sustainability norms and rules across the global economy.

Poor business practices and an overall low performance in responsible competitiveness become a hindrance to China's strategy of producing sophisticated products and establishing a first generation of multinationals with global markets and brands. Chinese government policy clearly reflects this strategy, as manifested in the forced closures of factories producing contaminated food, strengthened labour laws and harsh penalties for corruption among senior officials. Official Chinese responses to environmental concerns by the international community are shifting from defensive references to claims of responsibility. As an example, a handbook recently produced by the Chinese Forestry Ministry "positively guides and standardizes Chinese companies' sustainable forestry activities overseas, promotes the sustainable development of forestry in those countries, [and] protects the international image of our government being responsible." These are early days, and China's problems and shortfalls continue to outweigh its record of good practice. But the stage is certainly set for China to steward and advance responsible business practices at home and internationally (MacGillivray and Zadek, 2008).

4.3 China's Policy Challenge

CNTCs' strategies for how to orient toward sustainable development are not, of course, purely a matter of private actors making self-interested decisions. Such strategies, while commercially pragmatic, will be influenced by the Chinese government's own policy guidance and suggestions. This will be especially important for state-owned enterprises, but also for other parts of the Chinese business community through a variety of policy instruments that impact everything from their access to information and finance to prevailing international regulations and norms.

Chinese trade and investment strategy is essentially a macrocosm of this CTNC challenge. China's engagement in the international economy needs to move away from pure labour-value-added toward the higher economic gains associated with more sophisticated technology, intellectual property ownership and



premiums associated with globally valued brands. This strategy faces major competitive challenges from incumbent businesses supported by their respective governments' policies and practices. Equally, however, there is huge pressure to move in this direction in order to offset the trend toward protectionism against Chinese and other emerging economies, whether framed in terms of restrictions "in the national interest," "to protect industries and workers in transition," or to "prevent social and environmental dumping." Any move toward border carbon taxes by major export destinations will further accentuate the importance of this development.

Brand China will be associated with the values exemplified by the activities of high-profile companies, fairly or otherwise, just as the U.S. brand was after Enron and WorldCom, the Italian brand after Palmalat, the British brand in association with BAe Systems, and the German brand in the face of the corruption scandals associated with its iconic Siemens brand. Nations as well as businesses compete with each other, for example, through enabling policies and public investments in the broader underlying drivers of business competitiveness, such as good infrastructure, education and health care. Nations also embody communities or "clusters" of businesses, which leverage each other's competencies and create business climates and cultures that can support or restrict international competitiveness.⁹ And the expectations and demands of citizens also impact the basis on which nations compete, for example, in what products and standards of behaviour they demand from companies they buy from, work for and invest in.


The key difference, then, between the Chinese government's policy context as compared with a specific CTNC's strategic landscape is that CTNCs can act independently but are interrelated, whereas the government has to make more unified policy decisions to address diverse economic and political landscapes. The aggregate effects, however, are similar. Any specific CTNC will decide the best pathway to take from the low-value to the high-value economy. These means will differ depending on the sectors and market they occupy and wish to enter. China's broader profile in international markets and political economy are, however, a result of all of these actors and actions combined. If one CTNC, in pursuing a clear commercial interest, chooses low social and environmental performance, this will negatively impact the opportunities and fortunes of other CTNCs. Similarly, higher environmental standards may work for some CTNCs, but be commercial suicide for others given the state of the markets in which they operate. In short, what is commercially sound practice for any one CTNC may not be in the best interest of others, or of China as a whole.

Until China enacts a deliberate stance toward enhancing its responsible competitiveness through participation in international voluntary standards, its "go global" strategy will remain incomplete.

5.0 Sustainability Standards and Competitiveness

China's choice to build responsible business practices rightly centres on the primary challenge of upholding the rule of law. The recent case of tainted milk products, for example, clearly calls for visible enforcement of the rule of law. China, however, lacks an approach to non-statutory standards and associated incentives that complement and, indeed, enhance the rule of law. China is by no means alone in facing the limitations of an overreliance on statutory compliance, but in many ways lags some of its key competitors and export and investment destinations. In Europe and North America, for example, the value of so-called voluntary standards that go above and beyond the requirements for legal compliance is increasingly recognized as crucial to enabling norms and standards. These standards are often developed, stewarded and enforced through non-statutory means. The reasons for this are well-documented and include the cost of statutory approaches, the clumsiness and backward-looking nature of many legal approaches and the unintended consequences of the overuse of the law, such as the United States' overly litigious environment. The German government's

⁹ The possible existence of "responsible competitiveness clusters" was first discussed in Zadek (2001) and subsequently in Zadek, Sabapathy, Dossing and Swift (2003).



Ministry of Economic Cooperation rates voluntary standards as a “high” strategic priority and recommends “intense commitment in this field” (Federal Ministry for Economic Cooperation and Development, 2008; Litovsky, Rochlin, Zadek and Levy, 2008).

On the broader global stage, the damaging fate of the Doha Trade Round exemplifies the limitations of intergovernmental agreements of substance, and we see as a result a surge of not only bilateral and regional intergovernmental agreements but also non-statutory agreements between private actors that frame market transactions by “sustainability” standards and norms. Even the Europe-wide carbon trading system, widely cited to demonstrate the potential for innovative intergovernmental solutions, leaves much work to be done, and arguably would not have come into existence if its predicted substantive impact in the short to medium term had been significant. Again, we see private voluntary initiatives such as the Carbon Disclosure Project both enabling the carbon trading system to function more effectively and filling in gaps not covered by the system.

Applying the rule of law to sustainable trade presents numerous difficulties and limitations. Beyond the basics that should have been agreed to as part of the Doha Round, many dimensions of sustainable trade involve cross-border issues where jurisdictions can be unclear, or involve interjurisdictional issues with weak or non-existent regulatory enforcement mechanisms in practice. Furthermore, many issues are not and perhaps, in some instances, cannot be adequately covered by the rule of law. Examples of these include the share that peasant farmers get of the final value of their products, the responsiveness of global companies to community concerns when accessing water resources, or the employment of locals or nationals in the exploitation of their own resources.

Such factors, combined with the considerable asymmetries of power among global businesses, local communities and even governments, have led to the organic emergence of a “civil regulatory” framework of non-statutory initiatives covering everything from Internet privacy, to human rights abuses committed by security forces guarding extractive-industry sites, to anticorruption initiatives, to the greening of cotton (Federal Ministry for Economic Cooperation and Development, 2008; Litovsky, Rochlin, Zadek and Levy, 2008).

Creating such standards, let alone enforcing them, poses considerable challenges. Until the early 1990s, global businesses, largely European and North American, found themselves more or less exclusively in opposition to campaigning organizations, again largely from these continents, though increasingly also from parts of Asia—notably India—and sub-Saharan Africa, and from across Latin America. Governments played an ambivalent role, often quietly supportive of business while increasingly having to respond positively to challenges to corporate power in the face of the growing popularity of campaigning organizations. From these largely dysfunctional beginnings has emerged a new generation of standards developed by “collaborative standards initiatives,” often involving hundreds or thousands of interested parties, businesses and non-profit organizations, as well as public institutions acting as conveners and conveyers of the public interest rather than in their regulatory role.¹⁰

For example, standards covering cross-border project finance by financial institutions have been established as the Equator Principles,¹¹ stewarded by the International Finance Corporation. The most widely recognized

10 Several groups have emerged to support the integration of these collaborative standards initiatives, most notably the International Social and Environmental Accreditation and Labelling Alliance (ISEAL Alliance), founded in 2000, which, according to the German Federal Ministry for Economic Cooperation and Development, is an organization “in charge of organizing the most important standard initiatives as well as the international knowledge management with regards to standard-setting, and which promotes the exchange of its members on the topic of best practices in this context.” These organizations, say the ministry, “have significantly contributed to public awareness-raising.”

11 Li (2007) offers a good introduction and perspective on Chinese attitudes toward the Equator Principles.



and applied sustainable forestry standards are those of the Forest Stewardship Council (FSC). Standards of behaviour for security forces guarding extractive and energy sites are stewarded under the Voluntary Principles on Security and Human Rights; labour standards were first covered by the SA8000 and overseen by Social Accountability International and then by civil society organizations like the Fair Labor Association and the Ethical Trading Initiative. There are literally hundreds of these initiatives, and many of the most visible are global, but many of those have been adopted by businesses emerging at the national and regional levels (Long, Zadek and Wickerham, 2009; Rochlin, Zadek and Forstater, 2008).

These initiatives have not been driven exclusively by civil society organizations. Businesses and governments themselves promote these international voluntary standards as part of their own competitive advantage. The Extractive Industries Transparency Initiative (EITI), for example, was sponsored by several global oil majors, just as the Fair Labor Association was sponsored by the U.S. government together with leading U.S. apparel companies. Even where civil society organizations' actions are the drivers of such initiatives, such as the "Publish What You Pay" campaign in the case of EITI and student action in the case of the Fair Labor Association, companies and governments very often develop a leadership role as the resulting initiatives mature. Many forest-product companies support the FSC, as its core labelling strategy has become a real basis for commercial competitiveness in the sector.

5.1 Sustainability Standards as a Competitive Advantage

Collaborative standards initiatives provide a major opportunity to overcome the combined failure of global governance mechanisms and market-based solutions in order to create conditions in which businesses and nations can deliver sustainable development.

Without the forest-to-consumer stewardship of initiatives such as the FSC, the world's forests would be in a worse state than they are. And without initiatives that commit apparel and footwear companies like Nike to improve labour standards in the factories from which it buys, workers in their supply chains would get a worse deal than they do.¹² Countries such as the United Kingdom in the 1990s faced situations similar to China today, where jobs were moving overseas, media was driving sustainable development, the government and business saw the need to promote sustainable development outside the country's borders, and civil society was calling for more responsible business behaviour. It was in this context that global standards emerged.

Private voluntary standards (see, for example, Table 5.1) today do represent a potential barrier to entry for emerging business communities and nations. Indeed, through the concerned eyes of Chinese business leaders, and indeed business leaders from most emerging economies, these standards are mainly seen as

- Controlled by western companies, NGOs and governments.
- Having unattractive access conditions for emerging-economy businesses.
- Involving standards that are not suitable for emerging-market firms and their competitive context.

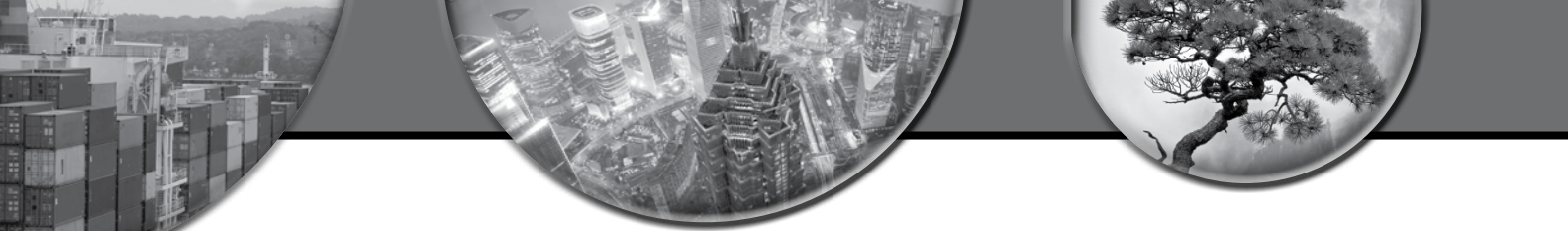
It is true that most standards systems are dominated on the business side by existing global companies, largely European and North American, and create, in effect, non-technical barriers to trade. Many make it difficult to operate in high-risk countries, and yet, as stated above, Chinese businesses often find themselves confined to high-risk markets, especially when competing for access to raw materials. Whether stimulated and created by any combination of active international civil society, governments, or business, these standards have in the

¹² For a history and commentary on the economic, social and environmental effects of voluntary standards for data protection and social and environmental standards, with case studies, see Haufler (2001; 2005).

main become or are in danger of becoming exclusive clubs for erstwhile enemies, that is, incumbent global businesses working with campaigning organizations.

Table 5.1: Scale of private sustainability standards.

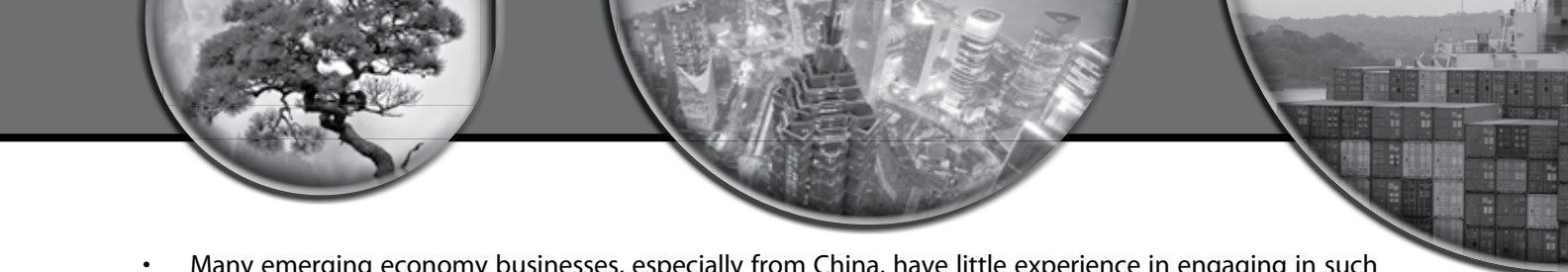
Standard	Scale	Chinese trade	Drivers
<p>Forest Stewardship Council</p> <p>Global non-profit membership organization founded in 1993 to provide standards, accreditation, product labelling and market access</p>	<p>% of global paper pulp market certified by FSC (2007): 10 per cent</p> <p>Forests under FSC certified management: 10 per cent, or 105,450,874 hectares (size of three Germanies)</p> <p>Labelled retail sales (2007): US\$20 billion</p> <p>Companies with a combined turnover of over US\$250 billion in wood products committed to FSC certification</p>	<p>Import of wood products: US\$15 billion (FAO statistics, 2007)</p> <p>Export of wood products: US\$14.4 billion (FAO, 2007; Changjin, Liqiao, Lijun, Lu and Bass, 2008)</p>	<p>Commitment from Home Depot and Wal-Mart</p> <p><i>Harry Potter</i> printed on FSC paper, but there was only enough supply to print 65 per cent of books on FSC-certified paper</p> <p>Public procurement commitments from the U.K., Netherlands, Denmark, Germany, Belgium and France</p> <p>Companies choose FSC for improved reputation (82 per cent), access to new clients (74 per cent) and access to new markets (66 per cent) (Conroy, 2007)</p>
<p>Fairtrade Labelling Organization</p> <p>Non-profit, multistakeholder association involving 23 member organizations (labelling initiatives and producer networks), traders and external experts</p>	<p>75 per cent of British residents recognize the "fair trade" logo</p>	<p>China has minimal trade in Fairtrade coffee and tea</p> <p>Some specialty goods sold by Carrefour with the WWF</p>	<p>Competition among retailers like Tesco and Marks & Spencer to see who can have the most Fairtrade</p> <p>Low level of recognition in China, but some partnerships formed between businesses and NGOs</p> <p>Starbucks announced in October 2008 it would double purchase of Fairtrade coffee, becoming largest buyer (www.fairtrade.net)</p>



<p>Marine Stewardship Council</p> <p>The world's leading certification and eco-labelling program for sustainable seafood</p>	<p>Certifying 10 per cent of global wild-caught fish</p>	<p>China is world's largest producer: 16–17 million tonnes of wild capture (Peru, the world's second largest, has 9.6 million tonnes)</p> <p>13 million fishers (31 per cent of world's total)</p>	<p>McDonalds and Wal-Mart aim to have 100 per cent of fish stocks under MSC certification</p> <p>Governments such as Vietnam and South Georgia are working with fishers to certify stocks</p> <p>Wal-Mart says, "When you're big enough, what was an externality is now an internality." (Conroy, 2007)</p>
<p>Initiative for Responsible Mining Assurance</p> <p>Social and environmental standards for mining</p>	<p>Five mining association members</p> <p>Five mining companies</p> <p>Dozens of NGOs</p>	<p>20 per cent of Chinese trade (Ministry of Commerce statistics)</p>	<p>After campaign from NGOs, the principles gained support from companies like Tiffany and Wal-Mart (Conroy, 2007)</p>
<p>Principles for Responsible Investing</p> <p>2006 UN initiative to make environmental and social governance part of investment analysis</p>	<p>444 signatories and US\$18 trillion under management</p>	<p>China Investment Corp. and China Banking Corp. became signatories</p> <p>Motivation: become part of norm on investment and pension funds</p>	<p>Investment institutions want to become part of the normal investment community</p> <p>Supply chain issues</p> <p>Companies use disclosure to accelerate innovation, identifying waste and driving more efficient investment</p>
<p>Extractive Industries Transparency Initiative</p>	<p>24 candidate countries with high foreign investment in extractives sectors</p> <p>40 companies signed up (no Chinese)</p> <p>11 extractive importing countries support</p>	<p>No Chinese companies</p>	
<p>Voluntary textile initiatives like SAI, ETI, FLA, FWF, WRAP and BSCI</p>	<p>In March 2008 there were SA8000-certified products made by 875,052 workers in 64 countries and 61 sectors</p>		

Two further crucial factors underlie these concerns or, more properly, the difficulty in overcoming them:

- Low trust between Western members of standards organizations and emerging-economy businesses blocks collaboration.

- 
- Many emerging economy businesses, especially from China, have little experience in engaging in such initiatives, and in particular with civil society organizations.

There are important exceptions. ISO provides a forum and process that is more familiar to Chinese players. But with the exception of the environmental management standards (the ISO 14000 Series) and the current ISO 26000 guidance on social responsibility, most of ISO's focus areas are at present not core to the sustainability agenda, though plans are in progress to develop ISO's role in this area. And, gradually, order is coming to the wider landscape of voluntary sustainability standards. The ISEAL Alliance, for example, has developed a code of conduct for such initiatives.

Sustainability standards do not confer costs and benefits equally across companies or nations.¹³ On the down side, markets for talent, finance, and goods and services do not automatically reward companies that work to improve aspects of sustainability performance. For example, some aspects of sustainable development appear to have no effect on Western consumer purchasing unless two goods of similar cost and quality are compared, according to one study (Holding, 2007). In this case, environmentalism is only slightly correlated with consumer purchasing, but other factors that are also important to investors, such as corporate governance and diversity, were more important to consumers. Also, there is no statistically significant relationship between the financial performance of the world's largest companies—the Global 100—and their score on the Accountability Rating (Zadek, 2007b). This fact may be for any one or more of three reasons:

- Firms often do not know how to exploit the business opportunities of enhanced sustainability performance.
- Even when they do, the gains have not yet fed through to reported financial performance.
- Most important is that markets are often “backward looking” and do not yet reward sustainability performance that, over the longer term, could provide significant financial gains.

Similarly for nations, the distribution of competitiveness gains from these standards is often location-specific. Leadership in improved emission standards for vehicles produced in Europe may deliver competitive advantage to the region, as such emissions are internalized into markets through legal pollution limits or when emissions contribute to a product's “embedded carbon” as priced, say, through cap-and-trade or carbon taxes. But as long as costs remain largely externalized, the higher costs for achieving lower emissions may well render the sector uncompetitive, especially in the high growth markets of India, Brazil and China. International pressure on Chinese apparel, textiles and footwear producers to improve standards certainly point the way toward desirable markets where businesses and nations are rewarded for enhanced sustainability outcomes. However, as long as purchasing practices by international buyers from global retailers are so heavily weighted toward price-point competitiveness, this pressure remains too often at odds with the realities of sustained competitiveness.

The Equator Principles, which set out sustainability principles to be applied for cross-border project investments, were advanced in particular by global financial institutions such as Citigroup and ABN Amro to enable them to apply such standards without facing competitive disadvantages. The EITI, similarly, was established to help companies like BP and Shell respond to growing societal pressure to publish data on royalty payments to host governments, and to avoid the threat of exclusion by those same governments.

¹³ For commentary on the fractured, sectoral nature and economic foundations of CSR, see Steger, Lonescu-Somers and Salzmann (2007). For a study on the correlation between sustainability and economic success that indicates “vice” funds do better than “virtuous” funds but that sustainable companies have competitive advantage in four areas—cost savings, product differentiation, innovation and strategic planning—see Asong (2007). Also see Soederberg (2007).



Acting alone, BP reasoned, would leave the company vulnerable to being excluded from access to resource opportunities in favour of competitors that were willing and able to ignore pressure to be more transparent in their dealings. Collaboration can also at times lead to reduced cost disadvantages or even absolute cost savings. Supply chain social and environmental auditing has added multi-million-dollar expenses that when adopted by vulnerable premium brands alone, can leave them with a significant cost disadvantage in fiercely competitive markets. Furthermore, through initiatives such as the Ethical Trading Initiative, opportunities are being developed for sharing such costs to reduce their absolute levels.

The competitive dimensions of sustainability standards, following the well-documented history of regulatory competition, is therefore especially related to the disadvantageous competitive position in which enterprises and nations find themselves as a result of their adoption of better sustainability practices than their competitors (Zadek, Raynard, Oliviera, de Nascimento and Tello, 2005). In such so-called first-mover disadvantaged situations, it becomes in companies' interests to encourage their competitors to reach the same standards and so, at minimum, offset the original competitive disadvantage. In these cases sustainability standards can be competitively smart for the enterprises of one nation only when others also join the standard. Game theory says these "prisoners' dilemmas" are likely to be overcome during repeated interactions such as trade. In such cases, it benefits sustainability leaders to help laggards toward mutually beneficial development outcomes through participation in voluntary sustainability standards, which offer the chance to overcome these dilemmas. It is in this context that we can turn to a brief review of China's approach to sustainability standards for enterprises.

Box 5.1: Chinese business leaders adopt private sustainability standards.

Developed in 2002, the Carbon Disclosure Project is the largest investor coalition in the world on climate change issues, with 385 signatories and \$57 trillion in assets. Globally, 1,550 companies of the total 3,000 companies surveyed by the project have responded. In China in 2008, for first time, 20 per cent of the largest 100 listed companies responded, with an additional 5 per cent providing complete information and 17 per cent declining. Comparatively, 77 per cent from the Global 500 responded, 90 per cent from the FTSE 100 and 321 from the S&P 500. China has two signatory members, the China Industrial Bank and the China Investment corporation (Syntao, 2009).

The China Ocean Shipping Company (COSCO) is one of China's most active participants in international voluntary standards initiatives, having signed up to the United Nations Global Compact and its Caring for Climate initiative. It also uses the Global Reporting Initiative and the AA1000 Assurance Standard to ensure quality and accountable sustainability reporting.

5.2 China's Current Stance on Sustainability Standards

Chinese businesses going global are facing a new generation of sustainability standards in international markets. At times they are statutorily framed, but often, and increasingly, they are collaboratively developed voluntary standards. The strategic question is not whether but how to respond to them. In many respects, the answer depends on the business, the sector, the markets being addressed and many of the factors set out in preceding sections of this paper.



Box 5.2: Labour standards in Chinese supply chains.

The Responsible Supply Chain Association of the China National Textile and Apparel Council created the CSC9000T voluntary standard and management system to suit what was in its view the situation of China's textile sector as a self-disciplinary, industry-specific, voluntary association that puts special emphasis on protecting workers' rights and enhancing capacity for businesses to develop sustainably. This standard has the support of the Chinese Federation of Labour Unions and accords well with many international systems, such as the ISO 14000 Environmental Management System. Aligning the CSC9000T to other standards gives Chinese industry the potential to influence the development of these standards, but this is not an explicit goal.

This national standard, combined with management training, has had a mixed reception by international organizations, which question whether China is seeking to uphold or undermine existing standards, particularly as the question relates to the sensitive issues such as the right of workers to form independent unions, organize and collectively bargain with employers. There is clearly potential, however, given the huge importance of Chinese suppliers in many global supply chains, for CSC9000T to become part of a global norm. This is especially significant because the China National Textile and Apparel Council and the Responsible Supply Chain Association have had limited engagement with international organizations such as the Foreign Trade Association's Business Social Compliance Initiative, WRAP and the International Labour Organization.

The wariness of Chinese businesses and government officials does not always prevent Chinese businesses from adopting such standards, particularly process-focused standards such as the Global Reporting Initiative's Sustainability Reporting Guidelines and AccountAbility's AA1000 Assurance Standard. On the other hand, there is a strong sentiment that imported standards will not be appropriate for Chinese enterprises. "We should make CSR standards with Chinese characteristics," said Li Hongyan, General Secretary of the 2006 Building a Harmonious Society and CSR (Shenzhen) Forum. And in response to such sentiments, the Chinese Academy of Productivity Science has drafted a universal CSR framework called "Chinese Corporation Social Compliance" (Deng and Li, 2006). Similarly, China-branded sustainability and responsibility standards are emerging in textiles and other sectors. Adding a country's characteristics to standards or creating entirely new standards can be appropriate in many cases, but the process becomes counterproductive if associations or ministries gain prestige through standard creation at the expense of international competitiveness. Standards with Chinese characteristics should be measured against many criteria, including necessary policy goals.

Chinese companies, working with the Chinese government, have a real choice in responding to prevailing sustainability standards in international markets. Labour standards in textiles and apparel are a case in point. Several standards have emerged and are widely used by international business, notably those promoted by the Ethical Trading Initiative, the Fair Labour Association and Social Accountability International (home of the SA8000). The Chinese response to this has been to develop and promote the CSC9000T (see the box "Labour standards in Chinese supply chains"). While the CSC9000T has developed some cooperation with existing standards bodies, this approach clearly implies a decision by China not to engage directly in existing international initiatives, whether because of problems with the substantive conditions of the codes being promoted, the participants, the process and associated governance, or some combination of these.

Sustainable forestry is an area where Chinese enterprises have adopted a "join and promote" approach to existing international sustainability standards. Sustainable forestry is a widely acknowledged issue, for which




national legislation in most countries where major forestry industries reside is largely inadequate. As a result of this, and of widespread activism by international campaigning organizations, the FSC evolved to become the world's leading sustainable forestry certification system. According to Heiko Liedeker, until recently executive director of the FSC and chair of the European Forest Team of the WWF, "The FSC has shown that it improves forest management substantially and provides credible certification. The world's forests now need better management to achieve the standards of the FSC rather than more certification schemes or mutual recognition frameworks" (Greenpeace, 2001). Such certification schemes, with their strong chains of custody, may prove powerful for China as it seeks to overcome new statutory barriers to trade in timber that is suspected to have come from illegal sources. Such barriers include the United States' recently amended Lacey Act, which would ban many manufactured products made from raw wood materials that have been harvested in countries where illegal wood harvests take place. This newly amended act means some U.S. companies trading in Chinese forest products could face forfeiture, penalties and even imprisonment (Gregg and Porges, 2008).

China is already learning the value of automatic branding through certification by the FSC. Chinese companies have made the FSC the fastest-growing forestry certification scheme in China (MacGillivray et al., 2009). As of September 2008 China had 730 active certified members, with the first having been certified in 1998. In June 2007, when the international board of directors of the FSC announced the accreditation of the Forest Certification Working Group in China as the official FSC national initiative in China (FSC China), chairman Grant Rosoman said, "China is a key player in global wood products trade and manufacturing. There is an enormous opportunity for Chinese businesses together with FSC to transform the national and international wood products trade into a responsible trade, while at the same time capturing additional value and protecting the world's forests" ("China takes crucial step," 2007). And yet even with the area of the FSC's certified forests totalling approximately three times the area of Germany, there was only enough supply to print two-thirds of the last Harry Potter book on FSC-certified paper (Conroy, 2007). China, as the world's largest processor of wood products, can do much to correct this imbalance.

Box 5.3: China, collaborative voluntary standards and the distributive benefits of globalization.

The United Kingdom's minister of international development, Lord Malloch-Brown, commented in a speech on August 30, 2007, that "China's full support for and engagement with the **Extractive Industries Transparency Initiative** would not only be hugely symbolic but would make a real practical difference. It would be a big push toward much greater transparency in... oil markets. The point is that a common approach will only be effective if it is just that—common. It is bound to be weakened if we apply different standards as donors and partners on working conditions, labour conditions or debt sustainability, or standards of governance in different individual countries. But for none of us, least of all China, working together in this way shouldn't be seen as a sacrifice of agenda."

The Chinese Ambassador to the United Kingdom, Zha Peixin, emphasized the importance of what many actors are beginning to see as the opportunities afforded by collaborative voluntary standards. Zha said, "All countries, big or small, poor or rich, strong or weak, should have the right of equal participation in international economic affairs, and the formulation and revision of 'rules of the game' should not be determined by only a small number of countries or groups of countries." He urged "that the benefits of globalization [be] shared more widely and equitably" and argued that globalization should be "conducive to [narrowing] the gap between the North and South" (Zha, 2003).



The development of sustainability standards through the ISO, though in its early stages, provides further insights into China's existing and possible options and strategies. Chinese researchers, including China's leading state-owned enterprises, have become active participants in ISO's work on its social responsibility guidelines, ISO 26000. In this instance, faced with a known and understood process, namely ISO standards, Chinese enterprises and standards bodies have been more willing to engage in the development of the standard, despite the considerable differences between Chinese representatives and others engaged in the process. This case shows that China's will to engage is directly connected with the availability of institutional pathways rather than the people or groups involved or the topic. Therefore, a standard's governance and transparency are important to the process and can boost Chinese participants' confidence that they can exert influence effectively. This transparency of governance and process means that Chinese and participants from other developing countries can more reasonably understand and predict processes and outcomes.

As a final example, the case of extractive-industry sustainability standards is noteworthy. Numerous sustainability standards have been developed in efforts to address aspects of the extractive industry footprint, which can be and often is extensive and negative in social and environmental terms. A business coalition, the International Council on Minerals and Mines, has sought to establish principles and oversight approaches, in consultation with others, covering the entire footprint of its business members. The EITI has established voluntary means of engaging host governments, together with mining and energy enterprises, in reducing the incidence of corruption and misuse of public funds associated with concession-related royalties. And the Voluntary Principles on Security and Human Rights, again comprising a coalition of businesses, governments and human rights organizations, have established principles for guiding the activities of security forces mandated to protect extractive and energy sites.

These initiatives are interesting in that there has been virtually no engagement in any of them by Chinese enterprises or the Chinese government. In the case of the EITI, one possible explanation is that it is seen to cross the line in interfering with the internal affairs of other sovereign states, which it clearly does. In the case of the Voluntary Principles on Security and Human Rights, one reason could be that China rightly sees the human rights community that currently composes the membership as, in the main, antagonistic, which would make it difficult if not impossible even to realize membership, let alone do anything constructive within the organization. In the third case, the International Council on Minerals and Mines, made up exclusively of enterprises, one might speculate that it would be very hard for a Chinese company to join an initiative made up exclusively of Western companies.

The U.S. Senate's approach to EITI, on the other hand, strongly encourages the U.S. government and businesses to systematically address the connections among extractives, corruption, reporting and poverty reduction, and encourages the G-8 to mandate "publish what you pay" rules for the cost of extractive resources (Minority Staff of the United States Senate Committee on Foreign Relations, 2008). Whether or not to join this and similar voluntary standards frameworks is not a simple decision for developing countries. China, because of its size and strengths, has more strategic options than most developing countries.

5.3 Strategic Competitive Framework for Sustainability

Sustainability standards, therefore, can be perceived as barriers to doing business when the opportunities they bring are ignored or if crucial actors do not engage; they also present opportunities to enhance competitiveness. In fact, these options are mirror images of each other, since sustainability standards are currently providing competitive opportunities for Chinese corporations' competitors. By implication, Chinese businesses and the Chinese government have the opportunity to frame this question with pragmatic analysis, namely by asking what China can do to address any particular standard to deliver enhanced competitiveness.



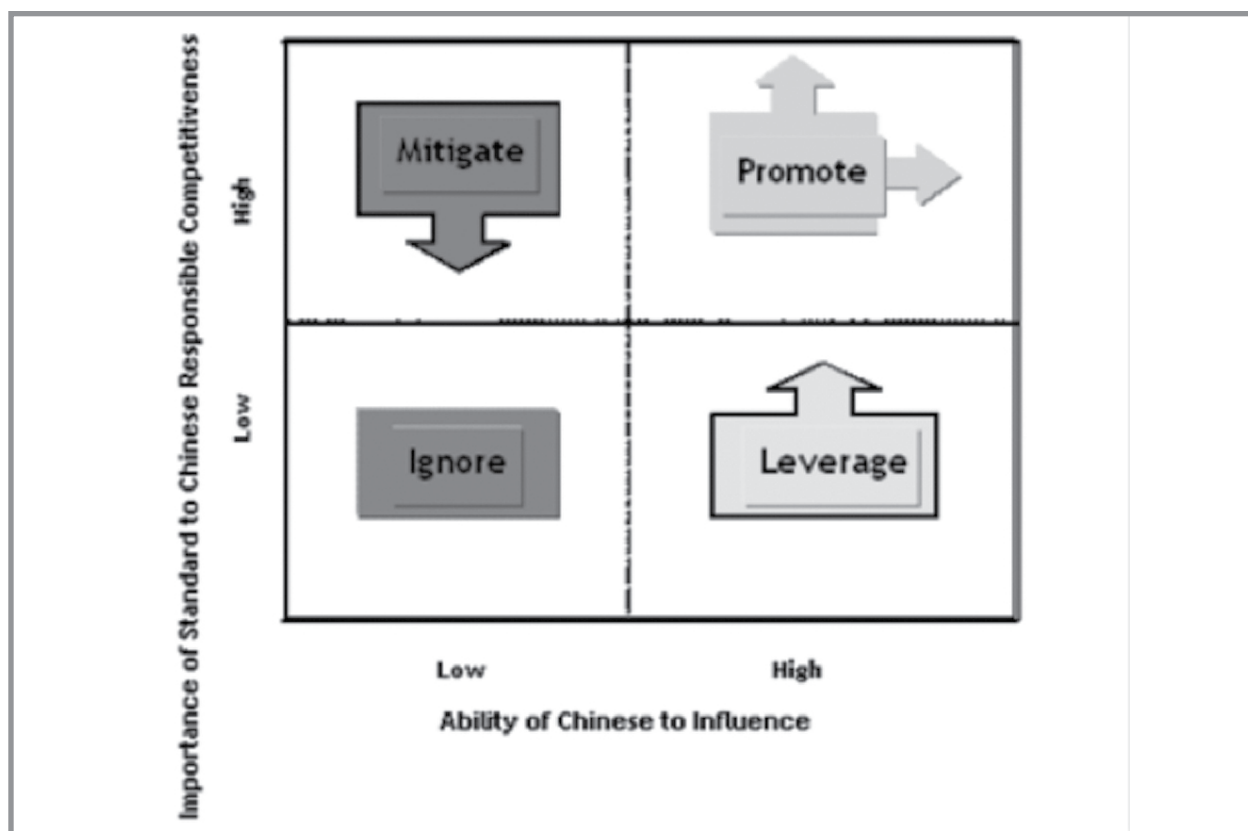
In addressing this question, the Chinese government and China’s business community, individually and collectively, are faced with the three broad pathways discussed in Section 1.0: normalization (compliance), exceptionalism (opting out) and transformation (engaging and influencing). Which pathway it makes more sense to pursue depends on two crucial variables:

- The actual or potential impact of any particular standard on CTNCs competitive position.
- The capacity of CTNCs to influence the standard.

Putting these two variables together with the three pathways provides the basis for a simple strategic framework offering four options (see Figure 5.1 for a graphic representation):

- *Ignore*. If a standard and its proponents are of little or no importance to Chinese competitiveness and China is poorly placed to influence the standard.
- *Mitigate*. Finding ways to reduce the impact of a standard that the Chinese cannot influence but that could, if effective, reduce Chinese competitiveness.
- *Leverage*. Seeking to enhance the impact of a standard on global markets if its success would enhance Chinese competitiveness.
- *Promote*. Enhancing a standard over which China has influence and that could enhance China’s competitiveness.

Figure 5.1: Strategic framework for dealing with sustainability standards.





5.4 Using the Framework

The key message from the preceding analysis and framework is that CTNCs can and should make active decisions about specific sustainability standards based on their commercial interests and strategies. In this way they can behave using the same rules to compete with incumbent international business organizations. Similarly, the Chinese government should frame its response to prevailing sustainability standards in global markets based on its broader national policy of moving China's internationally traded goods and services up the value chain, with the associated need for meeting associated standards, norms and stakeholder expectations.

Pursuing sustainable trade and investment does not, therefore, mean the passive acceptance of existing sustainability standards, nor does it mean a strategy of "avoidance where possible." Promoting the FSC standards for sustainable forestry might well be in the interests of the leading CTNCs in this sector. The Chinese government may choose to promote this standard in exchange for an agreement with international organizations to mitigate, for a time, its negative competitive effects on smaller or less-advanced Chinese companies. Similarly, there is scope for the Chinese government, working with CTNCs, to embrace international standards initiatives, such as the Ethical Trading Initiative, that focus on learning and collaboration in advancing workers' conditions in global supply chains rather than taking a rigid compliance approach to issues that would be difficult for CTNCs to sign up to, such as the rights of independent trade unions to associate freely and engage in collective bargaining. In efforts to stimulate rural incomes, promote sustainable domestic consumption and spur fairer South-to-South trade, China may choose to work with organizations like the Fairtrade Labelling Organization¹⁴ to establish guidelines suitable for the Chinese context. Indeed, it might be in the interests of key CTNCs to actively promote such labour standards in current circumstances, where Chinese labour costs are increasing relative to many Asian and even Latin American competitors because of a combination of key labour shortages and an appreciating domestic currency, perhaps in combination with regional trade agreements or perhaps with these voluntary standards built into trade agreements.

These standards can also create microclimates that not only provide new responsibly competitive market signals in trading areas but can also help prepare CTNCs within the right atmosphere domestically. If the government procures goods with voluntary sustainability standard labels, as the Swiss government does, it can further prepare consumers and companies for these standards outside borders, as well as provide spillover effects to disadvantaged communities. Fair trade standards, especially, may spur domestic consumption, especially if tied to statutory measures, and may be conducive to South-South trade and overcoming Chinese domestic savings and investment gaps. This is especially important, as well, in moving up the value chain, where companies may want to capture higher-value consumer markets at home and align their nascent brands to international standards that are more easily recognized abroad.

The Chinese government, moreover, may well choose to support key sustainability standards initiatives because it no longer feels able alone to monitor and control the activities of CTNCs that may be pursuing commercial strategies that are damaging the broader interests of Brand China. Initiatives such as the Equator Principles and the Extractive Industry Transparency Initiative provide means to extend the government's scope of control over its own business community and, therefore, the risks and benefits that the business community might pose to China's broader development process. Aspects of standards that threaten to damage CTNCs' reasonable foundations for competitiveness can, and can only, be mitigated if the Chinese government is directly involved in the future development of such standards. China's active engagement in the development of the ISO 26000 Social Responsibility Standard shows that the country can play an active

¹⁴ For more information on the Fairtrade Labelling Organization, visit <http://www.fairtrade.net>; for a brief summary of fair trade history, see Witkowski (2005).



role in the governance of international standards and may choose to use these as policy instruments for sustainable development.

It seems likely that, in many if not most areas, the balance will tip toward (voluntary) collaboration among relevant governments and international bodies, enterprises and civil society organizations rather than toward statutory standards. There are exceptions to this, of course. The Chinese government's own movement to improve the benefits and protection provided by workers' contracts is a case of a statutory shift. But even here, China may choose to promote collaborative means of establishing comparable conditions in other producing nations to prevent competitive disadvantages or even to increase adherence to domestic labour standards. Indeed, rather than seeing standards in either-or terms, the more interesting perspective is to understand the complex dynamic between statutory and collaborative initiatives (Zadek, 2007c).

Collaboration, of course, requires engagement from many sides, and ample anecdotal evidence suggests that many participants in existing collaborative standards initiatives are reluctant to engage with China, despite the risks of becoming irrelevant over time by not doing so. The entry conditions to the Voluntary Principles on Security and Human Rights have been the subject of intense debate, with human rights organizations being reluctant to adopt the "big tent" approach advocated by participating governments and companies, which would enable and encourage emerging-economy governments and enterprises to engage. Similarly, the governance of these initiatives is dominated by Western companies and civil society organizations that, while often erstwhile enemies, find themselves with common cause in wanting to sustain the underlying values and associated personal and institutional solidarity that underpins many of these initiatives.¹⁵


In conclusion, then, China has variously developed, adopted or ignored sustainability standards across different sectors at different moments in its development, advancing solutions that are sometimes statutory and at other times voluntary. While such diverse responses are, in a sense, to be expected given the heterogeneity of circumstances, it is less clear whether such diverse responses result from clarity and focus or, rather, ad hoc interventions within a policy vacuum. It is in this context that we turn to the final section, which concerns strategic options for advancing China's sustainable trade.

6.0 The Next Steps

Competitiveness comprises many factors. Some are present (or absent) purely at the enterprise level. These include specific technologies, unusually attractive terms of access to capital, a premium brand on which to build high-value sales, and so on. Others are a function of broader factors, such as public policies that may advantage specific forms of enterprise, shifts in societal expectations and, of course, changing market prices—for example, in commodities and carbon-based products. In most instances the critical link between the micro and macro level concerns the capacity of the enterprise to respond flexibly and effectively to changing market conditions and the ability of enterprises, often working with governments and others, to manage market risks and opportunities through managing the collective brand of the relevant business community, and by setting new market rules such as regulatory competition.

Sustainability standards are, of course, only one facet of this complex equation. However, these standards are, in many sectors and circumstances, an increasingly important element. Indeed, the success of many of the traditional aspects of competitive behaviour, such as those set out in the earlier sections, depend on sustainability factors. For example, acquiring premium brands as a means of accelerating moves up the value chain, as with Lenovo's purchase of the IBM personal computing brand and technologies, will be ever harder if attempted by Chinese companies with a poor sustainability record. Similarly, securing access to

¹⁵ Highlighted in Rochlin, Zadek and Forstater (2008).



natural resources, even in concert with exceptionally attractive financial terms, will become more difficult if Chinese enterprises have a demonstrably poor track record on employment of nationals, management of community issues and handling of environmental footprints. The links between competitiveness and sustainability performance along the value chain are also hard to separate. For example, establishing research and production facilities in Europe in pursuit of scarce talent will be likely to fail if the same enterprise is acting elsewhere in its value chain in ways that such talent deems unacceptable.

That is, competitiveness strategies cannot be understood, let alone successfully formulated or implemented, without an integrated approach to credible sustainability practices, which means developing strategies to address sustainability standards at the level of both enterprises and Brand China as a whole.

Collaborative standards initiatives have become commonplace in the development of sustainability standards for enterprises operating in global markets. These initiatives, governed by non-state actors and public institutions acting in their non-statutory roles, seek to create de facto regulatory enforcement through a blend of citizen-based campaigning, capital-market risk-based responses, peer-to-peer business pressure and, in some instances, the threat of statutory regulation in key markets. These initiatives have developed in an ad hoc manner and are fragmented in scope, coverage and quality. Nevertheless they are, taken together, a global phenomenon and are increasingly finding ways to “join up,” for example at the technical, governance and financing levels. Going forward, collaborative standards initiatives offer a credible option for filling the gap left by shortfalls in intergovernmental solutions.

Chinese enterprises and the Chinese government are, in the main, uncomfortable in engaging in non-state processes of standards development, with the exception of more structured institutional processes such as those led by the ISO. Many of the actors involved are business competitors or non-profit organizations with a history of antagonism toward China. In addition, the content and the manner in which it is treated, especially in the social sphere, appears from both sides to effectively exclude Chinese participation. As a result, China has in the main sought to ignore and, if necessary, evade prevailing standards designed and governed through collaborative means. The impact of this default positioning erodes trust in Chinese businesses and Brand China overall, creating the grounds for more overt protectionism and moralizing by the global community. This, in short, provides the basis for a vicious circle with no winners.

Collaborative initiatives advancing sustainability standards in global markets are a long-term phenomenon, and China’s economic competitive and broader interests are best served through engagement in the development of the next generation of these standards and the manner in which they are governed.

6.1 Policies to Enable and Create Incentives

The Chinese government should signal its commitment to engaging in collaborative initiatives promoting sustainability standards in global markets as one pillar of its underlying strategy for advancing China’s harmonious development and “going global.” The focus would be on enterprise-level engagement in select existing standards, with the Chinese government taking an active role where other governments are involved in advancing reviews of their content, positioning and governance.

Beyond such broad policy framing and engagement, the Chinese government has the opportunity to incentivize effective enterprise-level engagement in the development and application of sustainability standards by introducing such engagements as one criterion associated with the following instruments:

- Provision of preferential income tax arrangements for companies embedding sustainability strategies into their international investment.



- Operation of one or more international investment funds to offer seed or parallel public funding to support international investment, such as the newly established China-Africa Development Fund.
- Encouragement of suitable public or privately delivered insurance products to encourage international investment.
- Access to foreign-exchange reserves, a key instrument available as long as the yuan is not freely convertible.

6.2 Knowledge Development

Chinese enterprises remain mostly unaware of the history or place of collaborative standards initiatives in global markets, relying on their own, often poorly informed knowledge networks to guide them in associated perspectives and decisions. In fact, this situation is part of a broader gap in knowledge provision to Chinese enterprises as they emerge into global markets covering the basics such as country data, market analysis and information on the legal context.


Overcoming this knowledge gap therefore needs to be part of a wider upgrading of what the Chinese government already directly provides, either following examples such as the Japan External Trade Organization or ensuring that private service providers emerge to deliver what is required. Areas where Chinese government interventions might be especially useful include:

- Establishing an institute for promoting international investment, drawing in part on lessons from other successful experiences such as the Japan External Trade Organization, but also adding a significant component that covers sustainability standards.
- Easing restrictions to ensure the availability of key personnel to support international investment activities and, as part of this, strengthening the training of Chinese managers to operate effectively in managing international investments.
- Improving the effectiveness of China's diplomatic service in supporting CTNCs in their international investment activities, following examples where commercial attachés have undergone in-depth training in sustainability issues as they relate to foreign investment and trade.

6.3 Aligning the Brand

Finally, policy needs to be directed toward the actual improvement of the conditions within which CTNCs can make international investments. CTNCs face many potential obstacles to making such investments, some merely bureaucratic, some nationalistic and others purely commercial. Interestingly, as we have argued extensively in previous sections, "sustainability" is not just another possible obstacle but is often the vector through which many other concerns and issues are expressed. Leveraging some of the recommendations made above, policy in action might assist in overcoming obstacles in the following ways:

- Diplomatic means will become increasingly important if concerns increase over Chinese investments per se, as they will do if the responsibility of Chinese enterprise in general terms is placed in doubt. Similarly, diplomatic means and activities to enhance the profile of responsible Chinese enterprise will be important and effective as long as diplomatic teams are provided with the requisite knowledge and training (see above) and are aware of the actual practices of CTNCs (also see above).

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- Leveraging Chinese foreign assistance to further international investment has been a well-used avenue by other investing nations, including the United States, Europe and Japan. Foreign assistance can best provide a sustainable competitive advantage to CTNCs if it is visibly effective in benefiting the host country and, therefore, not wasted on prestige projects or leaked through corrupt practices along its value chain. China's embracing of the Paris Declaration regarding aid effectiveness, and its ensuring the linkage of aid to sustainable international investment, will help in this regard.
 - Bilateral and regional trade agreements can facilitate sustainable trade and international investment, especially in the face of disappointing progress in the Doha Development Round. While negative conditionality links to labour and environmental standards are ill-regarded by most trading and investment partners, incentives linked to such standards would certainly establish China's credentials as being committed to sustainability. Cases such as the U.S. trade agreement with Cambodia illustrate also how collaboratively developed standards, in this case regarding labour standards in the textile and apparel industry, can be dovetailed into such intergovernmental agreements.

Sustainable trade and international investment should be treated as an integral element of the Chinese and, indeed, any government's strategy for advancing its nation's development. The right course of action is not to have a sustainability strategy, but a sustainability perspective embedded at the heart of a strategy for trade and investment. This paper has tried to advance thinking on this as it relates to the specific circumstances of China's next stage of development, where Chinese enterprises are going global in every respect. In some senses, the same arguments could be presented for any country at any stage of development. However, China has a unique opportunity to get it right the first time, as opposed to most nations, which have had to struggle to retrofit their policies and practices with a sustainability focus. To that end, the recommendations made in this section are intended to be pragmatic and aligned with China's current circumstances and needs while at the same time seeking to establish a basis for China and CTNCs to address the needs and opportunities now and in the future.



Acknowledgements

We express gratitude to Hans-Peter Egler and Deborah Schmidiger from the Swiss State Secretariat for Economic Affairs for their financial and intellectual support at all stages of this project. We also thank the Chinese Ministry of Commerce, particularly Zhang Xiangchen, and our lead international research partners at the International Institute for Sustainable Development, Mark Halle and David Runnalls.

The London and Geneva study tours were helpful, particularly in exploring the roles of international voluntary standards and the organizations that set the standards. We especially thank those who attended the session on international voluntary standards in London, including Sasha Courville of the ISEAL Alliance, Andre de Freitas of the Forest Stewardship Council, Rupert Howes of the Marine Stewardship Council, Mark Davis of Marks and Spencer, Kan Xi of Principles for Responsible Investing, Nigel Topping of the Carbon Disclosure Project, Joost Martens of Consumers International, Katherine di Matteo of the International Federation of Organic Agriculture Movements, Chen Wu of the Chinese British Business Council, and Yi Shi and Cara Gallen of AccountAbility for organizing. We also thank Bernice Lee and her colleagues at Chatham House. We owe a debt of gratitude to Simon Evenett for organizing a meeting with the Centre for Economic Policy Research and the U.K. Department for Business Enterprise and Regulatory Reform; our thanks also to those who attended that meeting, including Vicky Pryce, Alan Winters, Guy de Jonquieres, Peter Dodd and many others. In addition, we thank Cheng Shuaihua and Ricardo Melendez-Ortiz from the International Centre for Trade and Sustainable Development, as well as all those who attended the research meetings in Geneva, including Sun Zhenyu, ambassador and permanent representative of China to the WTO.

We thank the research partners on this project, whose tireless efforts to consider China's sustainable trade from all angles have challenged our assumptions and hopefully helped deliver a better sustainable trade strategy. Simon Evenett of St. Gallens University and the Centre for Economic Policy Research, Song Hong from the Chinese Academy of Social Sciences, Li Jian of the Chinese Ministry of Commerce, Aaron Cosbey of IISD, Pan Yue of the Central Party School, Yu Lixin of the Chinese Academy of Social Sciences and Zhang Liping of the Development Research Centre. None of this would have come together without the coordination of Huihui Zhang from IISD.

Finally, we thank the peer reviewers and others who have helped us think through these issues, including Rolf Dietmer of GTZ's Sino-German CSR Project, Li Weiyang of State Grid Corporation of China, Alistair Monument of the Forest Stewardship Council, Liang Xiaohui of the Chinese Textile and Apparel Commission, Barry Naughton and Susan Shirk of the University of California San Diego, and Zhong Hongwu of the Chinese Academy of Social Sciences.



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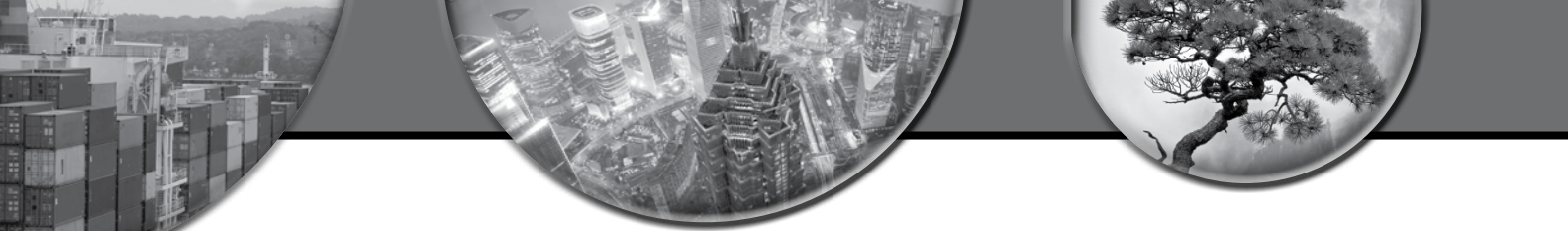
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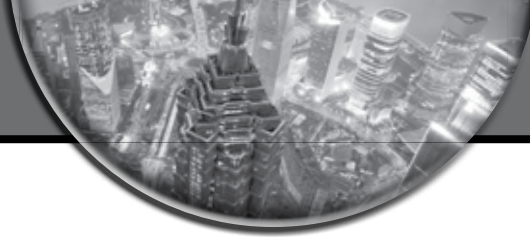
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An earlier version of this paper was published by AccountAbility in April 2009.



9

Conclusions: Elements of a Sustainable Trade Strategy for China

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This volume has made it clear that China's trajectory over the last 30 years has been nothing short of remarkable. When China began introducing its trade reform strategy in the 1970s, it was ranked 32nd among nations in global trade. Today it is the world's largest exporter, with total value of trade having increased over a hundred-fold since 1978—an annual average growth rate of 16.3 per cent. The open-door policy that has underlain much of this growth has also involved a torrent of foreign direct and portfolio investment, which rose from US\$1.9 billion in 1986 to just under US\$100 billion in 2005.

As the volume of China's trade has expanded, its structure has changed dramatically as well. In 1978 over half of China's exports were primary commodities—a figure that has now fallen to 5 per cent. Exports of manufactured goods, just 46 per cent of the total in 1978, have more than doubled to 95 per cent, with over 30 per cent of that being new and high-tech products.


But the strategies that worked so well to get China where it is today may not be the strategies that will take China to a sustainable and prosperous future. Increasingly, China struggles with challenges engendered by a model of growth that has led to tensions and imbalances: between economic and social development, between urban and rural development, and between the economy and the environment, among others. These challenges can be framed as falling within the themes of the three pillars of sustainable development: economic, environmental and social.

From the **economic** perspective, although the value of China's exports is high and the percentage of new and high-tech products significant, the actual value added is low; China is still overwhelmingly a manufacturer for brands owned and marketed by others. Over 40 per cent of China's export stream is processing trade, which involves assembly of imported manufactured and high-tech components. In this sector relatively little value added is contributed (as low as 10 per cent in some cases) and little rent is captured. In the end, the major value added portions of the global value chain go to brand owners, innovators and merchandisers, not to assemblers of products.

Second, as the structure of China's exports changes, its exporters are having increasing difficulty meeting foreign product and process standards. China's industrialized target markets (almost 50 per cent of exports) are increasingly upgrading the standards that goods must meet, whether pertaining to energy efficiency, sanitary and phytosanitary requirements, disposal requirements or bans on certain substances. These sorts of requirements tend to work against developing country exporters, who have less technical capacity; in 2005 they led to estimated losses for China of 9 per cent of total export value. And the celebrated few cases of non-compliance, especially with health and safety standards, work to tarnish *Brand China* in the minds of consumers. The "brand" image of China is critically important not only to China's exporters, but also to China's outward investors, whose forays into foreign acquisitions are often thwarted by anti-Chinese sentiment among policy makers and the public.

From the **social** perspective, China's failure to move up the global value chain means that trade cannot fulfill its potential as an engine of development and poverty alleviation. Neither can China's trade fulfill its potential to provide the quantity or quality of jobs that China must create to employ its increasing, and increasingly educated, workforce. The Chinese economy faces the difficult challenge of creating some 13 million new urban jobs annually to accommodate laid-off workers, university graduates, demobilized servicemen and migrant workers from rural areas.

Quality of jobs is also important from a social perspective. In considering how trade can contribute to that objective, one area that stands out is trade in services, where it is sometimes argued that jobs are better than the average in manufacturing. Unfortunately, China has a chronic balance of payments deficit in services, meaning a missed opportunity for social welfare improvement.



From the **environmental** perspective, China's export stream embodies significant unpaid environmental costs. That is, production for export in China entails domestic and global environmental damage that is not paid for by the foreign consumers of the final goods. So, for example, in 2004 China's exports were responsible for an estimated 23 per cent of its CO₂ emissions. Despite impressive government efforts to reduce the environmental impact of manufacturing and processing trade in particular, the positive effects of technological progress and tougher standards have been overwhelmed by the sheer scale of production. In addition to pollution related to energy production, there are concerns about agricultural and manufacturing water effluent and about the generation of industrial solid waste. Industrial air pollution in the form of toxics and volatile organic compounds is also an issue. These concerns are not just environmental, but are also social, since these forms of pollution degrade people's health and well-being.

The environmental challenge is also economic. China's extensive growth model and lack of technological capacity have led to the inefficient use of scarce environmental resources. Compared to their competitors in OECD countries, average energy consumption per unit of output in key Chinese sectors is significantly higher. Consumption of coal for thermal power generation was 40 per cent higher in 2007, and the figures for steel, cement and pulp and paper were 21.4 per cent, 45.3 per cent and 120 per cent higher, respectively. Although the efficiency of use of natural resources and energy has rapidly increased under the efforts of the Chinese government, there is still a big gap with the advanced economies, which in the end means more pollution, more waste and higher costs of production.

All of these challenges are taking place against the backdrop of global changes that add to the pressures on China's past model of growth. Multilateralism is struggling, whether we look at the impasse in the current global trade talks or at the beleaguered global climate negotiations. This is not good news for a country that relies heavily on an open, non-discriminatory global trading system. Prices of basic commodities such as metals, minerals, oil and agricultural goods fell from their dizzying heights in 2008 but are now back on the rise again. Aside from the damage of price volatility, which is a basic feature of these markets, this upward trend leads to concerns about a model that relies heavily on imported inputs. High prices for oil, in particular, are troubling because they negatively affect the viability of traded goods in general. And on a number of fronts, from biodiversity to climate change to ecosystem services, we are seeing increasing pressure on, and concern about, the natural environment. Worsening trends in this area will mean that consumers will increasingly translate their concerns into their shopping habits. This puts pressure on China's exporters to meet a plethora of ever-tightening foreign environmental standards, both public and private.

The pressures and tensions of China's current development path, and the various global drivers that influence China's future trajectory, strongly imply that the successful policies of the past are not the successful policies of a sustainable, prosperous future. The research undertaken for this book argues strongly that in the area of trade policy what is needed is a *sustainable trade strategy*—a thorough revisiting of current policy in all its facets to better understand how trade and investment can contribute to economic, social and environmental well-being in China. Ultimately such a strategy addresses the critical hurdles China needs to overcome in advancing to its next stage of maturity. Carried out successfully, such a pioneering strategy will help China firmly establish hallmark leadership throughout the twenty-first century.

A comprehensive sustainable trade strategy must look at sustainable trade in goods and services (both imports and exports), and sustainable flows of investment, both inward and outward. It must help to ensure that all of these flows, and their dynamic impacts on other aspects of China's economy and society, contribute to China's advancement. This involves considering trade policy in its broadest terms, including such areas as upgrading of the manufacturing sector, engaging on mandatory and voluntary standards in China's export markets, exploring the impacts of China's services trade and revisiting China's strategies for international trade and trade-related cooperation agreements. It involves close working partnership with China's enterprises in



ensuring that they can continue to meet and exceed international expectations for leadership and to secure a welcoming environment for their outward investment. It will involve clear understanding of the links between trade and related international developments such as climate change and other global challenges.

A sustainable trade strategy for China is grounded in a number of existing Chinese policy priorities. The Party has called for a “scientific concept of development” to guide future growth with the principles of people first, innovation, balanced and sustainable development and social harmony, among others. The thrust is a transformation from an extensive model of development to an intensive model. Echoing the same policy direction, China’s 11th FiveYear plan highlights the need to pursue a mutually beneficial opening-up strategy that moves away from a focus on quantity to harnessing globalization to improve the quality of China’s growth. It also highlights the need to build a resource-efficient and environmentally friendly society, underscoring the links between the environment and a sustainable national economic system.

The various chapters of this book have explored what key elements of a sustainable trade strategy for China would look like. In the manufacturing sector, the advantages of China’s current placement on the global value chain include the ability to learn by exposure to foreign practices and technologies, and the massive employment benefits that accrue from China’s labour-intensive export production machine. The disadvantages include increasing trade friction as the world’s low-cost supplier in an increasingly competitive global market; a low share of the value added in the value chain; and the significant environmental damage that goes along with energy- and resource-intensive processing and manufacturing.

In this area a sustainable trade strategy for China would focus greater attention on fostering and successfully absorbing innovation, on greening the process of industrial upgrading, on wringing more backward and forward linkages out of the existing processing trade and on promoting sustainable overseas investment. The aim is to move up the value chain while ensuring that social and environmental conditions are improved.

In the area of services, a sustainable trade strategy would look to exploit the ability of quality services to underpin a competitive manufacturing sector, including exporters. And it would look to environmental services to help ensure that environmental damage and heavy resource use do not undermine social well-being and future economic growth. It would also seek to offer quality employment to China’s growing workforce.

In some sectors this might be achieved by opening up to increased investment from foreign service providers, who bring with them technology, know-how and management practices that are globally competitive. Business services and environmental services may be particularly important. Although China has opened up a number of service sectors to unrestricted foreign investment in the WTO and free trade agreements, many barriers still remain in place to shelter domestic service providers.

A sustainable trade strategy would pay particular attention to the many types of foreign standards: those created as technical regulations by other governments; those maintained by buyers as a condition of sale; and those created collaboratively by businesses, international standard setting bodies and civil society. Government can assist firms in reaching standards that are a condition of sale by upgrading certain types of domestic standards, investing in testing facilities and continuing to act as a collector and distributor of timely information to exporters. It can also continue to participate in the processes and institutions that lead to mandatory standards, such as the ISO working groups.

Standards made collaboratively are voluntary and often created outside the reach and influence of China’s firms or government, but they are increasingly important to consumers and to branding transnational corporations as responsible global citizens. These sorts of standards offer China’s exporters and outward



investors one way to credibly demonstrate their commitment to a sustainable trade strategy, with the rewards being increased market share and a more welcoming environment for investment. But this would require either a strategy of active engagement in the elaboration of the standards, to ensure that they are appropriate for Chinese firms, or elaborating made-in-China standards—a tougher proposition to sell as credible, but nonetheless possible. There may be a role for government here to help build capacity for that sort of engagement with interested firms.

A sustainable trade strategy would have to reassess China's objectives and strategies with respect to commercial policy. China is an increasingly influential member of the WTO and in the last 15 years has engaged in a number of regional and bilateral trade negotiations and trade-related cooperation agreements. But if a sustainable trade strategy is successful in transforming China's export profile, new areas of strategic importance will emerge, such as protection of China's intellectual property and of its outward investments, and free movement of its professionals to other countries to provide services. Demands for these sorts of reforms, of course, may mean reciprocal demands from China. Diplomacy and bilateral discussions will assume greater importance in preventing the sorts of trade frictions China has seen in response to its rapid rise as a globally competitive exporter.

A sustainable trade strategy for China will depend not only on appropriate trade and investment policies, but also on complementary policies in a number of areas that directly affect the sustainability of China's trade profile. A good example is the energy sector, and specifically China's electrical power sector. This sector is important because it underpins so much of China's industrial sector, so any policies that can increase the sustainability or security of supply, or the efficiency of use of electricity, will also improve the competitiveness of China's manufacturers and exporters. The converse, however, is not always true; evidence from international experience seems to show that environmental policies that increase the cost of electricity may result in increased competitiveness as firms look for cost savings in product and process innovations. And to the extent that electricity sector policies result in low carbon exports, they may act as a shield against possible future border measures that levy charges on carbon embodied in traded goods.

There is a wealth of international experience on which China can draw for lessons to adapt to its circumstances in seeking to make this sector work for sustainable development. Although traditionally China used command and control tools almost exclusively, it is now experimenting with market-based instruments, broadening its toolbox in a useful way. One particular tool that might merit more consideration is carbon pricing, whether through a carbon tax or a cap-and-trade regime.

While the collection of research featured in this book is not an exhaustive portrait of a sustainable trade strategy for China, it is helpful in highlighting some of the key contours of any such strategy. And it demonstrates concretely the sorts of policy options that result from rethinking trade policy along the lines of sustainability.

As recognized in the 11th Five-Year plan, China is at a crucial point in its trajectory of development—one that calls for innovative thinking about future directions. There is potential for China to follow up its remarkable success in economic growth with a remarkable achievement of development that balances other important goals for a long-term vision of balance, sustainability and prosperity. That would be true global leadership.

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