

ENVIRONMENTAL AND TRADE IMPLICATIONS OF CHINA'S WTO ACCESSION
-- A PRELIMINARY ANALYSIS

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1. Introduction

1.1 Summary of progress of China's WTO accession

China is likely to become a member of WTO in the near future. At the end of September 2000, China had signed bilateral agreements with 36 of 37 countries (with the exception of Mexico) that requested bilateral negotiations with China upon its accession to the WTO. The signing of the "Agreement on China's WTO Accession" with the United States and the European Union is particularly crucial. The last round of multilateral negotiations (the 12th meeting of the WTO Working Party on China's Accession) was held in late September at the headquarters of the WTO in Geneva, Switzerland. Progress made in bilateral negotiations was reviewed and further discussions were scheduled. It has been predicted that China will become a member of WTO by the end of 2000 or by early 2001 at the latest.

1.2 Summary of impacts of China WTO accession on the economy structure

China's accession to the WTO will have great influence on China's foreign trade in terms of volume and structure. Under the agreement between China and the United States, China's policy will have the following changes after it becomes a WTO member: average tariff reduction for agricultural products from 22.1% to 17%; average industrial tariffs on U.S. products will fall from 24.6% in 1997 to 9.4% by 2005; elimination of all export subsidies; further opening of the market for agricultural products; implementation of a "tariff-rate quota" system for wheat, maize, rice and cotton; phase-out state control over trade in soybean oil; increasing textile exports; opening of the retail market and service sectors including legal, accounting and medical services; 100% foreign ownership for hotels; opening of tourism and the video and audio product markets; and importing more foreign films, at least 20 each year to double the present number. The auto industry will be expanded, reducing car tariffs each year from the present 80-100% to 25% by the year 2006 and allowing loans for car purchasing. The telecommunication industry will also be open, allowing foreign investors to own 49% of shares in communication services and increasing to 50% after two years. Foreign investors are allowed to invest in the Internet market and banking business will also be open, allowing foreign banks to handle Chinese currency for Chinese companies two years after China's accession to the WTO. The banking sector will be completely open after five years of being a WTO member and sectors such as brokerage, security, bond and insurance will also be open.

According to the quantitative estimates by a CGE model by Li Shantong of the Development Research Centre of the State Council¹, when China fully fulfills its WTO commitments by 2005, its GDP will have increased to 195.5 billion yuan RMB (1995 price, in contrast to non-accession), which equals US\$ 23.55 billion. These would account for approximately 1.5 per cent and 1.2 per cent of China's GDP that year (China's Tenth Five-Year Plan estimates that China's GDP growth rate in the 2001-2005 period will be 7%). The income increase of the WTO membership is mainly

¹ Li Shantong, et al., (1999) WTO Impact on China's Economic Structure, a report by Development Research Centre of the State Council.

due to high efficiency resulting from global resource re-allocation according to comparative advantage. This means China will participate in the division of labour internationally and share efficiency benefits of the integration into the world economy. For sectors that are capital intensive and under high protection of the state, such as auto, equipment and instruments, as well as cotton, wheat and those under high protection by agricultural departments, their output value will decrease greatly. However, sectors that are labour-intensive, like textile and clothing, will be the beneficiaries. The world exporting market for labour-intensive products and the importing market for primary agriculture commodities would be greatly affected. The share of China's clothing exports in the international market would meanwhile increase by 10 per cent and the import of land intensive agricultural commodities would also greatly increase. In the year 2010, China will probably become the most important agro-product importing country after Japan. In general, the tertiary industry in China will develop greatly after China's WTO accession. The proportion of the secondary industry in the economic structure would further grow, while the primary sector would shrink. According to the calculation by Huang Jikun of the Chinese Academy of Agricultural Science, grain production within the agricultural structure would decrease substantially while livestock production increasing greatly.²

2. Potential Environmental Impacts of China's WTO Accession

After China joins the WTO, the opening of the market and changes in the trade structure and volume will lead to tremendous changes in China's economic structure. Changes in the economic structure will have great potential environmental impacts in China. These include impacts on industrial pollution, the state of the ecological environment environmental management and environmental industries. This section discusses these possible impacts.

2.1 Impacts on pollution in industrial sectors

With WTO membership, China is likely to substantially increase its exports. This may lead to rapid production expansion in certain sectors, which would undoubtedly add new pressures to the environment. However, one of the most important changes in China's WTO accession will be China's participation in global re-allocation of productivity elements such as land, labour, capital and natural resources. It will help China restructure its overall economic configuration. If this takes places properly, the pollution elasticity of per unit of change will be presumably higher than the pollution elasticity of the volume change. With overall changes in the industrial structure, the pollution level would probably decrease gradually over a long-term period compared to non-accession. This is because environmental pressure would likely stick to the following trend: low value-added and labour-intensive industries which usually perform poorly in financial and environmental terms will, along with the investment direction, be transferred from developed countries in Europe, the United States and Japan to China, and then from eastern China to central and western China, and from China to other even poorer regions like Indochina countries, Africa etc. Industrial restructuring induced by trade expansion will be conducive to tackling industrial

² Huang Jikun, et al., (1998) WTO Impact on China's Agriculture, a report by the Agricultural Policy Research Centre of the Chinese Academy of Agriculture Science.

pollution at its sources and also to addressing non-point source pollution problems of chemical fertilizers and pesticides in the agriculture sector, if proper policies are put in place.

After China accesses to the WTO, productivity elements such as land, labour, capital and natural resources will be re-allocated internationally, which may help China reorganize its industrial structure. A general perception based on qualitative analysis could be:

- Labour-intensive industries such as manufacturing, livestock and handcraft would further expand;
- Intelligence/intellectuality-intensive and knowledge-intensive industries including information, telecommunication, consulting, community services, education and culture, etc. would grow further;
- Land-intensive industries such as plantation, grain production and traditional husbandry would decrease;
- Capital-intensive industries would largely increase, including banking, security, insurance, brokerage, tourism, real estate, education and culture;
- Pollution-intensive industries will vary from the east to the west of China. Generally speaking, environmental pressure would increase in central and western regions but decrease in eastern regions.

Quantitative estimates by the CGE model of the Development Research Centre of the State Council predict that the proportion of the tertiary industry in the national economy structure would greatly increase in the future while the proportion of the primary and secondary industries including traditional manufacturing, processing, grain production and husbandry would substantially shrink.

With the increase in the proportion of the tertiary industry and the decrease in the proportion of the primary and secondary industries after China joins the WTO, the overall pollution in China will most likely drop gradually in comparison with the baseline pollution level before China becomes a WTO member. WTO accession will be an historic opportunity for China to restructure its economic structure.

International experiences have proved that rational economic restructuring would help eliminate industrial pollution emissions at their source as well as non-point source pollution caused by the use of fertilizers and pesticides. It is a far more effective measure than direct pollution control. Japan underwent economic restructuring in the 1970s; it transferred its low value-added and labour-intensive polluting industries to other southeast Asian countries while developing its electronic industry at home. In doing this, it gained both economic growth and environmental benefits. Restructuring is also one of the measures now highly recommended by the World Bank in addressing environmental problems.

The Chinese government can take the opportunity of WTO accession to restructure its economic and industrial structures rationally, eliminating old industries that have low efficiency, high pollution and high energy consumption and replacing them with high technologies, high efficiency, low pollution and low energy consumption. Enterprises that intend to expand and develop in the international market will have to undertake technology innovation on one hand and on the other hand undergo systematic reform, establish a modern industrial system, strengthen their development forces and establish incentive or disincentive mechanisms. They will also have to learn advanced and modern management experience from abroad.

Rational restructuring can help eliminate industrial pollution emissions at their sources. In a long-term period, overall environmental pollution will be reduced and environmental quality improved. This is a more effective way to control pollution than the end-of-pipeline control used in the past and even cleaner production practiced at present.

It should be also noted that although restructuring through trade liberalization is likely to reduce pollution per unit of output, there is a concurrent risk of increased output volumes negating the gains per unit. To prevent this from happening, appropriate policy measures are needed. Most developed countries have found it necessary to utilize multiple standards to deal with environmental problems created by economic growth; these include emissions standards, environmental quality standards, product and process standards, use standards and disposal standards. China also needs to adopt such a structure to control scale effects of pollution after WTO accession.

2.2 Impacts on the state of the environment

After China's WTO accession, if appropriate policy measures are taken to facilitate rational industrial restructuring and effectively address environmental problems, the volume of wastewater discharges to the environment will probably be reduced due to more and better treatment being enforced. Although environmental pressure on air quality will also be reduced in general, air quality in urban areas will likely worsen. There is a possibility that the import and export of wastes will grow and the trend in ecosystem degradation probably slow down and even be reversed.

2.2.1 Water

Wastewater discharges in different sectors will vary along with the changes in industrial structure after China's WTO accession. The preliminary qualitative estimate of overall impacts on water is that total contaminated water into the environment would slightly decrease. This would mainly because pollution caused by non-point source from grain production accounting for a fairly large proportion of the total contaminated water into the environment. Take Taihu Lake as an example, 40% of wastewater containing nitrogen and phosphorus come from agriculture production.

As the partial equilibrium modelling by Chinese Academy of Agricultural Science predicts, although China's accession to the WTO will have adverse impacts on China's agricultural production (Huang, 1999), the export of livestock products is likely to expand. The textile industry will see tremendous development. Other traditional industries such as iron and steel are likely to slow down. Both the tertiary industry and residential water consumption will grow. How the water environment will be affected depends on the following sectors:

- *The grain production sector*: this sector will see reduction in use of chemical fertilizers and pesticides and therefore a reduction of non-point source pollution (presumably, substantial domestic production of rice, wheat, maize and bean, etc. will be replaced by foreign exports due to price disadvantages);

- *The livestock industry:* there is likely to be an increase of point-source pollution in this sector with increase of livestock manure;
- *The textile industry:* this sector will see an increase of wastewater discharges;
- *The iron and steel industry:* there will be a decrease of wastewater discharges as this sector is likely to slow down; and
- *The tertiary industry and residential consumption:* there will be an increase in wastewater discharges from the tertiary industry and residential consumption.

2.2.2 Air

After accessing to the WTO, China is likely to increase the import of clean energy such as petroleum and natural gas, which would enlarge the proportion of such clean energy and reduce the proportion of coal in China's energy structure. Therefore, environmental pressure resulting from energy consumption on air quality is likely to reduce.

However, the situation in urban areas could be quite different. Given the tariff reduction for automobiles, the import of cars will greatly increase as a result of price reduction. Therefore, the automobile purchasing rate by consumers in urban areas is likely to increase at an estimated rate of 5 per cent to 10 per cent annually. Meanwhile, existing old cars will continue to emit presumably much more air pollutants than newer cars. Moreover, there are other major sources that are likely to cause urban air pollution including domestic heating and industrial emission from existing sources. Compared to the baseline level before WTO accession, the increase of car consumption will bring greater pressure to urban air. Without taking adequate measures to enhance pollution control, particularly pollution caused by the increase of automobiles in urban areas, serious air pollution is likely to take place.

2.2.3 Solid wastes

Given the probable shrinking of the secondary industry and the growth in the tertiary industry after China becomes a WTO member, industrial solid wastes are likely to decrease with appropriate control measures. However, municipal wastes are likely to increase with urban expansion.

Meanwhile, with the increase of trade volumes and opportunities, there is a possibility of increasing the import of wastes from developed countries if no adequate controls are in place. There is also the likelihood that wastes would be exported from China to poorer countries.

2.2.4 Impacts on ecosystem

Since 1996, China has paid as much attention to ecological conservation as to pollution control. Nevertheless, ecological conservation and reconstruction projects are very difficult to carry through because of China's self-sufficient agricultural policy.

After accession to the WTO, China could greatly increase its import of timber and timber products to protect its forest resources, and to use both international and domestic markets to maintain food security for its 1.2 billion people. With WTO membership, average tariffs for agricultural products will be reduced from 31.5% to 14.5-15% within five years and a tariff-rate quota system will be applied for products such as wheat, rice and cotton, the import of these products (mainly land-intensive products) will greatly increase as they lose competitive advantages. Labour-intensive products like fruit, vegetables and livestock products could be developed faster given the comparative advantages of such products.

From the environmental protection perspective, the increased import of land intensive agricultural products such as grain means reduction of land utilization, reduction of chemical fertilizers and pesticides use, reduction of agriculture plastic film pollution and reduction of straw pollution caused by agricultural production. In this sense, after China's WTO accession, more agricultural products will rely on the international market. It will be conducive to addressing agricultural non-point source pollution, which is a daunting task at present. It could also make it possible to carry out reforestation and afforestation projects in remote and mountainous areas. This would apparently help China greatly reduce environmental pressure in rural areas and fundamentally halt the trend of ecological degradation resulting from economic development. Meanwhile, appropriately guided use of foreign investment would help carry out ecological reconstruction projects, if the Chinese government formulates appropriate incentive policies to encourage the investments.

At the same time, China's trade establishment should be cautious not to adopt trade policies that encourage exporting of products having detrimental environmental impacts simply for the purpose of keeping trade balance between import and export after China becomes a WTO member. Exporting of such products will cause significant environmental impact. For example, excessive expansion of tin exports is likely to result in serious environmental problems in the tin mining process, unless sufficient investment is put in environmental protection, which will permit increased production with lower pollution.

2.3 Impacts on environmental management

From the perspective of environmental management, China's accession to the WTO will provide China with good opportunities to improve its environmental management and make China's environmental management system and standards gradually conform with those of the international levels.

First, the complete market opening would make China's environmental management authorities face many new issues. To better manage its environmental regime, the authorities need to learn from the advanced experiences from abroad, standardizing its management system and making it gradually conform to the internationally practiced system.

Second, China's environmental management standards need to be revised in order to meet the requirements of the importing countries. The WTO encourages free trade while at the same time allowing governments to take appropriate measures to protect human health, animal and plant health, natural resources and the environment. Therefore, environmental measures are sometimes used as a non-tariff barrier. With WTO membership, China will have to re-consider its environmental standards and make efforts to coordinate with developed countries to reduce transaction costs for its exports.

Third, trading under the WTO rules requires a market-oriented system, and the separation of enterprises from the government is inevitable. Such a separation makes it easier for the government to regulate enterprises in terms of environmental management without considering too many social, economic and political issues.

2.4 Impacts on the environmental industry

After China's WTO accession, the environmental industry in China as a whole will develop rapidly, not only in scale but also in terms of the technology level; it will become a sector with a substantial scale. Presently, China continues to increase investment in environmental protection, and the market for the environmental industry is prospectively promising. After China becomes a WTO member, more and more foreign environmental companies are likely to enter China's market. Given fewer barriers for foreign investors to invest in China, foreign companies, with their advantages in capital, management skills, technology and human resources, can establish joint ventures and wholly foreign-owned enterprises and even form entities by ways of acquisition or recombination of China's environmental enterprises, according to the rule of the market economy. This means major upgrading of this industry not only in scale but also in terms of the technology level, if proper policy measures are taken.

However, China's environmental industry, which is now mainly comprised of TVEs, would not be able to compete with foreign companies in terms of technology, management and scale. This would substantially affect China's environmental industry and "force" it to increase its competitiveness. Without appropriate adjustment, China's environmental enterprises are likely to go bankrupt and come under the control of international capitals. Facing such a great challenge, China's national environmental industry needs to be reformed or it would go bankrupt.

Under WTO General Agreement on Trade in Services, the environmental services sector is one of the sectors encouraged to liberalize. In facilitating China's WTO accession negotiations, the Ministry of Foreign Trade and Economic Cooperation worked out a schedule of specific commitments for liberalizing trade in environmental services in China in 1995. After China's accession to the WTO, this sector will be gradually opened. Importing foreign advanced environmental management skills, coupled with their advanced technology, will help China meet its environmental protection needs and promote sustainable development. On the other hand, opening this sector to foreign environmental service suppliers may impede the development of the newly developed domestic environmental services sector. The challenge for China will be how to maximize the benefits of liberalizing this sector, while at the same time providing necessary protection to the development of its own sector. It is important for China to meet such a challenge under the WTO rules and obligations.

3. Environment-related Trade Implications and Other Trade-related Environmental Implications

In addition to domestic environmental impacts, China's WTO accession would also have some environment-related trade implications and other trade-related environmental implications. These include the impact of green consumer challenges in the international market on Chinese exports, environmental challenges of increased foreign investment inflows and the impact of increased imports of resource-based products on the global environment. WTO membership will also require China to adjust its trade and environment policies to ensure consistency with rules of the world trading system in support of environmental protection and sustainable development.

3.1 Impacts of green consumerism in the international market on Chinese exports

WTO membership will provide China with tremendous opportunities to expand exports, as China will enjoy stable multilateral preferential trade policies under a rule-based system and its trading partners will have to reduce arbitrary tariff-rates and measures imposed on China's exports. As mentioned earlier, China's WTO membership will mostly benefit China's labour-intensive products like textiles, toys, leathers and other light industry products. Taking the textile and garment industries as an example, their products are expected to benefit considerably from WTO membership. At present, about 25 per cent of Chinese textile exports, worth \$US10 billion value, are under the restriction of quotas imposed by European countries and the United States. With WTO membership, China will greatly benefit from the Uruguay Round Agreement on Textiles and Clothing. China's textile exports are expected to grow substantially by 2005³, while garment exports will double. The toy industry is another sector that will benefit from WTO membership.

In the agriculture sector, although exports of Chinese primary products such as wheat, corn, rice, edible oil, cotton and sugar are likely to shrink (due to price disadvantages), fruits, vegetable and husbandry products are likely to obtain competitive advantages in the international market.

However, there will be some potential environmental challenges for these Chinese exports in the international market. The current international market is changing rapidly in response to consumer's preference for environmentally friendly products, and stringent environmental regulations in other countries. There is an increasing public perception in developed countries that trade liberalization needs to consider environmental and other social values. Chinese exports are likely to encounter green challenges due to more stringent environmental regulations and other voluntary environmental measures in response to green consumers' choice in these countries. Textiles, toys, and food products are most likely to encounter environmental measures in foreign countries.

³ According to a commentary by Ni Yueju in China Economic Review of June 2000, Chinese textile exports would increase by 63.8 percent by 2005.

Studies undertaken by the Working Group on Trade and Environment of the China Council for International Cooperation on Environment and Development on impacts of environmental standards and other voluntary environmental measures in other countries clearly indicate that measures taken by other countries for the purpose of the environment, health and plant and animal protection will cause impacts on China's exports, such as the German ban of 108 Azo dye stuff and the ban imposed by the U.S., Canada and EU on untreated wooden packaging materials.⁴

An APEC study indicates that environmental regulations and standards in the U.S., Japan and European countries have mainly impacted 24 categories of products in APEC developing countries among 10 surveyed environmental measures. Of the 24 categories of products surveyed, 21 are affected by environmental measures.⁵ Environmental measures range from provisions of multilateral environmental agreements, national laws and regulations and environmental standards and requirements, to voluntary environmental measures such as ecolabelling and ISO14000 environmental management system standards. These measures are sometimes referred to as "green barriers." Strictly speaking, only those measures that are used under the green cloak but for the purpose for trade protection are called "green barriers" in a real sense. Nevertheless, some commentators refer all environmental measures as "green barriers."

Although these "green" measures caused some difficulties for Chinese enterprises, they also brought about opportunities. They prompted the industry to seek alternatives and undertake technology innovation. As a result, they promoted the integration of environmental considerations into industrial restructuring and strengthening the environmental management systems of exporting firms. These efforts eventually brought competitive advantages to Chinese exporting firms.

The most recent trend is developing countries tightening their environmental regulations. Trade conflicts could arise from environmental measures taken by a developing country as well. Recently, the European Union requested consultation with Chile, within the WTO, concerning Chile's ban on access to its ports for foreign fishing vessels catching swordfish inside and outside the 200-mile coastal economic zone of Chile. Chile has tightened its domestic rules regarding the capture of swordfish because the species is now threatened. This could be a precedent-setting trade and environmental conflict triggered by environmental measures from a developing country, if it goes to the WTO dispute settlement.

To compete successfully and ensure the expected greater access of Chinese exports to the international market after China joins the WTO, Chinese exporting enterprises need to be aware of the green consumerism trend and the rapid change in international markets in response to environment protection. It is not economically beneficial to rally against the prevailing winds of

⁴ Policy Research Centre for Environment and Economy, *Impact of environmental standards/requirements in EU countries on China's textile industry, a report submitted by the WGTE to CCICED in October 1999*; Chinese Academy of International Trade and Economic Cooperation. *Improving outer packaging of export goods for sustainable growth of China's foreign trade, a report submitted by the WGTE to CCICED in October 2000*.

⁵ APEC Economic committee, *Survey on trade-related environmental measures and environment-related trade measures in APEC*, p64-65, 1998.

consumer preference. The government of China needs to strengthen and adjust its domestic environmental regulations and standards, help exporting enterprises obtain necessary information on changes and overcome “green barriers” adopted in foreign countries to meet the environmental challenge in international markets. Enterprises need to strengthen their environmental management, practice cleaner production, and make these efforts known by obtaining ecolabels or ISO 14000 certification.

3.2 Implications of Foreign Investment for Environment and Sustainable Development

Since the economic reform in late 1970s until July 2000 there have been more than 350,000 foreign-invested enterprises established in China with a contractual investment totalling US\$ 641.7 billion and an actual investment of over US\$ 327.7 billion. According to a newly released World Development Report by the World Bank, China has attracted 6% of the world foreign direct investment (FDI), and has become the largest recipient of FDI among developing countries⁶ since 1993. Foreign investment now accounts for more than 20 percent of the fixed assets of the entire nation.

Table 1 FDI Ranking for Developing Countries

Country	Percentage of total FDI (%)	Rank
China	6	1
Brazil	4	2
Mexico	3	3
Singapore	2	4
Indonesia	2	5
Malaysia	1	6
Saudi Arabia	1	7
Argentina	1	8
Other developing countries	10	
Industrial countries	70	

Source: Entering the 21st Century: World Development Report 1999/2000, World Bank

Most of FDI comes from Hong Kong, Taiwan and Macao, Japan, the U.S. and EU as well as Singapore. Most FDI inflows to the industry sector, particularly manufacturing, and to eastern coastal areas such as Guangdong, Fujian, Jiangsu and large Chinese cities such as Beijing and Shanghai. These regions attracting most foreign investment have been very successful in its development. FDI has played a very important role in China’s fast-growing economy over the past two decades. In 1999, the growth rate of the industrial output of foreign-invested enterprises was higher than the national average. Their tax revenues increased by 33.78 per cent, 16% of the total tax revenues of the national industrial and commerce tax revenues. The import and export value of these enterprises reached US\$ 174.5 billion, accounting for 48.38 per cent of the nation’s total.⁷

⁶ World Bank, *Entering the 21st Century: World Development Report 1999/2000*.

⁷ The role of foreign direct investment in China’s economic development, China Economic News (www.cei.gov.cn) September 8, 2000

China's WTO membership would further boost FDI inflows. Elimination of restrictive measures, access to more sectors, and lifts of tariff would all contribute to bring more foreign capital to China. The rule-based environment would also boost foreign investors' confidence and trust in investing in China. It is estimated that FDI inflows will increase from US\$ 45.6 billion in 1998 to US\$ 70 billion by 2003.

As mentioned above, the CGE model prediction by the Development Research Centre of the State Council indicates that after China joins the WTO the general development trend will be: the primary and secondary industries will generally shrink while the tertiary industry is likely to greatly increase. More specifically, land-intensive sectors such as plantation, grain production and traditional husbandry will decrease, while labour-intensive sectors (such as textile, toy and handcraft, etc), capital-intensive service industries (such as banking, security, insurance, brokerage, tourism, real estate, etc.) and intelligency-/intellectually-intensive and knowledge-intensive industries (including information, telecommunication, consulting, community services, education and culture) would largely increase.

Accordingly, the investment direction will most likely follow this trend. The increase of the tertiary industry and the decrease of the primary and the second industries will be conducive to China's industrial restructuring and help address environmental problems and promote sustainable development. Nevertheless, it is still important to integrate environment and sustainable concerns in guiding FDI inflows to China. Because investment is the most important force in fostering more sustainable forms of production, the introduction of foreign capital, advanced technology and management expertise will give impetus to technical innovation and structure adjustment in Chinese enterprises. However, these benefits associated with investment do not accrue automatically and need adequate policy guidance. Investment today will largely decide the future economic structure of the country in the long run.

There are lessons that can be drawn from China's own experience in utilizing foreign investment in the past. Foreign investment has made obvious contributions to China's rapid economic growth. Many foreign-invested firms, particularly large multinationals, are more environmentally responsible. They introduced advanced technology and pollution control facilities and practice advanced environmental management systems in their operation. However, in some cases, environmental and national long-term goals of sustainable development have been compromised for short-term economic profits. Studies done by the University of International Business and Economics pointed out that some small and medium sized foreign-funded firms have moved to China's southern provinces to take advantage of lower environmental standards and lax enforcement.⁸ Certain foreign-invested enterprises are engaged in pollution-intensive industrial activities. There is a race among different regions to attract foreign investment, sometimes at the cost of environment and long-term development.

⁸ University of International Business and Economics (UIBE), *Pollution Heavens and ODS control in China*, a report submitted to CCICED by the WGTE in 1998; UIBE, *International investment rules and sustainable development: China's perspective*, a report submitted to CCICED by the WGTE in 1999.

The Chinese government has begun to attach importance to integrating environmental concerns into its investment policy. In its guiding industry priorities for foreign investment implemented in 1998, foreign investment is encouraged in sectors and projects that are energy efficient and environmental friendly; and discouraged or prohibited in projects that may cause environmental pollution. Most recently, measures have been taken to encourage foreign investors to undertake R&D and establish R&D centres, including environmental technology R&D. Those who do so will be exempted from import tariff and other import fees for equipment and technology needed for R&D. Those who invest in encouraged projects and technology will be exempted from certain business and other taxes. In response to China's new development emphasis in the western provinces, various measure have been taken to attract foreign investment. Those who invest in projects that are encouraged will be exempted from import tariffs and procedure fees. More sectors are open for investment, and requirements for investment and the approval procedures for encouraged projects have been relaxed.

When it becomes a member of the World Trade Organization, China needs to continue to adjust its national investment policies to include environmental and sustainable development concerns in its investment policy-making process. China must ensure that new investments do not lead to environmental deterioration but rather support its goals of environmental protection and long-term sustainable development and ensure that short-term economic interests do not compromise long-term sustainability. In this regard, there are two aspects that need attention. First, to provide detailed guidance for investment projects and technology and to enhance the ability to identify the technology desirable for supporting China's environmental and sustainable development goals. Second, to strengthen environmental management of foreign investment such as encouraging foreign investors to implement higher environmental standards, develop environmentally friendly products and practice cleaner production, etc.

3.3 Impacts of increased imports of resource-based products

After accession to the WTO, China is likely to substantially increase imports of resource-based products for various reasons. These include grain products, forest products, oil and natural gas.

China's annual timber consumption reaches 150 million cubic meters, which exceeds the world total annual timber trade volume. The demand for timber products in the future will continue to grow in a rapid growing economy. Ironically, the country's forest resource base has been very fragile. Deforestation over the past few decades for economic development has caused devastating consequences. Floods in 1998 demonstrated the serious consequences of deforestation and China's fragile ecological environment. In order to reverse the deterioration of the ecological environment, the Chinese government has decided to ban logging in the upper and middle ranges of the country's two major rivers and initiate programs for afforestation and restoration of claimed land for grain production. Under these circumstances, China expects to increase timber imports and reduce exports. Statistics shows that China's timber imports rose sharply in 1999 since the logging ban was imposed. In the first half of 1999, China imported 10 million cubic meter of timber, more than doubled the 4.8 million cubic meters imported in 1998.

China's WTO accession will likely foster China's timber imports. Tariff rates for imports of processed forest products could be further reduced and non-tariff measures such as trading rights can be phased out. Increased imports of forest products would benefit the country greatly, helping to address the domestic timber shortage and support domestic forest conservation efforts.

In the agriculture sector, marked reduction of tariff and elimination of quota could likely lead to increased imports of agricultural products such as wheat, corn, rice, cotton, oil and sugar. From the environment and sustainable development perspective, it would be conducive to the country's land conservation leading to less land exploitation, less application of fertilizers and pesticides, and reduction of non-point source pollution.

In the energy sectors, increased imports of natural gas could help ease its heavy dependency on coal and increased imports of petroleum products may help ease oil exploitation. The importation of other natural mineral resources could prevent environmental impacts associated with mining.

Although these changes in trade in the forest, agricultural and energy sectors would be environmentally beneficial to China in terms of land conservation, forest conservation and promoting the use of clean energy; China's likely increased imports of natural resource-based products may raise issues of environmental impacts on the global environment. China would be soon in the situation where it plays a role in deforestation in tropical countries and in unsustainable exploitation of natural resources in other poor exporting countries. China needs to pay attention to the environmental challenges in resource exploration beyond its border and become a responsible natural resources consumer in the international market. The government could take necessary measures to encourage the sustainable form of production and discourage the unsustainable form of production in exporting countries. These measures may include the requirement of the Forest Stewardship label to encourage sustainable forest management systems and environmental impact assessment on projects that Chinese firms invest in, etc.

3.4 Implications for trade and environmental policies

After China becomes a member of the WTO, it will have to strictly follow the rules of the multilateral trading system. Some current trade related economic laws and regulations in China are not quite consistent with rules of the multilateral system and need to be adjusted.

From an environment and sustainable development perspective, WTO membership also requires necessary changes in environment-related trade policies and trade-related environmental policies. Integrated policies and measures are needed to ensure mutual support of trade development and environmental protection and to promote long-term sustainable development. The overall effect of China's WTO accession will be to place increased demands on the quality and technical appropriateness of China's environmental management system.

China needs to make efforts in integrating environmental concerns in national investment, import and export policies for goods and services, and strengthening its environmental legislation and enforcement. In addition, attention should also be paid to the following aspects:

Technical barriers to trade and sanitary/phytosanitary measures

The WTO aims to promote free and fair trade. But it also allows its Member States to maintain their sovereign rights to protect human health, plant and animal health, natural resources and the environment as exceptions to its general rules. There are two binding WTO agreements that intend to limit abusive uses of standards for protection purposes. They are the WTO Agreement on the Application of Sanitary and Phytosanitary measures (the SPS Agreement) and the WTO Agreement on Technical Barriers to Trade (the TBT Agreement). The SPS Agreement covers the use of sanitary and phytosanitary measures that ensure food safety and animal and plant health. The TBT Agreement governs all mandatory technical regulations and standards as well as voluntary standards for products. TBT standards may involve product content, packaging and labelling measures. Although WTO member states are allowed to maintain sovereign rights of governments to provide the level of protection of human health, plant and animal health, natural resources and the environment, as they deem appropriate, the basic aim of these two agreements is to ensure that such measures are not distorting trade. These two agreements regulate the use of protection measures.

The TBT and SPS issues China may face are twofold. On one hand, China's likely increase in imports of timber and food products may pose challenges to China's sanitary and phytosanitary regulatory regime. The increased imports of these products will likely increase the chances of bringing invasive species to China. Currently, China's sanitary and phytosanitary measures are generally lax and the risk of bringing in invasive species doesn't seem to receive adequate attention. In order to protect human health, plant and animal protection and ecological environment conservation, China needs to strengthen its sanitary and phytosanitary regulatory regime to provide adequate protection of human health, plant and animal health, natural resources and the environment.

On the other hand, with greater access to the international market, Chinese products may also encounter more stringent TBT and SPS measures, and other "green barriers." China needs to carefully undertake studies on TBT and SPS measures and other "green barriers" in foreign countries, and formulate its counter measures so as to minimize barriers to trade and maximize its exports of goods and services.

Upgrading environmental regulations and standards

After China becomes a WTO member, China's environmental regulations and standards will have to gradually conform with international ones. These may include environmental standards for products, environmental management standards and environmental quality standards. While allowing Member States to take necessary measures to protect human health, plant and animal health, the environment and natural resources, the WTO rules also impose some restrictions on protection measures to ensure that measures taken by governments are not misused for protectionist purposes and do not result in unnecessary barriers to international trade. The WTO rules require standard setting bodies of governments to follow certain rules. On the other hand, both the SPS and TBT Agreements encourage Member States to use international standards. They also encourage standards harmonization and mutual recognition.

This implies that WTO membership requires China to upgrade its environmental regulations and standards by incorporating international standards as well as regulations and standards in other countries. Strengthening environmental regulations and upgrading its environmental standards will promote environmental management in the country, encourage efficient production practices while raising the competitiveness of Chinese firms in the international market.

Transparency of trade and environmental policies and regulations

Another important policy implication is the issue of transparency. Transparency is one of the most important principles of the WTO. It requires member governments to follow a transparent procedure in the rule-making process and make any rules related to trade easily accessible. WTO membership requires China to publish domestic laws and regulations that may affect international trade, including measures governing import, export, sale of goods and technical regulation, as well as sanitary, etc. These requirements also apply to environmental regulations and standards.

This means that China needs to establish a transparent registration and publication system for governmental regulations that may affect international trade ensuring the compliance of the WTO publication requirements. Trade related environmental regulations and measures as well as environment-related trade regulation and measures will become one of the important components of the system.

4. WTO and China: a perspective of trade and environment

China's entry into the WTO will not only allow China to enjoy stable multilateral preferential trade policies of its trade partners and expand its exports, China will also enjoy a full membership in exercising its power to influence this organization and present its views. In addition, China will be able to participate in the rule-making process of the world trading system. It will also participate in a new round of trade negotiations, if there are any, and influence the rule-making process of the trading system. China will be also able to participate in the continuing negotiations on the "build-in agenda" and on issues concerning the implementation of existing commitments.

It will also allow China to use the WTO dispute settlement system to resolve any dispute it may have with other trading partners. From an environment and sustainable development viewpoint, China will be able to use the dispute settlement system to resolve trade and environment-related disputes and play a role in the trade and environment debate.

4.1 Use of the WTO Dispute Settlement System

Over the past few years, there were a number of trade conflicts between China and other countries related to environmental measures. Non-WTO membership prevented China from bringing its disputes to the WTO dispute settlement system. China's WTO membership will provide China with a channel for bringing its trade conflicts with other trading partners to the WTO for a fair settlement. To resort to the WTO dispute settlement mechanism could safeguard its trade and environment interests.

Studies undertaken by the Working Group on Trade and Environment of the CCICED found that although environmental measures taken by foreign governments are sometimes legitimate, the procedures used to adopt the measures are inconsistent with WTO rules. Take for example the azo ban in Germany or the packaging requirements by the U.S. and Canada. Although the measures themselves are legitimate in protecting human health and forests, these measures did not pay proper attention to the impact on China's trade and are not consistent with the procedure requirements like consultation and transparency.⁹

WTO membership will allow China to bring these disputes to the WTO dispute settlement system for a fair settlement.

4.2 The role of China in the trade and environmental debate in the WTO

WTO membership will allow China to participate in a new round of trade negotiations, if there are any, and in making international trading rules. With its size of economy, its dimensions of trade, its status as the principal recipient of investment among developing countries, China is likely to become one of the most important key players in the WTO regime, and in discussions on all the important issues. Developed countries and developing countries are greatly divided in the debate about trade, environment and development. Developing countries reject any inclusion of environmental or labour issues and call for full implementation of the Uruguay Round Agreements, while a growing number of developed countries in Europe and North America call for strong environmental measures and support environmental review of trade agreements.

China, as the world's largest developing country, shares the concerns of the developing countries. On the other hand, it also recognizes the importance of environmental protection and sustainable development. It is crucial that China develops a forward-looking position and plays a major role in discussions on the issue of trade, environment and sustainable development.

5. Preliminary Conclusions and Recommendations

Generally speaking, WTO membership will have long-term historic impacts on China's environmental quality, environmental management and environmental industry at large. It will become a major milestone in China's environmental history. Some of these impacts are short-term direct impacts, while most of others are long-term and indirect. It is not only a historic opportunity to redistribute its industrial structure, but it also adds more pressure on the environment in some aspects. It challenges the environmental industry and raises new requirements for environmental management.

⁹ See Note 4.

Environmental impacts of China's WTO accession can be summarized as follows:

- With fundamental changes in industrial structure, the overall pollution level will gradually reduce year after year compared to pre- WTO accession, if proper policy measures are taken. There is a likely tendency in terms of environmental pressure: low value-added and labour-intensive industries which usually perform poorly in environmental terms transferred from advanced countries in Europe, the United States and Japan to China, and then from east to central and west regions, and from China to poorer countries (such as India, Africa, etc.). Industrial restructuring is conducive to addressing industrial pollution emission at its source, and non-point source pollution caused by chemical fertilizer and pesticide from agriculture.
- The quantity of wastewater discharges in China will probably be reduced with appropriate measures. Although environmental pressure on air will be lessened in general, air quality in urban areas will probably worsen. Industrial solid wastes will be cut down, but municipal wastes would likely increase. There is a probability that the import and export of wastes would increase. The trend in ecological degradation would be reversed.
- China's WTO accession may bring excellent opportunities for China to improve its environmental management and to gradually upgrade its environmental management system and environmental standards to be more consistent with international practice.
- China's environmental industry will develop rapidly, not only in scale but also in terms of the technology level, and it may form an industry in substantial scale. WTO membership may also greatly affect China's environmental industry, which is mainly made up from township and village enterprises. This sector will be facing great challenges and needs to be reformed or else go bankrupt.

In addition to domestic environmental impacts, China's WTO membership will also have some environment-related trade implications and other trade-related environmental implications. These include:

- Chinese exports that may have great competitive advantages, such as textiles, toys and leather, are most likely to encounter green consumer challenges in the international market. Efforts need to be made to address these environmental challenges;
- China's WTO membership will attract more foreign direct investment to China. New investments need to be guided and rationally used in support of China's long-term national goals of environment and sustainable development;
- With WTO membership, China is likely to substantially increase imports of natural resource-based products. China needs to pay attention to environmental challenges in natural resources exporting countries and avoid playing a role in deforestation and unsustainable exploitation of natural resource in these countries;
- China's WTO membership requires adjusting its relevant trade and environmental policies, including integrating environmental concerns into national investment, import and export policies. It would also require China to establish a sound regulatory system for protection of human health, plant and animal health, natural resources and the environment. Efforts should also be made to upgrade its environmental laws and regulations in lines with those in other countries, and to make its laws and regulations transparent; and

- China would be able to use the WTO dispute settlement mechanism to protect its trade and environmental interests and play an active role in the trade and environmental debate in the WTO.

WTO membership will bring China opportunities as well as challenges; it will have positive and negative impacts on China's environment. Therefore, the Chinese government needs to pay sufficient attention to trade and environmental implications of China's WTO accession. In order to make good use of the opportunities of WTO membership and minimize adverse impacts on China's trade and the environment and to maximize its trade opportunities, the following preliminary recommendations are put forward for relevant departments to consider as actions to be taken to address trade and environmental issues of China's WTO accession:

1. There is a need to undertake a more thorough assessment on environmental impacts of the WTO agreements in China in order to be clear about the actual impacts of China's WTO accession on the environment and environmental related trade implications. Adequate policies and measures to address these issues must be formulated\
2. There is a need to set up an integrated program to address environmental challenges brought about by China's accession to the WTO. The opportunity of China's WTO accession to address environmental problems through the structure adjustment must be taken in hand. A detailed plan needs to be formulated that integrates eco-environment protection into economic system as soon as possible to take part in economic actions and minimize negative environmental impacts. Efforts should be made to strengthen its environmental legislation, enforcement and management
3. There is a strong need to integrate environmental concerns in relevant trade policies to address environmental challenges both at home and abroad. These include adjusting China's national investment policies, import and export policies for goods and services to strengthen its sanitary and phytosanitary measures and other technical standards and regulations and to establish a transparent publication system for trade laws and regulations. This also requires close cooperation among relevant departments responsible for trade, environmental, technical standards and others. It is desirable to establish an advisory committee, under the auspice of MOFTEC, comprised of representatives from all relevant departments. This committee should meet regularly to advise on appropriate policies for China to address issues related to trade and environment. There is also a need to study "green" measures in foreign countries, to help enterprises meet the green challenge in international markets.
4. There is also a need for China to develop a forwarding and positive position and play an active role in the trade and environment debate in the WTO. China may wish to bring relevant governmental officials and academic professionals together to develop a set of principles to help address trade and environmental issues.

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