

WTO and implications for the Chinese environment policy

Andreas Oberheitmann¹

Regulatory basis of trade and environment under the WTO are the provisions of the relevant WTO-Agreements. Though these Agreements are basically containing trade regulations, there are also a range of environment related provisions. With the entry into WTO, China has to follow these WTO-rules (reduction of WTO incompatible subsidies especially in the energy, textile and agricultural sector, opening of the domestic markets etc.). As a consequence, there could be negative effects on employment, e.g. in the agricultural sector. However, entering the WTO, China also receives the right to use the trade conflict settlement mechanisms of the organization including environment related cases as other developing countries did before. Implementing the WTO-rules could also bring about economic and environmental benefits for China. Benefits especially come up from the reduction of the over-utilisation of natural resources though the lift of subsidies and from the promotion of environmentally friendly technology, inter alia through WTO consistent governmental support including tax reductions. As a developing country, China also has the right to utilise the relevant WTO exemptions for import liberalisation.

1 Introduction

After the bilateral agreement between China and the USA including the establishment of normal trade relations, it seems to be very likely that China in early 2002 will re-access its status as a contracting party of GATT/WTO. Nevertheless, with the entry into WTO, China has to obey the WTO-rules. However, it also receives the right to use the conflict settlement mechanisms of the organization and could directly take part in the WTO discussions and negotiations.

In the Uruguay Round, beyond trade policy, other fields of policy have been included into the WTO legal system, for instance industrial policy and investment promotion. With progressive globalisation and economic integration, the demand increases for multilateral rules to be able to solve the possible new conflicts of these policies. Even social and environmental policy belong to the policy fields relevant for competition. Especially, environmental questions are getting higher and higher on the political agenda. This could be seen on the Millennium Round of the WTO in Seattle 1999, which was marked by the discussion and conflicts about the

¹ This article is a revised and updated form of a paper presented on the international Symposium "WTO and Environmental Policies", hosted by GTZ on 7-8 November 2000 in Beijing. Andreas Oberheitmann is senior research fellow at the Rheinisch-Westfälisches Institut für Wirtschaftsforschung, Hohenzollenstr. 1-3, 45128 Essen, Germany. E-Mail: oberheit@rwi-essen.de.

introduction of social and ecological standards into the rules of WTO, taking into account the special needs of developing countries. In the Agreement establishing the WTO, the parties recognise that

their relations in the field of trade and economic endeavour should be conducted with a view to [...] expanding the production of and trade in goods and services, [...], while allowing for the optimal use of the world's resources in accordance with the objective of sustainable development, seeking both to protect and preserve the environment and to enhance the means for doing so in a manner consistent with their respective needs and concerns at different levels of economic development.²

The conflict between the industrialised countries and the developing countries such as China is characterised by mutual accusations of eco-dumping and eco-protectionism:

- Industrialised countries argue that low environmental standards of developing countries are one reason of lower production cost and lead to GATT-incompatible trade advantages (such as in the Chinese textile industry³).
- Developing countries are arguing that high environmental product and production standards set by the industrialised countries are misused as reasons for import barriers to protect their domestic industries (such as in the shrimps-turtle case⁴).

This constellation is a dilemma for China and other developing countries as they cannot fulfil the standards with the existing technology, but at the same time are losing export revenues that would enable them to invest in environmentally friendly technologies and management. Additionally to that, the sequence of disputes settled by the WTO-Appellate Body indicates that unilateral trade restrictions imposed are seen as GATT compatible which are based on differences in production technology rather than the nature of the product itself. This may lead to a wide range of trade conflicts based on unilateral environmental regulations. Multilateral environmental agreements have not been the basis of import restrictions until now, but this might change in the future. Hence, Chinas entry into WTO will also have influence on the Chinese environmental policy. In this context several issues have to be addressed:

- Which WTO rules apply on environmental policy?
- What are the opportunities and challenges for the environment and trade development through the application of the WTO rules?
- Which lessons can be learned from trade and environment conflicts in the WTO context?
- What can be suggested for the environment policy in China?

2 World Trade Organization (Ed.) (1994): *Uruguay Round, Final Act. Marrakesh, 15. April 1994, Agreement establishing the World Trade Organisation*, Preamble, p. 9.

3 Cf. A. Paulus (2000): "Chinas Textilindustrie vor dem WTO-Beitritt: Handels- und umweltpolitische Konsequenzen einer Aufnahme von Umweltstandards in die WTO am Beispiel der chinesischen Textilindustrie". In: *CHINA Aktuell*, Vol. Juni 2000, Hamburg: Institut für Asienkunde, p. 642-653.

4 Cf. O. Ranné (2000): "More Leeway for Unilateral Trade Measures – The Report of the Appellate Body in the Shrimps-Turtle Case". In: *Intereconomics*, Vol. March/April 2000, p. 72-83.

Following up there is a brief introduction in the environmentally related regulations of the WTO-system, which could generally lead to trade conflicts between China and Members of the WTO (Chapter 2). On the basis of the analysis of selected trade and environment disputes, recommendations will be given for the future Chinese environmental policy (Chapter 3). A summary with recommendations (Chapter 4) concludes the article.

2 Trade and environment – Relevant provisions of the WTO

Trade restrictions because of international environmental agreements are existing long before GATT and WTO are established. In 1878, the "Agreement on measures against *Phylloxera Vastatrix*" (a wine louse) prohibits the trade with certain wine plants and prescribe certain packing material and certificates.⁵ Today, there are about 200 international agreements outside the WTO dealing with various environmental issues currently in force. They are called Multilateral Environmental Agreements (MEAs). About 20 of these MEAs include provisions that can affect trade. E.g. the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) from 1973 prohibits the trade with certain species. The Convention on the Control of Transboundary Movement of Hazardous Waste and their Disposal prohibits the export and import of dangerous disposals from countries that are non-members of the Convention. These Conventions cover trade restrictions on goods on environmental reasons on the basis of their specific nature. Until now there had not been trade disputes on the basis of MEAs, though they at first sight generally seem not to be compatible with key GATT-rules.⁶

A slightly different case is the Montreal Protocol on Substances that Deplete the Ozone Layer. Generally, it is also covered by Art. XX GATT, but it has a different touch. It restricts the trade with non-member states *inter alia* with the obligation to prohibit the import of goods that are produced with ozone depleting substances, but which do not contain this substance (Art. IV, 4). This means that not the nature of the good is the reason for trade restrictions, but the production process. The provisions of the Protocol for instance applied on Asian producers of electronic products and semiconductors that are cleaned with hydrochlorofluorocarbon (HCFC). However, as the aim of Protocol is almost universally agreed, there had been no dispute on trade restrictions because of this agreement.

⁵ Cf. F. Biermann (1999): *Internationale Umweltverträge im Welthandelsrecht: zur ökologischen Reform der Welthandelsorganisation anlässlich der geplanten "Millenniumsrunde"*, Berlin: WZB, Forschungsschwerpunkt Technik, Arbeit, Umwelt, p. 15.

⁶ Generally, these MEAs conflict with key GATT-rules such as the *General Most-Favoured-Nation Treatment* (Art. I) which determines that every favourable condition that is granted by one GATT-Member to one other GATT-Member automatically applies to every GATT-Member, the *National Treatment on Internal Taxation and Regulation* (Art. III) which determines that imported goods have to be treated exactly in the same way as national goods and the *General Elimination of Quantitative Restrictions* (Art. XI, 1). However, environmentally based trade restrictions finally are GATT-compatible, as they fall under the general exemption of Art. XX of GATT (see below).

Table 1:

Membership of China and WTO Countries in Multilateral Environmental Agreements (in percent)									
	WTO	CITES	Montreal Protocol (1987)	Montreal Protocol (1990)	Montreal Protocol (1992)	Montreal Protocol (1997)	UNFCCC	CCTMHWD	Convention on Biodiversity
Members	133	145	169	135	98	24	178	126	174
China's Accession	-	+	+	+	-	-	+	+	+
Share of MEA-members in WTO	-	89 %	94 %	80 %	60 %	17 %	95 %	76 %	94 %
Share of WTO-members in MEA	-	81 %	74 %	79 %	82 %	92 %	71 %	80 %	72 %

Source: F. Biermann (1999), p. 69. CITES = the Convention on International Trade in Endangered Species of Wild Fauna and Flora. UNFCCC = United Nations Framework Convention on Climate Change. CCTMHWD = Convention on the Control of Transboundary Movement of Hazardous Waste and their Disposal. - No accession of the MEA; + accession of the MEA.

There had not been a trade dispute on the basis of this MEA. However, the radically decreasing number of WTO-members to this Protocol over time (see table 1) is a hint that many countries, including China, even in the WTO do not feel at ease with the implications of this agreement on their foreign trade.

So far trade disputes had only been coming up because of unilateral trade restrictions based on single provisions of WTO-Agreements. Ironically, the WTO has no specific agreement dealing with the environment.⁷ Only a few number of the WTO agreements include provisions dealing with environmental concerns.

GATT 1994, Article XX. Environmentally based trade restrictions can be legally imposed, if they are inter alia necessary to protect *human, animal or plant life or health (lit. b); or relating to the conservation of exhaustible natural resources if such measures are made effective in conjunction with restrictions on domestic production or consumption (lit. g)*. This provision was the basis of the shrimps-turtle and dolphin-tuna trade disputes. It could be applied on similar cases involving Chinese products. These conditions, however, are restricted by the initial provision of Art. XX that these trade restrictions imposed by the respective contracting party is "*subject to the requirement that such measures are not applied in a manner which would constitute a means of arbitrary or unjustifiable discrimination between coun-*

7 In the early 1970's, the GATT initiated a study on the interaction between the control of pollution and international trade. Cf. A. Basler (1999): *Handelspolitische Flankierung der Umweltpolitik: mit besonderem Bezug zum Agrarhandel zwischen Industrie- und Entwicklungsländern*, Braunschweig: Bundesforschungsanst. für Landwirtschaft (FAL), p. 21.

tries where the same conditions prevail, or a disguised restriction on international trade".

Agreement on Technical Barriers to Trade, Art. 2,2 and 2,4. It covers the introduction of national standards for products and product related technology (which can be traced in the product). The Agreement does not contain a general exception as it can be found in Art. XX GATT, but in Art. 2,2 allows WTO-members to maintain legitimate objectives.⁸ With this provision, environmental concerns are materially added to the list of meritory goods in Art. XX GATT and recognised as a legitimate policy aim. Especially in this Agreement the strict division in GATT between domestic product standards which – on the basis of a national treatment — can also be applied of imported goods and production and process methods which basically are not allowed to be the basis of trade restrictions is not consequently applicable. As the quality of foodstuff and pharmaceutics cannot be separated from the quality of the process, the importing country may be entitled to impose trade restrictions, e.g. on China.⁹

Agreement on the Application of Sanitary and Phytosanitary Measures, Art. 2. The Agreement on the Application of Sanitary and Phytosanitary Measures provides for rules on the sanitary policy of WTO-members. Article 2,1 provides that "*Members have the right to take sanitary and phytosanitary measures necessary for the protection of human, animal or plant life or health, provided that such measures are not inconsistent with the provisions of this Agreement*". However, it has inter alia to be ensured that the measures do not arbitrarily or unjustifiably discriminate between Members where identical or similar conditions prevail, including between their own territory and that of other Members. Especially, sanitary and phytosanitary measures shall not be applied in a manner which would constitute a disguised restriction on international trade (Art. 2,3). One example may be Chinese import restrictions on British beef, which might be infected with BSE. An other one is the trade with genetically modified animals and their products as the risks of biotechnology are incalculable.

Agreement on Agriculture. Preamble, Art. 6, Annex 2, Paragraph 12. Focus lies on environmental programmes that are exempt from cuts in domestic supports, i.e. subsidies.¹⁰ Art. 6 of the Agreement makes clear that this reduction commitment generally shall apply to all domestic support measures in favour of agricultural producers. Following up, in Annex 2, several exceptions were made. The environment

8 It provides: "Members shall ensure that technical regulations are not prepared, adopted or applied with a view to or with the effect of creating unnecessary obstacles to international trade. For this purpose, technical regulations shall not be more trade-restrictive than necessary to fulfil a legitimate objective, taking account of the risks non-fulfilment would create. Such legitimate objectives are, inter alia: national security requirements; the prevention of deceptive practices; the protection of human health or safety, animal or plant life or health, or the environment".

9 Cf. J. Wiemann (1997): "'Handel und Umwelt' oder 'Handel und nachhaltige Entwicklung'? Wie die Handelspolitik den Rio-Auftrag umgesetzt hat". In: *Nord-Süd aktuell: Vierteljahresschrift für Nord-Süd- und Süd-Süd-Entwicklungen*. — Vol. 11 (1997), No. 2, p. 274.

10 Generally, the preamble of the General Agreements makes clear that the "*long-term objective is to provide for substantial progressive reductions in agricultural support and protection sustained over an agreed period of time, resulting in correcting and preventing restrictions and distortions in world agricultural markets*".

related exceptions are mentioned in Paragraph 12, where payments under environmental programmes can be the basis for the exemption from the reduction of domestic support under certain conditions.¹¹ The Agreement on Agriculture aims to reduce the subsidised overproduction in the industrialised countries, especially in the European Union. These subsidies do not only lead to a misallocation and an over-utilisation of natural resources in the industrialised countries through chemical intensive and non-sustainable agriculture. It also reduces the export capacities of the developing countries, including China, through a dumping of the European and other industrial countries exports of agricultural goods. Thus, the introduction of programmes to reduce the use of chemical fertilisers and pesticides environmental programmes as well as the liberalisation of the international agriculture markets is a win-win-situation as both trade political and environmental political goals are reached.¹²

Agreement on Subsidies and Countervailing Measures. It allows subsidies of up to 20% of firms' costs for adapting to new environmental laws. If China is member of the WTO, it can apply this provision.

Agreement on Trade Related Aspects of Intellectual Property Rights, Art. 27. Due to Art. 27, governments can refuse to issue patents that threaten human, animal or plant life or health, or risk serious damage to the environment. This provision may e.g. applies on patents and the commercial exploitation of genetically modified animals and their products in China. However, if an exclusion is made by WTO-members, it must be proven that the *"exclusion is not made merely because the exploitation is prohibited by their law"* (Art. 27,2).

General Agreement on Trade in Services, Art. XIV. The Agreement recognises that every member of WTO has the right to regulate, and to introduce new regulations, on the supply of services within their territories in order to meet national policy objectives. However, at the same time, these regulations may be used as trade barriers. Policies affecting trade in services for protecting human, animal or plant life or health are exempt from normal GATS (General Agreement on Trade in Services) disciplines under certain conditions.¹³

Until now, there has not been a dispute on the basis of the Provisions of the General Agreement on Trade in Services. A possible, but more theoretical conflict would be restrictions on Chinese airline transports because of too many accidents. However, it is likely that the market mechanisms would sort out that problem before trade conflict would come up.

11 These conditions are that *"(a) the eligibility for such payments shall be determined as part of a clearly-defined government environmental or conservation programme and be dependent on the fulfilment of specific conditions under the government programme, including conditions related to production methods or inputs and (b) the amount of payment shall be limited to the extra costs or loss of income involved in complying with the government programme"*.

12 Cf. J. Wiemann (1997), p. 273.

13 The general exceptions of Article XIV provide that *"Subject to the requirement that such measures are not applied in a manner which would constitute a means of arbitrary or unjustifiable discrimination between countries where like conditions prevail, or a disguised restriction on trade in services, nothing in this Agreement shall be construed to prevent the adoption or enforcement by any Member of measures: (b) necessary to protect human, animal or plant life or health; [...]"*.

3 Analysis of selected trade and environment disputes and recommendations for the future Chinese environmental policy

The WTO's procedure for resolving trade quarrels under the Dispute Settlement Understanding (DSU) is vital for enforcing the rules and therefore for ensuring that trade flows smoothly. A dispute arises when a member government believes another member government is violating an agreement or a commitment that it has made in the WTO. Ultimate responsibility for settling disputes also lies with member governments through the Dispute Settlement Body. First rulings are made by a panel. Appeals based on points of law are possible. All final rulings or decisions are made by the WTO's full membership. No single country can block these.

The WTO provides for statistical material about the disputes. From 1 January 1995, the date of the establishment of the WTO, there had been 168 distinct matters of trade disputes with 210 complaints. The regional structure of the distinct matters of trade conflicts mirrors the intrasectoral trade of the industrialised and developing countries. About 60% of the complaints from industrialised countries were for measures of industrialised countries, about 56% of the complaints from developing countries referred to measures of developing countries (see table 2).

Table 2:

Regional structure of complaints to the dispute settlement body (number of distinct matters)			
	Complaints by		
	Industrialised countries	Developing countries	Total
Responds by			
Industrialised countries	73	25	98
Developing countries	50	20	70
Total	123	45	168

Source: WTO, own calculations.

The dispute settlement procedure takes time. Only 34 of the dispute cases had been settled yet (see table 3).

In the past, trade and environment disputes have been coming up because of unilateral measures of single WTO-members or groups of members. In the following, one energy/environment related trade dispute will be examined, namely the dispute between the United States and Venezuela/Brazil on standards on reformulated and conventional gasoline.

3.1 The dispute between the United States and Venezuela/Brazil on standards on reformulated and conventional gasoline

On 23 January 1995, Venezuela complained to the Dispute Settlement Body that the United States were applying rules that discriminated against gasoline imports, and formally requested consultations with the United States. The case arose because the

United States applied stricter rules on the chemical characteristics of imported gasoline than it did for domestically refined gasoline. In 1990, the United States supplemented the Clean Air Act. The US Environment Protection Agency (EPA) was directed to introduce measures to reduce emissions in mobile fuel combustion aggregates on their own competence. Subsequently, EPA enacted new rules on for gasoline. These rules contain general "compositional specifications" on the product as well as at the same time "performance specifications" which provide that the quality of supplied gasoline in a certain period of time should improve or not change at least.

Table 3:

Statistical overview of the state-of-play of WTO disputes								
	Com-plaints notified to the WTO ¹	Active Cases ²	Appellate Body and Panel Reports Adopted ³	Settled or Inactive ⁴ Cases	Active Cases on Implementation of WTO rulings ⁵	Adopted Appellate Body and Panel Reports on Implementation of WTO rulings ⁶	Active Arbitrations on Level of Suspension of Concessions ⁷	WTO Authorisations of Suspension of Concessions ⁸
Reporting period/ date	since 1-1-1995	on reporting date	since 1-1-1995	since 1-1-1995	on reporting date	since 1-1-1995	on reporting date	since 1-1-1995
Number	210 (with 168 distinct matters)	16	40	34	1	6	1	4

Source: WTO.

¹ This category encompasses all requests for consultations notified to the WTO, including those requests which have led to panel and appellate review proceedings.

² This category encompasses pending or suspended panel proceedings or appellate review proceedings, with the exception of proceedings pursuant to Article 21.5 of the DSU.

³ This category does not include reports resulting from proceedings pursuant to Article 21.5 of the DSU.

⁴ This category includes cases where the contested measure has been terminated, a panel request was withdrawn, etc.

⁵ This category encompasses pending or suspended panel or appellate review proceedings pursuant to Article 21.5 of the DSU.

⁶ This category includes reports resulting from proceedings under Article 21.5 of the DSU.

⁷ This category covers arbitration proceedings pursuant to Article 22.6 and 22.7 of the DSU and Article 4.11 of the Subsidies Agreement.

⁸ This category covers authorizations granted by the WTO pursuant to Article 22.7 of the DSU and Article 4.10 of the Subsidies Agreement.

The complaints came up because of the calculation of US performance specifications.¹⁴ Objects of the dispute were the "baseline establishment rules", i.e. the rules for the determination of the 1990 share of the pollutants. The problem is that there often is a lack of specific data for 1990. Generally, the EPA-rules provide for three possibilities to determine the 1990 baseline:

- original data (method I),
- individual, calculated baselines (methods II and III), and
- EPA-standards.

If original data for 1990 (method I) is not available, domestic producers can use other individual data (method II and III). Importers, however, who do not have original data, have to use the EPA-standards. Thus, domestic producers have a higher number of choices for the determination of the baseline than importers.¹⁵ Venezuela (and later Brazil) said this was unfair because US gasoline did not have to meet the same standards — it violated the "national treatment" principle and could not be justified under exceptions to normal WTO rules for health and environmental conservation measures.

Just over a year later (on 29 January 1996) the dispute panel completed its final report. (By then, Brazil had joined the case, lodging its own complaint in April 1996. The same panel considered both complaints.) Due to the panel report,¹⁶ Art. III,4 of GATT 1994 (national treatment) was violated. This Article provides that

the products of the territory of any contracting party imported into the territory of any other contracting party shall be accorded treatment no less favourable than that accorded to like products of national origin in respect of all laws, regulations and requirements affecting their internal sale, offering for sale, purchase, transportation, distribution or use.

The panel made clear that domestic and imported gasoline of the same type are "like products" in the sense of Art. III,4 GATT. In a second step it made clear that the *de-facto* impossibility to use individual baselines by foreign importers of gasoline represents a violation of the principle of national treatment. Thus, there is only the possibility of the exceptions of Art. XX (b) and (g) GATT 1994 left.

The specific condition of Art. XX (b) is that the national measure is necessary to achieve the environmental goal. This necessity is normally interpreted in that way that the measure in question is the least trade distorting measure. In this case the panel did not see a reason to make it necessary to apply two different calculations of the baseline to domestic and foreign companies. Due to the findings of the panel, the USA were not able to justify this unlike treatment, though generally, the environ-

14 Generally, the US rules provide that the share of volatile organic compounds in the gasoline of every domestic producer or importer has to be reduced by 15% compared to the 1990 share. The share of nitrogen oxide (NOx) is not allowed to increase compared to the 1990 share.

15 Cf. A. Ziegler (1996): "Erste Erfahrungen mit der Berufungsinstanz der WTO: Anmerkungen zum WTO-Streitschlichtungsverfahren "United States — Standards for reformulated and conventional gasoline"." In: *Aussenwirtschaft: schweizerische Zeitschrift für internationale Wirtschaftsbeziehungen*. – Vol. 51 (1996) 3, p. 423.

16 Cf. World Trade Organization (1996): *United States – Standards for reformulated and conventional gasoline, Appellate Body Report and Panel Report, 20 May 1996, WT/DS2/9. 96-1932, p. 8.*

mental goal as such has been seen as consistent with Art. XX (b). Art. XX (g) was seen similarly. The specific condition of this provision is that the trade restricting measure not only has to relate to the environmental goal of the conservation of exhaustible natural resources, but has to be primarily aimed at it. The panel had the opinion that the discriminating treatment on the baseline calculation as such was not primarily aimed at the conservation of exhaustible natural resources. Thus, this treatment was not justified under Art. XX (g).¹⁷

The United States and Venezuela then took six and a half months to agree on what the United States should do. The agreed period for implementing the solution was 15 months from the date the appeal was concluded (20 May 1996 to 20 August 1997). The Dispute Settlement Body has been monitoring the progress — the United States submitted "status reports" in January and February 1997. The dispute panel agreed with Venezuela and Brazil. The appeal report upheld the panel's conclusions (making some changes to the panel's legal interpretation).¹⁸

The United States agreed with Venezuela that it would amend its regulations within 15 months and on 26 August 1997 it reported to the Dispute Settlement Body that a new regulation had been signed on 19 August 1997.

There are several lessons that can be learned from this first trade conflict. Firstly, the dispute settlement bodies of the WTO make their decisions independently from the disputing parties. Developing countries have a real chance to get their rights in trade disputes with industrialised countries. Secondly, generally, environmental concerns are taken into consideration, but do not overrule the trade-relevant aspects. Thus, the needs of the developing countries are taken seriously. Thirdly, the WTO's procedure underscores the rule of law, and it makes the trading system more secure and predictable. It is clearly structured, with flexible timetables set for completing a case. However, the future will show, how this system will remain fair.

3.2 Environmental benefits of removing trade restrictions and recommendations for the future Chinese environmental policy

One central question about China's WTO entry is what are the possible environmental benefits. Due to the WTO Committee on Trade and Environment, the greatest environmental benefits of trade liberalisation, i.e. the removing of trade and restrictions and distortions are in

- agriculture,
- energy,
- fisheries,
- forestry,
- non-ferrous metals,
- textiles and clothes, and

17 Cf. World Trade Organization (1996), p.16.

18 Cf. World Trade Organization (1996), p.16.

- leather.¹⁹

For China, agriculture, energy and textiles are the most important economic sectors in this context.

3.2.1 Agriculture

The agricultural sector is replete with examples where externalities are not reflected in market prices. The ensuing market imperfections in many instances are considered to have widespread effects on the environment; these include soil degradation, water depletion, deforestation, loss of wildlife habitats and loss of biodiversity. The agricultural sector is also confronted with a large number of measures that distort pricing signals and result in an inefficient allocation of resources. When output prices are held artificially high and input prices held low, the effect is to encourage farmers to increase production, which encourages the extension of production, leading to various problems such as soil degradation, sediment damage, increased nutrient loadings in waterways, etc. Conversely, when farm incomes are taxed by artificially lowering food prices to subsidise consumers, and input markets are distorted, deforestation and other land misuses are encouraged.

In many developed countries, farmers have been subsidised to ensure food security and maintain income levels. However, it is widely considered that the objective of self-sufficiency has been exceeded and overproduction has taken place in some countries. As far as the nature of trade distortions and restrictions are concerned, price supports, trade barriers, quantitative restrictions on output, subsidies to inputs and direct budgetary payments, are all common in this sector. Such measures affect the decisions that are taken regarding the types of agricultural products to grow and their quantities. These decisions often have significant environmental effects.

Anderson and Tyers have constructed a model of world food markets, which has been used by a number of researchers as a basis to estimate the likely environmental impacts of production changes.²⁰ The model suggests that declining agricultural production in densely populated countries with relatively high levels of protection will reduce environmental degradation more than in regions with expanding production. Meat production would also be expected to shift from densely populated countries, to the more sparsely populated ones. The model suggests that use of less intensive livestock production methods (associated with range feeding) will result in less air, soil and water contamination from the disposal of animal effluent. In so far, as relocation leads to greater use of crop/leguminous pasture rotation methods, there will be a decline in the chemical fertilizers used and, therefore, a decline in water pollution from nitrates and other agro-chemical run-off problems (i.e. build-up of heavy metals or other toxic substances, destruction of fish habitats, accumulation of silt, and increase in plant and algal growth). In areas of contracting agricultural production, as price supports are reduced, output prices and land values are expected to fall, and the absolute amount of farm chemicals, irrigation water, feed concentrates

19 Cf. World Trade Organization (1997): *Environmental benefits of removing trade restrictions*, 7 November 1997, WT/CTE/W/67, 97-4873, p.3.

20 Cf. K. Anderson and R. Tyers (1992): *Disarray in World Food Markets: A Quantitative Assessment*, Cambridge: Cambridge University Press.

and other agricultural inputs associated with environmental degradation will decrease as agriculture becomes less profitable.²¹

It has also been suggested that income growth effects of trade liberalisation can be beneficial for the environment in China. Firstly, the rate of population growth generally has been found to decline as income rises, and this could reduce an important source of pressure on both urban and rural environments. Secondly, demand for pollution abatement policies is income elastic (at least beyond a certain threshold), and the cost of compliance falls as rising incomes and more open borders allow for the adoption of more environmentally-sound production technology, consumer products and inputs.

In China, 75% of the population is living in rural areas. Thus, the reform of the agricultural sector is a difficult task. Subsidies have to be reduced only where GATT-incompatibilities exist or where there are appropriate having positive implications for economic welfare (e.g. subsidies for the use of energy, pesticides and fertilizers). Art. 6 (b) of the Agreement on Agriculture allows subsidies in the agricultural sector, if they are granted to environmental programmes promoting the utilisation of environmentally friendly technology. More important, the potential environmental benefits of the trade liberalisation in the international trade of agricultural goods should not be counter-measured by an too early opening of the domestic agricultural markets in developing countries such as China. Provisions of the Agreement on Subsidies and Countervailing Measures (Art. 27.2 (b)) and other Agreements under the WTO have specific expectations for developing countries. As long as there is no internalisation of external effects in the industrialised countries, but through a subsidisation of the sectoral production costs including the energy costs, there is still a risk that the domestic agro-production in developing countries is undermined by an artificial dumping of agricultural export-goods of the industrialised countries.

3.2.2 Energy

Energy consumption in China has increased significantly since the last 20 years. (1980: 600 mill. t Standard Coal Equivalents (SCE)), 1998: 1,36 bn. t SCE).²² Within the developing countries, the countries of the Asia Pacific region consume approximately 60% of total world energy demand among all developing countries, accounting for the bulk of demand increase in recent years. According to IEA data, with 3.1 bn. t of CO₂-emissions from fuel combustion in 1997, after the USA, China is the second largest emitter in the world.²³

From the WTO point of view, trade restrictions and distortions in the energy sector are caused by the subsidisation of energy. Several types of subsidies are applied both directly and indirectly to energy production. As in other sectors, different subsidies

21 Cf. K. Anderson and A. Strutt (1994): *On Measuring the Environmental Impacts of Agricultural Trade Liberalization*, Seminar Paper 94-06, Centre for International Economic Studies, Adelaide: University of Adelaide.

22 However, since 1996 primary energy output has decreased by 17% due to the closure of ten thousands of small coal mines. Subsequently, primary energy use dropped by 4%. Cf. J.E. Sinton and D.G. Fridley (2001): "Growth in China's Carbon Dioxide Emissions is Slower than Expected." In: *Sinosphere*, Vol 4 (2001) 1, p. 3-5.

23 Cf. International Energy Agency (1999): *CO₂ Emission from fuel combustion*, Paris, p. II, 57.

have varying economic and environmental effects. Given the linkage between the energy sector and virtually all forms of economic activities, identifying the existence and nature of subsidies (e.g. whether direct, indirect or implicit) is complex. Table 4 shows a sample of energy subsidies. Some of them are applied in China as well.

Table 4:

Examples for subsidies of energy:	
(a)	direct subsidies
(b)	tax concessions or tax exemptions
(c)	low-cost long-term land concessions for energy exploration or production activity
(d)	government absorption of different risks associated with exploration or production (such as liability waivers)
(e)	energy-infrastructure subsidies (such as low-cost power transmission lines, low-cost land concession rights, and petroleum import or export facilities)
(f)	the provision of free accident insurance
(g)	the provision of loan guarantees
(h)	grants or tax incentives to develop energy-related technologies
(i)	transfers to upgrade either commercial or household energy sources
(j)	grants or tax incentives to lower operating costs in various energy-intensive commercial production activities
(k)	transfers to lower household heating bills

Source: World Trade Organization (1997), p. 12.

As for environmental benefits, it is generally felt that trade liberalisation through the removal of subsidies and the restructuring of taxes to bring energy prices in line with marginal social costs could result in significant environmental benefits. Subsidies on energy should be eliminated where WTO-inconsistencies exist and where are additionally welfare gains can be expected. This is especially for subsidies in the coal and electricity sector including subsidies of the coal transport. In the view of future growth perspectives, these subsidies may have short-term advantages. However, medium and long-term subsidies will cause a conservation of the primary energy structure and the inefficient use of primary energy as well. If the subsidies are passed through to the consumer, they will be a disincentive for the improvement of energy efficiency in the final energy-use. If possible and appropriate, China environment policy should try to internalise the external costs of the over-utilisation of natural resources though the introduction of an energy tax or even in the future a domestic trading system of emission certificates. Clean technologies, co-generation gas turbine combined cycles, steam-injected gas turbines, increased reliance on renewable energy sources, and demand-side management are among the range of options which will be important in improving the environmental profile of energy in addition to the changes in relative prices.

However, in certain cases, subsidies can also be used to provide incentives for the development and use of renewable energy or more environmentally friendly technology, including electrical appliances, heaters and boilers, energy saving devices for fishing vessels, alternative energy sources such as solar power, or energy related standards covering automobile engine efficiency performance standards. Such

measures have been primarily made under the TBT (Agreement on Technical Barriers to Trade) and Agreement on Subsidies and Countervailing Measures (SCM). In addition, a TRIMs (Trade Related Investment Measures) notification lists alternative energy sources "like solar, wind, etc., and equipment thereof" including energy efficient lamps, although no reference is made to environmental objectives. One notification under the SCM Agreement lists support of agricultural processing, including assistance in the "application of modern packaging procedures as well as energy savings and environmentally-sound technologies". There are also TBT notifications on labelling and certification of electric motors for energy efficiency objectives, labelling requirements for energy efficiency standards covering air conditioners. Other notifications included information on assistance in support of the research, development and diffusion of cleaner technologies, including energy efficient technologies, waste reduction technologies, the use of renewable energy as a means of reducing negative environmental impacts linked to traditional energy use.

In the last thirty years, environmental policy has addressed the adverse environmental implications of energy production and use. An extensive body of literature exists identifying different aspects and magnitudes of environmental problems in the sector, which is too broad and detailed to be summarised here. It is worth mentioning, however, that different types of energy sources raise different environmental issues both at the stage of production and consumption. Comprehensive domestic and international environmental policies have emerged to address externalities linked to energy use including command and control as well as economic based measures to reduce emissions of sulphur dioxide, suspended particulate matter, nitrous oxide, carbon monoxide, carbon dioxide, light hydrocarbons, organic and inorganic aerosols, as well as toxins produced in certain combustion methods. China has also taken measures to reduce these emissions. Environmental policy should proceed further on this way. Especially the Clean Development Mechanism in the Kyoto process to reduce greenhouse gas emissions should be recommended to China's environmental policy as an appropriate measure to mitigate climate change.

Energy is an important input to almost all economic activities. Thus, reforming energy policies will impact on virtually all aspects of the economy. Estimating the effect of changes in energy prices on different economic activities is difficult, as energy input requirements vary between and within sectors, and between countries. Environmental policy in the energy sector should stress on coal and electricity as there are the biggest opportunities to reduce emissions and improve energy and cost efficiency of production.

3.2.3 *Textiles*

The textiles and clothing sector can be divided into four stages of production:

- (a) the production of natural and synthetic fibres: natural fibres include cotton and wool and various plant fibres, and synthetic or man-made fibres include nylon, polyester, polypropylene and acrylic,
- (b) yarn making or spinning,
- (c) fabric making, including weaving, knitting and non-woven processing, and

(d) the production of final products, comprising household and industrial textile products and clothing.

The various stages of production, along with differences in production processes and technology used within these stages create a variety of environmental externalities of different magnitude. Trade in textiles are of great importance for the Chinese balance of payments. It is not the raw material, but the final products. In 1997, the exports of articles of apparel and clothing (SITC 84) made 17.4% of total Chinese exports (see table 5).

Table 5:

China textile trade				
(1997, in bn. US\$)				
	Textile fibres (SITC 26)	Textile yarn (SITC 65)	Articles of apparel and clothing (SITC 84)	Total trade
Exports	0.805	0.968	31.781	182.697
Imports	3.964	3.228	1.117	142.361
1997, Share of total Chinese trade				
	Textile fibres (SITC 26)	Textile yarn (SITC 65)	Articles of apparel and clothing (SITC 84)	Total trade
Exports	0.4	0.5	17.4	100.0
Imports	2.8	2.3	0.8	100.0

Source: China Customs Administration (Ed.): *China Customs Statistics*, Beijing 1998.

Despite restrictions in the former Multi Fibre Arrangement (MFA), China became the biggest exporter of clothing and the second biggest of textiles in the world.²⁴ As for textile fibres and textile yarn the Chinese imports are more important than the exports. Textile fibres (SITC 26) made only 0.4% of total exports, but 2.8% of total imports. There is a similar condition for textile yarn.

The textiles and clothing sector has for many years been heavily influenced by numerous trade restrictions and distortions. These include export restraint measures under the former Multi Fibre Arrangement which have been implemented into the Agreement on Textiles and Clothing (ATC) and which are to phased out over 10 years (1995-2005). There are also high tariffs, import licensing requirements, import prohibitions, and indirect subsidies on some production inputs. An extensive body of literature exists on the economic effects of these distortions; the cost of protection has been estimated on numerous occasions to be particularly high. Thus, the WTO entry is of great importance for the Chinese textile industry. In 1983, China signed the MFA.²⁵

If China is not member of the WTO before the MFA expires, there could be selective export restrictions for textiles and clothing. Mexico already imposed antidump-

24 Cf. A. Paulus (2000), p. 646.

25 Cf. A. Oberheitmann (1994): *Die VR China und das GATT — Anpassungsbedarf der Außenhandelspolitik im Spiegelbild der nationalen und internationalen Interessensphären*, Mitteilungen des Instituts für Asienkunde Nr. 233. Hamburg, p. 9.

ing tariffs between 54 and 500%. Thus, China should intensify its efforts to entry the WTO by the end of this year.

Another example for trade restrictions on Chinese textiles is the US Uruguay Round Agreement Act. In this Act countries further processing goods are faced with quotas to the same extent as the countries from which the intermediate products come. The advantage of Chinas WTO membership would be the possibility to get a compensation.

It is not possible to give a definite answer as to which extent the MFA restrictions limited China's trade, or what trade levels (or the structure of production worldwide) would have been in their absence. An important part of world trade in these products was not restricted at all — such as trade between developed countries. Furthermore, where trade was restricted, some MFA quotas were not fully utilised; and a number of restrictions in international trade in this sector existed outside of the MFA. The possible effect of relatively high tariffs, for example, also had to be taken into account. Nevertheless, some of the side-effects of the MFA regime are evident and relevant for any discussion about the environment.

The most prominent development leading to the removal of trade restrictions and distortions for China in the coming years – and therefore any ensuing environmental benefits — is the phasing out of the MFA. In revealing the relationship between trade liberalisation and environmental benefits in the textiles and clothing sectors, potential benefits can be broadly divided into two groups:

- general welfare benefits which are expected to accrue to developing countries because of the MFA removal and further tariff reduction and
- especially environmental benefits which may arise because of changes in the structure of production.

With respect to the item mentioned first, it has been estimated that the expiration of the MFA could induce a shift of Chinas share of total world textiles and clothing markets of about 10%. In 2005 China could have a share of 30%, if Taiwan also joined the WTO. This shift of the share would represent 50 bn. US\$ additional exports of textiles and clothing. China's imports of intermediate products will have to increase by 13 bn. US\$ to maintain this predominant position on the world market.²⁶

As in other sectors, it is difficult to quantify changes in environmental outcomes due to changes in the structure of production that result from trade liberalisation. Environmental problems that relate to the structure of production are, however, associated with the production of cotton and the finishing of textiles. As in some other agricultural sectors, subsidies applied directly to cotton production have led to the extensive use of agro-chemicals. The question is, whether this is the case in China. Growing cotton is chemically intensive; there is frequently a high pesticide, herbicide and fertiliser input intensity applied during the cultivation of cotton, which has eroded soil and polluted water resources.²⁷

26 Cf. A. Paulus (2000), p. 650.

27 Cf. World Trade Organization (1997), p. 36.

With respect to textile production, the two principal environmental problems are the discharge of different polluting effluents at different stages of processing, and the high consumption of water and energy inputs. Liquid wastes arise from textile washing operations and may contain substantial quantities of organic and suspended pollution loads such as fibres, grease and various toxic chemical effluents. For example, the production of synthetic fibres is linked to the release of monomers in the air and water, together with volatile organic compounds. Polymer and other synthetic fibre production is also energy intensive, and removing energy subsidies would also restrain energy use in this segment of production. Production related environmental externalities include liquid waste emissions containing organic and suspended loads including fibres and grease removed from raw natural fibres during processing, as well as water pollution containing chemical residues which may be toxic. To the extent that the removal of trade distortions and restrictions leads to a continuation of the process of industrial restructuring, new investment will provide the possibility to introduce more environmentally friendly production processes and machinery.

Chinese environmental policy is aware of these environmental problems. One outcome of these environmental concerns is a Chinese labelling programme. The aim of the programme is to "reduce domestic environmental stress of products [...] that are closely related to people's daily life."²⁸ The programme is financed by the government and companies can voluntarily apply for the label on the basis that they have to fulfil the technological and environmental standards set by a commission. This label is equivalent to the ISO (International Organization for Standardisation) type I and applies to one or more criteria of the product. Currently, 22 product categories with 219 products from 55 producers have been getting this label.²⁹

Internationally, this label is of low acceptance, because it is based on a very simple set of criteria. Thus, Chinese environmental policy may think about a more sophisticated set of criteria to have a more valuable label. Additionally, European and other regions aggravate their standards for the production and the import of textiles. As long as the principle of non-discrimination (e.g. the national treatment) is not touched, these new European standards are GATT compatible.

Many trade experts suppose that the ISO 14000 certificate on environmental quality of production processes and management will be one of the main pillars of environmental labelling. The older ISO 9000 had a tremendous impact on the European trade. Thus, the introduction of ISO 14000 might be very important for the export oriented Chinese textile industry in the future. This can help to reduce potential green trade barriers. China reacted on that, and the State Environmental Protection Administration (SEPA) established a control centre for the introduction of ISO 14000. A pilot project with 55 companies was brought into being, 27 of them received the ISO 14000 certificate until now. In 1999, only three textile companies got the certificate, what might be a hint on the fact, that the Chinese textile industry currently does not meet international environmental quality standards. Thus, a wider diffusion of ISO 14000 in the Chinese textile and other industries seems to be es-

28 Cf. A. Paulus (2000), p. 647.

29 Cf. A. Paulus (2000), p. 647.

sential. However, the high certification costs of 200,000 to 300,000 RMB make it only a practical option for big, export orientated companies. Small and medium sized companies may be assisted through the promotion of labels on the product quality.

4 Conclusions and Recommendations

China's WTO accession has various political, economic and environmental implications. With the entry into WTO, China has to obey the WTO-rules. However, it also receives the right to use the conflict settlement mechanisms of the organization and could directly take part in the WTO discussions and negotiations. Apart from these political consequences, implementing the WTO-rules could bring about economic and environmental benefits for China. Regulatory basis of trade and environment under WTO are the provisions of the relevant WTO-Agreements. However, these Agreements include environmentally related trade provisions that might lead to trade conflicts.

Most worrying is the fact that unilateral trade restrictions imposed are seen as GATT compatible which are based on differences in production technology rather than the nature of the product itself. This may cause various trade conflicts based on unilateral environmental regulations. Hence, China's entry into WTO will also have influence on the Chinese environmental policy. For instance, a justification of trade restrictions on products that have been produced with electricity that has been produced inefficiently and causes transboundary emissions that violate the environment in neighbour states or even the global environment seems to be possible under WTO legislation. For example, Japan could argue that China's emissions of SO₂ and other pollutants going along with the production of export goods and are reaching Japan detrimentally to the Japanese environment or even to the global environment and hence could justify trade restrictions on these Chinese export goods. On the basis of the Kyōto Protocol, Japan could even try to argue that through an import ban of goods from China that have been produced environmentally unfriendly and are substituted by Japanese production could be seen as a domestic measure to reduce global greenhouse gas emissions.

De facto, this decision could lead to a situation that China has to accept the production standards set by the big trade nations in order not to lose its export markets. This, however, would impose enormous investment in these sectors. Additionally, this investment may lack in other sectors of the economy which are more important for the Chinese economic development. This policy decision is violating the principles of the Rio Declaration which states, "that environmental standards, management objectives and priorities should reflect the environmental and developmental context to which they apply, and that standards applied by some countries may be inappropriate and of unwarranted economic and social cost to other countries, in particular developing countries".

On the other side, following the WTO-rules, China can realise environmental benefits through trade liberalisation, i.e. the removing of trade restrictions and distortions from environmental policy. As for China, agriculture, energy and textiles are the

most important economic sectors in this context. Summarising the advantages and disadvantages, the WTO entry has the following implications for Chinese environmental policy:

Agriculture:

- Reduction of subsidies where GATT incompatibilities exist (e.g. export subsidies which are not falling under the WTO exceptions) and appropriate (e.g. for energy, fertilisers and pesticides). Environmental benefits come up from the reduction of an overuse, e.g. of fertilisers and pesticides.
- However, e.g. against the background of possible negative effects on employment the agricultural sector should still be protected where necessary. Developing countries should be given flexibility in implementing their obligations on the grounds of security of food supply, the protection of rural livelihood, and poverty alleviation. Thus, in developing countries such as China, food produced for domestic consumption and the products of small farmers shall be – where appropriate — exempted from the WTO-rules on import liberalisation and domestic support.
- Environmental benefits from maintaining subsidies where GATT compatible (e.g. for the promotion of environmentally friendly technology).
- As the liberalisation of international agricultural markets is far from being realised, an opening of the Chinese agricultural markets for international competition in a too early stage is not to be recommended. The provisions of the WTO-Agreement on Subsidies and Countervailing Measures provides for concrete exceptions in this case (Art. 27.2 (b)).

Energy:

- Reduction of subsidies where GATT inconsistencies exist or where they are economically feasible (e.g. subsidies of industrial energy prices or coal transport). Middle and long-term subsidies are conserving the industry structure and are a disadvantage to save energy.
- Maintaining subsidies for private household energy prices for social policy reasons. Due to Art. 6.1 (c) of the Agreement on Subsidies and Countervailing Measures such subsidies are WTO consistent.
- Environmental benefits from the promotion of environmentally friendly technology on the supply side, *inter alia* through WTO consistent governmental support including tax reductions.
- Utilising the Clean Development Mechanism as a flexible mechanism of the Kyoto Protocol. Due to Art. 27.2 (b) China can use subsidies to attract foreign investments until 2003. In the past, there was still some reluctance on the Chinese side as the government fears that in the case of possible own quantitative obligations towards the Kyoto Protocol the least-cost options are already given away to foreign countries. Now, the Chinese government view has changed. Except for sink projects, CDM projects are seen as to attract foreign capital.

- In the case of a possible domestic emissions trading scheme in China as a measure of environmental policy to reduce emissions, conflicts may come up with the general prohibition of subsidies, if the primary allocation of emission certificates will be given to a small number of companies due to their emissions in the past.

Textiles:

- Lift of subsidies where economic appropriate or WTO inconsistent. For example, growing cotton is chemically intensive; there is frequently a high pesticide, herbicide and fertiliser input intensity applied during the cultivation of cotton, which has eroded soil and polluted water resources.
- Danger of selective export restrictions due to the expiration of the MFA.
- Environmental benefits of the promotion of the national labelling programme. The promotion of the ISO 14000 label may have positive effects on the production of export-orientated large companies. Because of the high financial impact of the introduction of such a labelling programme (200.000 to 300.000 RMB) ISO 14000 seems to be no option for small and medium sized enterprises. Product related labels below the ISO 14000 are to be recommended here.
- Chinese environmental policy should pro-actively push forward internationally agreed standards under a proposed "UN Environmental Organization".

The list of implications reveals that China's WTO entry does not only affect China's environmental policy, but also to a large extent other policy fields (domestic trade policy, international trade policy, fiscal policy etc.). This conclusion is not surprising as the WTO is a trade organization, not an environmental organization. However – as discussed above – in several cases there are close interlinkages between different policy fields as environmental policy has significant economic impacts. Thus, for an efficient design of China's policy relating to its WTO entry intergovernmental work is essential. SEPA should push forward the establishment of an interministerial working group (similar to the German interministerial working group on climate change mitigation policy). At least, the following Ministries and Commissions should be included:

- SEPA,
- the Ministry of Foreign Trade and Economic Cooperation (MOFTEC),
- the State Economic and Trade Commission (SETC) and
- the Ministry of Finance.

Without such an interministerial cooperation there is a danger of double work and the misallocation of financial and personal resources.

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