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Umwelt, Innovation, Beschäftigung

Eco-Innovation, International Trade, WTO and Climate:

Key Issues for an Ecological Industrial Policy

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für Umwelt, Naturschutz
und Reaktorsicherheit

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Eco-Innovation, International Trade, WTO and Climate: Key Issues for an Ecological Industrial Policy

Documentation of a Workshop on March 12, 2008

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by

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Content

FOREWORD

On March 12, 2008 the German Federal Environment Agency and the German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety held a meeting of experts entitled “Eco-Innovation, International Trade, WTO and Climate: Key Issues for an ecological industrial policy”. At this meeting, international experts spoke on the links between international trade, climate change and eco-innovation in the context of ecological industrial policy. The meeting consisted of three sessions, discussed in turn below.

The first session was entitled “The International Framework for Trade – Door Opener or Door Closer to a Resource Efficient Economy?”. Experts presented their insights into current issues in the interface between trade and climate change, as well as on prospective developments. They also looked at the competition issues resulting from different carbon prices at an international level and the implications of unilateral climate policies for trade policies.

The second session was entitled “Contributions of Trade Policy to Combating Climate Change”. The first presentation in this session focused on the current status of the discussion on EGS within the Doha Round, as well as the resulting opportunities and challenges for EU companies working in the field of environmental goods and services. The second presentation was on the issue of market support strategies and their relation to the rules and regulations of the WTO. The final presentation in this session dealt with further instruments supporting eco-innovation and relevant to trade, such as the introduction of standards and labels.

In the third session the experts looked at current EU trade policy with regard to the prevention of and adaptation to climate change. The session dealt with the requirements for an integrated European climate and trade policy and aimed at critically evaluating the current EU approach.

The papers presented in this book reproduce the experts' contributions to the meeting. The outcome of the discussion is summarised in the final paper presented here.

TRADE POLICY AND CLIMATE CHANGE – AN OVERVIEW FROM THE PERSPECTIVE OF AN ECOLOGICAL INDUSTRIAL POLICY

by Jutta Hoppe and Walter Kahlenborn, Adelphi Research

"'WTO members have an unprecedented opportunity to address in a concrete and meaningful way the global environmental challenge of climate change,' said Susan Schwab, US trade representative."[1]

"Developing countries, led by India and Brazil, have opposed a proposal submitted by the USA and the EU at the World Trade Organisation (WTO) calling for liberalisation of trade in environmental technology. India and other developing countries have termed the proposal, which calls for two-tier approach to environmental goods and services liberalisation, as 'disguised protectionism to boost exports by developed countries'."[2]

"Plans to force importers to pay the same greenhouse gas emission charges as domestic producers could provoke a trade war of retaliation and litigation, officials and lawyers have warned. The plans, being considered by the US Senate and floated by the European Commission, are intended to prevent production shifting to laxer regimes abroad after countries impose carbon controls. But although supporters argue they will comply with the General Agreement on Tariffs and Trade (GATT), […] officials and lawyers say that affected countries such as China and India are likely to resort to litigation or retaliation."[3]

Trade and the Environment – Revival of the Debate

Discussion of the interrelation between trade and the environment has figured within the GATT/WTO system since the 1990s. Right from the outset, a wide range of governmental and non-governmental organisations took part in the debate and contributed their points of view to an often controversial discussion.

At the Fourth WTO Ministerial Conference in Doha, Qatar in 2001, trade ministers launched the Doha Development Agenda (DDA). As the DDA covers three issues relating to the interface between trade and the environment, the previously informal discussions on trade and the environment had been converted into formal negotiations by the Doha Declaration.[4]

The topics to be negotiated within the Doha Round are: 1) the relationship between WTO rules and specific trade obligations set out in Multilateral Environmental Agreements (MEAs); 2) procedures for regular exchange of information between MEA Secretariats and relevant

[1] Williams, F. 2007: Green plan for US-EU trade. Financial Times, 3 December 2007, http://www.ft.com/cms/s/0/87dd38c4-a141-11dc-9f34-0000779fd2ac.html (last visited 26 May 2008).

[2] Anonymous 2007: US-EU Proposal at WTO Opposed. The Statesman, 25 December 2007, http://www.thestatesman.net/page.arcview.php?clid=12&id=209533&usrsess=1 (last visited 26 May 2008).

[3] Beattie, A. 2008: Carbon Tax Could Provoke Trade War. Financial Times, 23 January 2008, http://www.ft.com/cms/s/0/0bcb3cac-ca01-11dc-b5dc-000077b07658.html?nclick_check=1 (last visited 4 February 2008). However, looking at the US position one has to keep in mind that the US role is very ambiguous these days. On the one hand the US Senate is discussing the Lieberman-Warner Climate Security Act, which will probably include some kind of border adjustments if necessary, to protect the US economy. On the other hand the current administration is fiercely opposing any EU proposals for border adjustment. For example, the US Trade Representative Susan Schwab accused the EU of using the climate as an excuse for protectionism in January of this year, saying that the US had "been dismayed at a variety of suggestions where we see climate or the environment being used as an excuse to close markets." [Anonymous 2008: Britain and US Up in Arms against EU Carbon Tax. EurActiv, 23 January 2008, http://www.euractiv.com/en/climate-change/britain-us-arms-eu-carbon-tax/article-169790 (last visited on 5 May 2008)]. This ambiguity might come to an end after the presidential election in November of this year.

[4] See Cameron, H. 2007: The Evolution of the Trade and Environment Debate at the WTO. In: IISD; ICTSD; The Ring (eds.): Trade and Environment. A Resource Book. Geneva: UNEP, 6.

WTO committees, as well as criteria for granting observer status to MEAs; and 3) the reduction or elimination of trade barriers to environmental goods and services.

Originally the Doha Round was set to conclude in four years, after two more Ministerial Conferences had produced a final draft declaration. However, this plan has proved to be unrealistic. Negotiations to date have been unsuccessful; indeed, they were suspended for half a year in 2007. Even after the resumption of negotiations at the beginning of 2008, the jury is still out as to whether they will ultimately meet with success.

Due to the stagnation of the Doha Round, the debate on trade and the environment lost a lot of its initial energy. But, surprisingly perhaps, it is currently back in the news. This is because one aspect of the debate – the issue of climate change – has gained so much attention lately that it alone has served to revive the flagging debate.

Why is climate change attracting so much attention? There are a number of answers to the question:

- The degree of urgency with regard to climate change is increasing and its relevance is growing by the minute. According to the IPCC's Fourth Assessment Report, climate change is a reality, it is a human-driven phenomenon, and only a few years remain in which to take action. Emissions need to peak by 2015 and need to be reduced by 50 to 80% by the middle of this century in order to achieve a two-degree Celsius cap and thus avoid serious irreversible impact. Action to address climate change is imperative.
- It is becoming clear that climate change is not only an environmental issue but also an economic one. Climate change impacts on shipping routes and trade-related infrastructure, for example, as well as national productivity capacities and forecast demand. To tackle climate change, a fundamental restructuring of the world's system of energy production, transportation and manufacturing is required, among other things. This involves massive investment in clean technologies. Eco-innovation and the rapid deployment of existing green technologies are essential in order to deal effectively with climate change.
- The need to address climate change so that trade is not disrupted over the long term is becoming ever clearer. The Stern Review states that in the long run the cost of inaction on climate change will far exceed the cost of action. The report estimates the cost of action to reduce greenhouse gas emissions in order to avoid the worst impacts of climate change to be equivalent to around 1% of global GDP annually. By contrast it forecasts an up to 20% loss of global GDP due to inaction. Such a development would make it very unlikely that the multilateral trading system could continue delivering on its fundamental goal of increasing well-being around the globe.[5]

Another important factor is that the institutional context is also in flux. This goes for the future of the WTO as well as the design of the post-Kyoto regime, especially with regard to trade-related issues. The United Nations Climate Change Conference in Bali in 2007 added new momentum to the debate. Here, trade officials met in parallel with climate negotiators for the first time.[6] By doing so, trade officials were turning their attention to the close ties between these two areas, the influence of the UNFCCC, and a post-Kyoto regime that can be expected to gain strength in the future.

[5] See Stern, N. 2007: The Economics of Climate Change. The Stern Review. Cambridge: Cambridge University Press, XIff.
[6] See Anonymous 2007: Bali Climate Conference. The Next Two Years Will Tell. Bridges, Vol. 11, No. 7, November, 14.

Ecological Industrial Policy

Some scientists see trade policy as one element of industrial policy. Others regard it as an independent area, but one that strongly overlaps with industrial policy. Whichever view is correct, industrial policy plays a strong role in shaping trade policy. The growing debate on climate protection and world trade is taking place against the backdrop of major changes in the debate on industrial policy. We see a new approach to industrial policy, known as ecological industrial policy (EIP). This has been prompted in particular by climate change. The arguments about how to revamp industrial policy, and the outcomes of this debate, will influence the future shape of world trade and climate change.

EIP has been devised to overcome the growing problems faced by the world economy, in particular increasing shortages in energy and resources and strict limitations on power supply due to required reductions in climate change gas emissions. EIP attempts to turn the problem into an opportunity. Working on the assumption that, due to energy and resource shortages, industrial economies will inevitably have to change, EIP states that the competitiveness of entire branches of industry and different countries' economies will depend on how efficiently they manage the transition. Those companies that lead the process towards an energy- and resource-efficient economy stand to gain from the development. Societies and industries as a whole will eventually profit by using know-how and human resources in place of natural resources and energy. EIP thus aims to drive and shape the necessary process of transformation. It does this by focusing on the following areas: [7]

- Synergies between competition policy and a global environmental strategy
- Adjustment and reorganisation of industrial production structures with regard to the impending shortage of energy and natural resources
- Greater alignment of the industry with future lead markets
- Development of technological advances with integrated ecological and eco-efficient technologies, and thus the reduction and substitution of materials used during the entire lifecycle
- Promotion of "sustainable industrialisation" and industrial leaps within developing and threshold countries at a technologically high and resource-efficient level.

The Memorandum for a “New Deal” published by the German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU) lays out the key elements of a coherent strategy for implementing an ecological industrial policy.[8] These include taking the following actions:

- Setting benchmarks as the basis for EIP and related economic activity
- Developing an intelligent regulatory framework for EIP
- Exploiting export potential more effectively
- Accelerating the market launch of innovative technologies
- Improving innovation financing for companies
- Creating lead markets and developing “man to the moon” projects
- Building new institutional structures for eco-innovation.

[7] See Bundesumweltministerium für Umwelt, Naturschutz und Reaktorsicherheit (BMU) 2007: Ökologische Industriepolitik. Konzeptpapier, ZG III 2, Berlin: BMU, 4-5. See also Jänicke, M. 2008.

[8] Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU) 2006: Ecological Industrial Policy. Memorandum for a “New Deal” for the Economy, Environment and Employment. Berlin: BMU, 22-23.

Links between Ecological Industrial Policy, Climate Change and Trade Policy

In fact, the issues of trade, climate change and EIP are interconnected. Ecological industrial policy is, as the name implies, concerned with the relationship between industry and the environment. Several of the components listed above are trade-related, so a coherent EIP strategy is likely to have implications for the trade and environment agenda. There is currently great interest in (and controversy surrounding) the interface between trade and the environment, especially with regard to climate change. This links between the triangle of EIP, climate change and trade policy are therefore discussed in greater detail below.

Although the links between the environment and trade have been discussed for more than 15 years now, there are still huge gaps in our knowledge. There is insufficient data, for instance, on the quantity of CO_2 emissions accounted for international trade.[9] Data is also lacking on carbon leakage due to different national levels of enforcement in climate policy.

In recent months the debate about the relationship between the environment and trade has acquired new momentum. In particular, the issue of climate change has added great force to the discussion, as it becomes increasingly obvious how much is at stake if the average rise in temperature exceeds a certain level. The debate is likely to gain urgency as time goes on, and it has the potential to cause distortions in trade and even hamper progress in climate protection.

To date, the discussion on trade and the environment has been dominated by two main viewpoints. On one hand, it is argued that environmental policy is impeding free trade. This is clear in the Chair's summary of the trade ministers' informal dialogue on climate change issues at the UNFCCC meeting in Bali in 2007, for example. The document states that "in the absence of a multilateral consensus on climate change and fundamentally the pricing and measurement of carbon, there is a risk that the principles of non-discrimination, transparency, scientific and rules based standards, and special and differential treatment of the international trading system would be undermined."[10]

The other main viewpoint is that free trade mostly harms the environment, not only by increasing the amount of traded goods and therefore adding to CO_2 emissions, but also by impeding progress in preventing climate change.

One of the most important impacts of EIP could be to reframe the discussion on a broader footing. EIP could demonstrate that free trade and the environmental protection are not necessarily in conflict. By systematically searching for and drawing attention to the economic trade-related opportunities that come with the inevitable shift in the global economic structure, EIP could create win-win opportunities. It would not only help to turn environmental policies into economic approaches, but also draw attention to the limited resources that future economies will have to be built on and the resulting need to redesign the system for the future.

By showing that the system of international trade and the environment need one another in order to survive in the long run, EIP could help to break the tradition of playing the economy off against the environment. To do so, EIP needs to enable economies to deliver on the future needs of humanity – needs that will be increasingly shaped by the need to adapt to

[9] Data have been recently provided by Peters, G.P. and E.G. Hertwich 2008: CO_2 Embodied in International Trade with Implications for Global Climate Policy. Environmental Science & Technology, Vol. 42, No. 5, 1401-1407 and Statistisches Bundesamt 2007: Umweltökonomische Gesamtrechnungen (UGR). Umweltbelastungen durch deutsche Importe und Exporte. Ergebnisse der UGR über indirekten Energieverbrauch, Kohlendioxidemissionen und Güterbeförderungsleistungen. Wiesbaden: Statistisches Bundesamt.

[10] World Trade Organization 2008: Chair's Summary – Informal Trade Ministers Dialogue on Climate Change Issues. Bali, 8-9 December 2007, WT/L/717.

(and prevent) further climate change. In so doing, EIP would not only help individual countries respond to and deliver on the needs of humanity: it would also help them achieve a better position in the global economy "as a global provider of environmental technology and services for the 21st century."[11]

EIP can thus demonstrate, through the example of free trade, that environmental policies are not necessarily an impediment to the welfare of the economy, but can promote a highly competitive economy for future markets. This would not only help to reconcile trade and the goal combating climate change: it would also give EIP a whole new meaning and relevance as a mediating element within the broader topics of the environmental threats and the economy.

Contribution of an Ecological Industrial Policy towards Climate Change Mitigation and Adaptation and Trade Policy

Governments can take a number of different actions to design EIP that simultaneously fosters trade, climate change prevention and adaptation of the economy. Here one may distinguish broadly between (1) national trade-related measures and (2) efforts towards international agreements on trade-related initiatives to combat climate change.

(1) National trade-related measures to combat climate change either aim at (a) stimulating a desired development or (b) preventing a loss of competitiveness due to differing international regulations.

(a) Governments are an important player when it comes to stimulating the intended development of the economy and of society as a whole. They can do it for example in the following ways:

- Through target-oriented support for research and development for clean energy technology, low-carbon goods and renewable energy, governments can support the knowledge creation and eco-innovation that is necessary for a sustainable society.
- Similarly, governments' procurement policies can provide a powerful economic incentive to producers of eco-friendly goods and services.[12] By giving their procurement policies a mid- to long-term perspective, governments can provide a major incentive to invest in the further improvement of low-carbon goods and services and thus in eco-innovation.

(b) Governments should strive to create a level playing field with regard to international carbon prices:

- Differing carbon prices can lead to relocation of production and/or the replacement of domestic products by imported ones. One option, therefore, would be for governments to apply trade restrictions (such as border adjustments) for goods that do not meet national CO_2-standards. In order to prevent trade friction or disproportionate disadvantages for developing countries, this should be done in a predictable and cooperative manner.

[11] Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU) 2006: Ecological Industrial Policy. Memorandum for a "New Deal" for the Economy, Environment and Employment. Berlin: BMU, 9.

[12] Government procurement spending in Germany accounted for 17% of Germany's GDP in 2002 and roughly 16% of the EU's GDP (see Bundesministerium für Wirtschaft und Technologie (ed.) 2007: Gutachten Öffentliches Beschaffungswesen. Wissenschaftlicher Beirat beim Bundesministerium für Wirtschaft und Technologie, No. 2/07, Berlin: Bundesministerium für Wirtschaft und Technologie, 5; Anonymous 2004/2006: Green Procurement. EurActiv, 17 August 2004 and 9 November 2006, http://www.euractiv.com/en/environment/green-procurement/article-117505 (last visited on 7 May 2008)).

- By introducing carbon and climate-related standards and labelling schemes, governments can encourage importers to adapt to the local or regional standards. This can play a key role in mitigating climate change in sectors such as energy, agriculture and electronic goods as well as in building and construction. Such schemes give consumers access to important information which empowers them to choose eco-friendly goods and services, and thus the demand for eco-innovative products and services grows.[13] Again, such standard and labelling schemes should be developed and implemented in a cooperative way in order to avoid trade-related disputes, and in particular discrimination against developing countries.

Most experts agree that national trade-related measures to combat climate change will be possible under international trade regimes, but that they would need to be carefully designed. A problem related to the required predictability (which encourages companies and individuals to invest in new research and development) is WTO's case law, as it provides this very predictability for each measure only after it has been tested in a legal case.

(2) With regard to international agreements on trade-related initiatives to combat climate change, it is important to consider initiatives such as the following:

(a) Governments can take actions that lead in the long term to an internationally agreed carbon price, helping to internalise costs of environmental damage and thus leading to realistic prices[14]:

- Governments should strive for agreements to reduce subsidies in general and fossil fuel subsidies in particular. This is important, as these subsidies could hamper the prevention of climate change by encouraging excessive use of fossil fuels and discouraging the move towards cleaner fuels and renewable energy sources.
- Governments should also aim at tightening the European Emissions trading scheme and work towards the generation of a carbon market at international level. As more countries are expected to introduce a national scheme of emissions trading, this should be feasible in theory.[15] However, integrating different national and regional schemes of emissions trading into a single scheme that is accepted internationally will no doubt present a number of difficulties.

(b) Governments should support development, deployment and trade in environmental goods and services (EGS). This applies especially to developing countries and the urgent requirement of technology transfer to such countries:

- One important step in this direction would be the elimination or lowering of tariff and non-tariff barriers to trade in EGS within the Doha Round. However, it is still unclear whether negotiations here will ultimately be successful. Moreover, other factors apart from tariff and non-tariff barriers to trade are important drivers when it comes to trade in EGS. According to Jha, these factors include GDP, the environmental performance index ranking and technical assistance projects.[16]

[13] See Horbach, J. (forthcoming): Bedeutung (umwelt-) politischer Instrumente für Entstehung und Diffusion von Umweltinnovationen aus theoretischer und empirischer Sicht, In: Umweltbundesamt (Ed.): Ökologische Industriepolitik – Wirtschaftswissenschaftliche und Politikwissenschaftliche Perspektiven. Dessau-Roßlau: Umweltbundesamt.

[14] With regard to the need for "realistic prices" and the internalisation of environmental costs in order to adapt the industrial production of goods and services to the decreasing availability of natural resources, see Klepper, G. and N. Heitmann (forthcoming): Wofür brauchen wir die ökologische Industriepolitik? In: Umweltbundesamt (Ed.): Ökologische Industriepolitik – Wirtschaftswissenschaftliche und Politikwissenschaftliche Perspektiven. Dessau-Roßlau: Umweltbundesamt.

[15] Australia will start consultation for a national emissions trading scheme in the first half of 2008. The USA is expected to introduce such a scheme before the end of 2009.

[16] See Jha, V. (forthcoming): Environmental Priorities and Trade Policy for Environmental Goods. A Reality Check. ICTSD Environmental Goods and Services Series, No.7, Geneva: International Centre for Trade and Sustainable Development.

- The design of intellectual property rights (IPR) could also have a strong impact on eco-innovation and hence climate change.[17] On the one hand, weakening IPRs could have immediate climate benefits, as it might lead to a more widespread dissemination of urgently needed technologies. At the same time, the ultimate impact might be negative as weakened IPR protection might discourage prospective innovators.[18] So far there is no consensus on how IPRs should be designed in order to support technology transfer and hence eco-innovation. One suggestion is the creation of a knowledge and innovation fund, designed along the lines of the adaptation fund established in Bali.[19]

An important feature of successful EIP is its ability to foster eco-innovation. The EU project "Measuring Eco-Innovation" defines eco-innovation as "the production, assimilation or exploitation of a product, production process, service or management or business method that is novel to the firm or user and which results, throughout its life cycle, in a reduction of environmental risk, pollution and other negative impact of resource use (including energy use) compared to relevant alternatives."[20] With this definition in mind, eco-innovation can be seen as a cornerstone in the reshaping of our society and industry in the face of the challenges that lie ahead. A lively debate is currently underway in Germany and at a European level on how to promote eco-innovation.[21] Several key factors for eco-innovation and its diffusion have emerged, including the following:

- Long-term, clear and ambitious environmental targets giving orientation and creating predictability. These are key prerequisites to fostering target-oriented innovations. The innovation process in particular can be stimulated by specific instruments such as technology forcing.[22]
- Close networking and collaboration between science and industry in order to foster application-oriented research and accelerate technology transfer.
- Involving a wide variety of forces in society so that eco-innovations are based on the broadest possible knowledge base. This is especially important as the topics at stake – such as the prevention of climate change and the broader concept of sustainability – are highly complex issues. To find the best possible solutions, these issues need to be looked at from different angles and draw on a rich fund of knowledge.
- Employing market incentives such as grants. Such instruments not only help to ensure the financial basis of eco-innovative companies and research institutions: they are also a sign that the government in question takes a long-term perspective on eco-innovation. This again creates predictability and helps to create a climate for innovation.

[17] With regard to the influence of patent legislation on eco-innovation, see Horbach, J. (forthcoming): Bedeutung (umwelt-) politischer Instrumente für Entstehung und Diffusion von Umweltinnovationen aus theoretischer und empirischer Sicht, In: Umweltbundesamt (Ed.): Ökologische Industriepolitik – Wirtschaftswissenschaftliche und Politikwissenschaftliche Perspektiven. Dessau-Roßlau: Umweltbundesamt.

[18] See Cosbey, A. 2007: Trade and Climate Change Linkages. A Scoping Paper Produced for the Trade Ministers' Dialogue on Climate Change Issues. Meeting Held in Conjunction with UNFCCC COP 13, Kyoto Protocol MOP 3, Bali, Indonesia, 8-9 December 2007, 5.

[19] See Barton, J.H. 2007: Intellectual Property and Access to Clean Energy Technologies in Developing Countries. An Analysis of Solar Photovoltaic, Biofuel and Wind Technologies. ICTSD Trade and Sustainable Energy Series Issues Paper, No. 2, xii; Mytelka, L. 2007: Technology Transfer Issues in Environmental Goods and Services. An Analysis of Sectors Relevant to Air-pollution and Renewable Energy, ICTSD Trade and Sustainable Energy Series, No. 6, Geneva: International Centre for Trade and Sustainable Development.

[20] Kemp, R. and S. Pontoglio 2007: Methods for Analyzing Eco-Innovation. Report of the Second MEI Workshop, 21-22 June 2007, Brussels.

[21] On the approach of the European Commission, see e.g. the ETAP (Environmental Technologies Action Plan) website (http://ec.europa.eu/environment/etap/index_en.htm)

[22] On technology forcing, see Jänicke, M. 2008

- Employing "market pull" instruments in order to accelerate diffusion of eco-innovations and, ideally, to create lead markets.[23] To help these lead markets to develop, instruments such as support for the market introduction of new eco-friendly goods and services, and green public procurement, should be taken into consideration. As we have seen, governments are themselves substantial consumers and so can use their buying power to induce eco-innovation by purchasing low carbon goods and services.

These drivers for eco-innovation should form part of a coherent strategy. A wide variety of factors is important in fostering eco-innovation; many of them are trade-related and so trade policy should also form the focus of EIP.

At the same time, national trade-related measures and efforts to arrive at international agreements on trade-related initiatives to combat climate change are not the only contributions EIP can make. EIP should identify and exploit the win-win opportunities in the interface between climate change and trade, as well as help reframe the broader debate on trade and the environment as described above. This will benefit these two areas and also EIP itself, raising its profile and improving its position in the struggle for limited resources in the political arena.

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[23] See Jänicke, M., ibid.

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KYOTO, POST-KYOTO AND THE WTO

by Malena Sell, ICTSD

The debate on the interface between trade and climate change has evolved tremendously over the last few years. From being a mostly academic debate among experts, it now engages a wide range of policymakers and has reached the public as well.

Background and Policy Context

In terms of the policy context, there is today wide recognition that action to address climate change will have significant trade and development implications, warranting interventions not only in the environment arena, but also efforts on other policy fronts.

There is also convergence that while the solution to climate change will have to be first and foremost sought in the UNFCCC (United Nations Framework Convention on Climate Change) and other climate policy processes, trade and trade policies could offer part of the solution. The Bali Action Plan sets the stage for a process of negotiations towards reaching a global agreement for long-term cooperative action on climate change, with the objective of concluding those negotiations in 2009. In that context two fundamental questions arise:

1) How can trade policy and trade policy instruments contribute in the global effort to reach a post-2012 agreement on climate change?

2) Beyond 2009, what trade policy tools and instruments can support long-term action on climate change mitigation and adaption as policy processes towards further reform of the international trade system take place?

Global Energy Use and Future Scenarios

In order to address these questions, this paper begins with a brief look at the global energy landscape and emission scenarios.

It is clear that despite an increased share of renewables in the energy mix, fossil energy will remain the dominant energy source until 2030. This is the case in both the Reference and the Alternative Policy Scenario[24] of the International Energy Agency (IEA). Fossil fuels are projected to account for 83% of the overall increase in energy demand between 2004 and 2030. The share of biomass falls marginally, as developing countries increasingly switch to using modern commercial energy, offsetting the growing use of biomass as feedstock for biofuels production and for power and heat generation. Non-hydro renewables – including wind, solar and geothermal – grow the quickest, but from a small base.

According to IEA projections, CO_2 emissions are to stabilise in OECD countries but will increase in non-OECD in the reference scenario, and also under the alternative policy scenario, which provides the 'best-case' option for the world. In terms of policy changes under the alternative policy scenario, demand-side measures represent the largest contributor the emissions reductions.

[24] The IEA has developed two alternative forecasts to predict the evolution of the global energy system up until 2030. The 'Reference Scenario' entails business as usual, while the 'Alternative Policy Scenario' outlines an energy future in which governments significantly strengthen environmental and energy security policy.

Biofuels is a controversial source of renewable energy that has garnered significant attention, including on the trade front. The share of biofuels in road transport fuel consumption is set to increase in all regions of the world.

In conclusion, the energy sector will remain the main source of greenhouse gas (GHG) emissions with future increases originating in developing countries. Therefore, energy will be a central aspect of climate change mitigation where policy intervention is likely to concentrate.

The Linkages between Trade and Climate Change

The Kyoto Protocol to the UNFCCC calls for action including in the following areas:

Enhancement of energy efficiency; protection and enhancement of sinks and reservoirs of GHG, promotion of sustainable forest management practices, afforestation and reforestation; promotion of sustainable forms of agriculture in light of climate change considerations; development and increased use of new and renewable forms of energy; progressive reduction or phasing out of market imperfections and subsidies in all GHG emitting sectors.

Several trade rules and agreements come at the intersection of these policy interventions. The trade-related climate policies generally fall under three categories: Regulatory measures; fiscal measures; market-based and incentive measures. Examples of policies within the three areas include: energy-efficiency standards, carbon taxes, and market access for low-carbon goods and services, respectively.

Trade competitiveness has emerged as a major debate in the trade-climate interface. The debate centres on trade and carbon leakage, as climate policies may lead to loss of competitiveness for certain energy-intensive and trade-exposed industries in mitigating countries, vis-à-vis their international competitors. There is also significant discussion around carbon labelling and export competitiveness, since there is a rise in initiatives seeking to label the carbon footprint of internationally traded agricultural products. These may negatively affect exports of poor countries (as has been the case with regard to ‘food miles’ and air-freight labelling). On the other hand, product differentiation can act as a positive driver for innovation, and can provide new niches also for developing country exporters.

Another recent discussion is that on carbon embodied in internationally traded goods and the global carbon accounting system. In 2004, net exports from China accounted for 23% of its total CO_2 emissions (the equivalent of Japan's total CO_2 emissions, and more than double the UK's emissions in that year.[25]

All these issues raise fairness and equity concerns that may trigger use of (unilateral) trade policy tools in the search for solutions.

Using Trade Policies to Achieve Climate Change Objectives

Reduction of emissions from energy generation and use are critical, but agriculture and forestry also offer a big mitigation potential. ICTSD has developed a conceptual framework for linking mitigation/adaptation strategies with economic/trade-related policy instruments, summarized in the following table.

[25] See Wang, T. and J. Watson 2007: Who Owns China’s Carbon Emissions? Tyndall Briefing Note, No. 23, October 2007, 1-7, accessible at: http://tyndall.webapp1.uea.ac.uk/publications/briefing_notes/bn23.pdf.

Table 1: Conceptual framework for linking mitigation/adaptation strategies with economic/trade-related policy instruments

Example of mitigation/adaptation strategy/options	Example of economic/trade-related instruments	Opportunities and Issues
A) Improved supply and distribution efficiency	• Energy/fuel efficiency standards • Market creation for efficient products • Financial incentives • Carbon/energy taxes • Harmonisation of standards	• Markets expanded for clean/efficient technologies • Rapid technology deployment • Product differentiation/process and production methods (PPM)/ classification issues • Production/market distortions
B) Renewable energy development	• Incentives for R&D • Producer incentives • Market creation for clean energies • Carbon/energy taxes	• Markets expanded for clean/efficient technologies • Rapid technology deployment • Product differentiation/PPM/ classification issues • Production/market distortions
C) REDD[26] and agricultural emissions/sinks	• Incentives for afforestation, reforestation, reduced deforestation • Incentives for climate-friendly agricultural practices • Market creation for sustainable agricultural/forestry products	• Markets expanded for sustainable agricultural products • Product differentiation, PPM and classification issues • Production/market distortions
D) Technology development and transfer	• Incentives for innovation • Indicators of technology development and transfer • Gradual phasing out of GHG emitting products & technologies • Intellectual property	• Markets expanded for clean/efficient technologies • Rapid technology deployment • Intellectual property protection
E) Diffusion of low carbon goods & technologies	• Market creation for low carbon goods and technologies • Financial incentives	• Markets expanded for clean/efficient technologies • Rapid technology deployment • Product differentiation/PPM/ classification issues • Production /market distortions
F) Leakage	• Sector-based incentives/ disincentives • Import/export carbon/energy taxes	• Mitigation across key emitting sectors • Production/market distortions

[26] Reduced emissions from deforestation and forest degradation.

In general, the international trade system operates through three main channels: regulating, rewarding/incentivizing, and arbitrating. Examples of the three types of functions include, for regulating, setting rules for energy subsidies, standards and labelling, as well as taxation. In terms of rewards and incentives, there is the possibility of providing preferential market access for low carbon goods and services, and for positive discrimination favouring clean sources of energy. In terms of arbitrating, the WTO has a strong Dispute Settlement Mechanism, and measures that countries are contemplating, such as border tax adjustments, could be tested through that system. As the legality of various forms of carbon barriers is less than clear, WTO Members would have the option of challenging them at the WTO – an option that does not exist within MEAs (multilateral environmental agreements) or other multilateral regimes at present.

Potential Contributions from the Trade System in the Lead-Up to 2012

All of the trade policy tools discussed in the section above can potentially be harnessed to support climate change policy interventions. Timing and sequencing, as well as political developments will be key issues in this regard.

In the short term, leading up to 2012, the focus could be on existing opportunities in the multilateral trading system for addressing climate change. These include liberalisation of environmental goods and services, including biofuels, in the ongoing Doha Round. In fact, the EU and USA presented a joint proposal in this regard to trade ministers in Bali in December 2007. However, WTO Members have yet to agree among themselves on how to move this mandate forward. Developed countries have clear export interests in this area; emerging economies increasingly so as well. Many developing countries are more interested in ensuring the policy space to build up industries in this area for future, or in exporting "environmentally preferable products" – potential also biofuels such as ethanol, which are currently not on environmental goods and services lists being circulated.

Agricultural reform within the Doha Round also offers the potential of concrete climate benefits already in the short term. Cuts envisioned would lead to reductions particularly in subsidies currently targeting high-intensity industrial agriculture with negative side effects for the climate.

These opportunities inherent in the Doha Round could thus be implemented in parallel with the policy options outlined in the section above.

Potential Medium and Longer-Term Contributions from the Trade System

In addition to measures to support the effort to tackle climate change in the short term, there is scope for considering and implementing various policies with bearings on trade in the medium and long term.

Issues already on the table – which need well thought out and long-term implementing strategies – relate to technology innovation, transfer and diffusion. Here, the multilateral trading system can be harnessed. A range of technologies needed for mitigation and adaptation to climate change have already been identified. These include technologies needed for observation and monitoring of climate change, technologies for mitigation (e.g. energy efficient and renewable energy technologies, energy efficiency transportation technology; energy and material saving building and construction technologies, low-emission technologies for agriculture and animal husbandry etc.) and technologies for adaptation (e.g. water-saving, water capture and water reuse technologies, agricultural biotechnology,

disease and pest control technology, flood, drought, sea level rise, agricultural disasters, and desertification control technologies).

Trade liberalisation, while a key driver, is an insufficient driver for the diffusion of the knowledge and technologies that will be required, especially in developing countries, to mitigate and adapt to climate change. Several barriers to access to these technologies have been identified. Legal and policy measures have an important role in the transfer of technology, even as technology is largely transferred by the private sector. A range of economic and trade-related instruments provide opportunities for multilateral action to promote climate-relevant innovation and technology transfer, providing an 'enabling environment'.

Through its overarching Agreement on Trade Related Intellectual Property Rights (TRIPS), the WTO helps govern frameworks for encouraging innovation and diffusion of new climate-friendly technologies – if the right balance between private and public rights is struck. Intellectual property rights have long been a tool to promote innovation and the dissemination of new ideas and inventions. Nevertheless, in some cases the excessive scope or level of protection of intellectual property rights in fact provides a disincentive for further research and development, as well as an obstacle to access to the protected knowledge by the broader public. Therefore, a balance will need to be achieved between patents and access to climate-related technologies.

Intellectual property is not necessarily the bottleneck for the present generation of technologies. This may change as new technologies are developed, and a better understanding is also needed on a sector by sector and technology by technology basis. Under the Montreal Protocol, the technology funds included money to pay for the necessary licensing fees.

Other options within the realm of the WTO include developing disciplines on climate/energy standards, as well as on fossil fuel subsidies. Existing subsidies supporting fossil fuels still need to be phased out, in accordance with the Kyoto Protocol objective of progressive reduction or phasing out of market imperfections and subsidies in all greenhouse gas emitting sectors. Current WTO rules set out the parameters for subsidies that affect trade, as well as for standards and labelling. Some have called for efforts at the WTO (in a potential future round) to phase out harmful energy subsidies, along the lines of the current Doha Round negotiations targeting subsidies in the fisheries sector that lead to overexploitation of fish stocks globally.

In order to develop a comprehensive and coherent strategy at the interface between trade and energy – spanning trade in energy itself, in energy-related technologies, energy subsidies, standards, labelling, technology transfer and innovation – the crafting of policies or even a new legal instrument may be necessary. This future instrument could potentially be located within the WTO framework. Alternatively, it could be negotiated within the UNFCCC framework and accommodated and adjusted for within the WTO and regional trading arrangements.

On the agricultural side, subsidy reform could go much further than under the current Doha round, while certain climate-friendly subsidy regimes could be developed and shielded from challenge.

Concluding Remarks

In conclusion, trade instruments will only be a part of a broader package of interventions to address climate change. Important considerations to keep in mind are that action on the trade front should prioritise multilateral solutions as opposed to unilateral measures. Equity and fairness concerns need to be given due consideration in the use of trade policy tools to achieve climate change objectives.

Finally, trade liberalisation needs to be accompanied by other policy interventions such as technology transfer, technical assistance and considerations of domestic concerns – trade liberalisation alone may not be sufficient to drive global diffusion and adoption of climate-friendly technologies.

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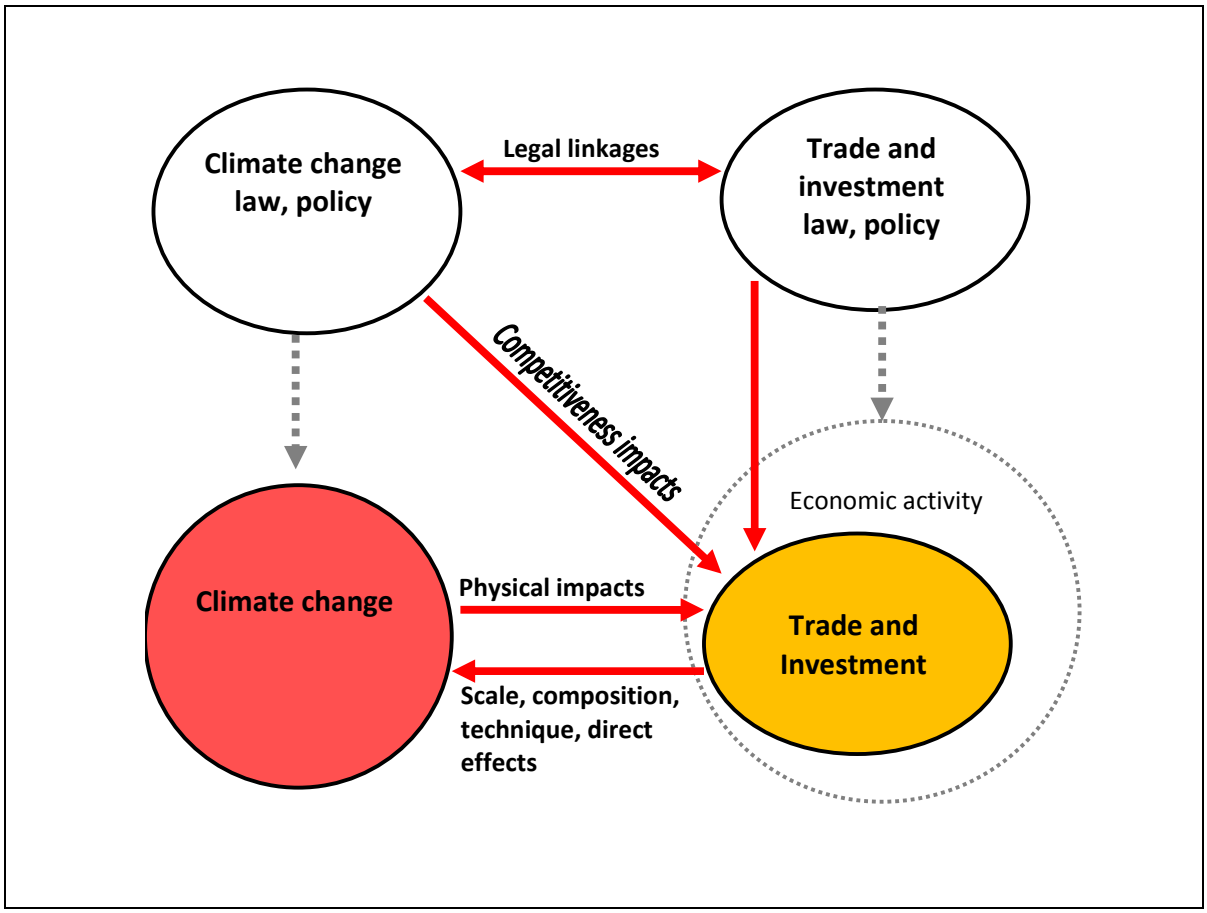
CLIMATE CHANGE, TRADE AND COMPETITIVENESS

by Aaron Cosbey and John Drexhage, IISD

The issue of climate change and its implications for trade and competitiveness is still at a fairly nascent stage with the scope of the issue itself still being defined. As the diagram below (Figure 1) illustrates, there are at least four different considerations to take into account when addressing the broader issue of trade and climate change. One set of considerations addresses the issue of legal linkages between climate and trade investment law and policy. There has been a fair bit of attention on this issue, typically focused on the legal relationship between the Framework Convention on Climate Change and the Kyoto Protocol to the GATT and WTO agreements. Another area not nearly as much considered but certainly an important component in the climate change – trade discussion relates to the impacts of climate change on trade capacity, particularly vulnerable developing countries which are reliant on primary exports, such as in agriculture, for their economies. In the same vein, climate change impacts on trade-related infrastructures, such as ports and transport routes, is predicted to be significant. Yet another area is the complex array of environmental effects that come from the economic impacts of any change in trade and investment law or policy. Trade liberalization, for example, can increase efficiency, reducing the resources used and wasted in production (technique effect); it can increase wealth, meaning increased amount of total production and associated GHG emissions (scale effect); and it can alter the composition of any given economy toward more or less GHG-intensive sectors (composition effect). Trade itself also has direct impacts, such as those related to transport of traded goods.

Figure 1: Considerations reflecting the issue of trade and climate change



Finally, of course, we have the issue of competitiveness and typically when there are discussions of trade and climate change, it is usually first understood in the context of impacts on competitiveness. And there are at least three components to the competitiveness issue – the first, I'll refer to as the non-Annex B or 'free rider' problem, in which the concern is that implementation by Kyoto Parties included in Annex B to the Protocol (covers, with the exception of the US, OECD, Eastern European countries, Russia and the Ukraine) to meet their mitigation commitments will put their economy at a disadvantage when compared to other major economies who have no such constraints. Typically this argument is expressed most pointedly with respect to non-implementation of the Kyoto Protocol commitments by the US, and to the lack of quantitative commitments by large developing countries under Kyoto.

The second problem, hereinafter the 'implementation problem' (and not extensively addressed in this paper) is that Annex B Parties may create unfair competitive advantages for domestic industry by the manner in which they implement their Kyoto commitments. This argument has been considered most prominently in the context of the EU, where a highly integrated market spans countries that have the flexibility to elaborate very different national plans for allocating their emissions reductions.

A third type of competitiveness problem is not dealt with in this paper. Even under similar targets for action on climate change, and even given a harmonized approach to implementation, the firms of some countries may still suffer more than those of other countries. For example, a country that has in the past pursued aggressive targets for energy efficiency, or that has a preponderance of energy generated from clean sources, will have a much tougher time meeting a given target for emissions reduction than will a country with a large amount of relatively mitigation opportunities available. As negotiations intensify on a post-2012 regime for addressing climate change, research on this aspect of competitiveness will be increasingly important, particularly with respect to defining "comparable efforts" among developed countries (and other major economies but it should be noted that the Bali Action Plan only refers to comparable efforts only with respect to developed, or OECD, countries) in setting targets and implementing policies to meet those targets.

As a first-order task, we should define what we mean by competitiveness. Too often the term is applied to nation-states as if they were in some sort of grand contest one against the other. A recent literature survey on competitiveness and regulation, using fairly standard language, defines international competitiveness at the country level as 'the success with which a country […] competes against overseas counterparts'.[27] Krugman and others, however, have argued convincingly that competitiveness at the level of the nation-state has little meaning, as distinct from simple productivity.[28]

Krugman argues this case by showing that over the last half-century standards of living in major economies have been almost entirely determined by domestic productivity, as opposed to terms of trade (the relative prices of imports and exports for an economy – an indicator of how productive a country's firms are relative to those of other countries). He explains this by noting that the overwhelming majority of production in those economies is for domestic consumption, and not for international markets. More fundamentally, he notes that the economic success of one country does not necessarily come at the expense of others; there is no zero-sum contest between nations, played out in trade flows and investment. Productivity growth in China, for example, means cheaper inputs for OECD manufacturers, cheaper consumer goods, and stronger Chinese demand for OECD exports.

[27] SQW Ltd 2006: Exploring the Relationship between Environmental Regulation and Competitiveness. Literature Review. Report prepared for the Department for Environment, Food and Rural Affairs, UK. London: SQW.
[28] See Krugman, P. 1994: Competitiveness. A Dangerous Obsession. Foreign Affairs, Vol. 73, No. 2, March-April, 28-44.

Where productivity growth in China, may have impact, however, is at the firm or sectoral level. Here it can be simply defined as capture of market share – a state that is maintained in a dynamic contest among firms. Hence the appropriate question to be explored in this paper is: *how will the implementation of the Kyoto Protocol affect the competitiveness of the Parties' firms or sectors?* Three scenarios are possible as manifestations of this type of concern:

- Regulated firms will simply migrate to jurisdictions where the regulations are less stringent or in the case of climate change, effectively non existent;
- New investment, either domestic or foreign, will tend to flow to those jurisdictions that are less stringently regulated;
- Firms that do not migrate away from stringently regulated jurisdictions will suffer a loss of market share (either domestic or international) to their less-regulated competitors.

In the climate change context these concerns are commonly characterized as concerns over potential *leakage* – the chain of events whereby greenhouse gas-producing activity simply shifts from a regulated jurisdiction to an unregulated (or less stringently regulated) one. To argue that competitiveness needs to be considered at the firm or sectoral level is not to deny that it can be significantly affected by the actions of home states. Governments have an important role to play in fostering an environment in which domestic firms can successfully compete against their foreign counterparts, both in the proper elaboration of climate change related policies and more broadly in achieving such basic prerequisites as macroeconomic stability, and conducive legal and bureaucratic regimes. As such, though we will view competitiveness through a sectoral- or firm-level lens, any findings on competitiveness so defined are clearly relevant to government policy-making at the national level, and may have international-level implications as well.

Given such a framework for analysis, this paper does not consider a number of costs and benefits that manifest at the national level, rather than at the sectoral or firm level. Most important, this analysis will not consider the side benefits that may accrue from measures designed to constrain carbon emissions, such as associated air quality effects. These sorts of benefits are significant; the recent Stern Review makes the case that such benefits – including energy security, health benefits from improved air quality, reduced consumer spending on energy, increased efficiency of production, increased innovation and reduced deforestation – will often outweigh the cost of mitigation actions.[29] As such, policy-makers clearly need to consider such benefits when crafting climate change policies and policies in other related areas. But they are not a part of the competitiveness debates *per se*. Calculating competitiveness impacts should thus be understood as only one part of a larger exercise of considering the social welfare costs and benefits of action on climate change.

But back to the 'non-Annex B' or free rider issue. Despite the fact that we often hear, loudly and clearly, from many in industry that stricter environmental regulations will work to both reduce market share and negatively impact on new and additional investments, the fact is that rather extensive studies agree that more traditional environmental regulations have had typically moderate impact on industries with more stringent regulations, but that in some cases there have been significant impacts. Where those impacts have occurred, the findings are that the specific characteristics of the sector or firm tend to be much more significant to that result than the stringency of environmental regulations.

[29] See Stern, Nicholas 2006: Stern Review on the Economics of Climate Change. London: Her Majesty's Treasury.

Along these same lines, a recent Carbon Trust analysis[30] outlines three variables that together serve as a useful screen for assessing the competitiveness impacts of climate policy in any given sector:

(1) Energy intensity: The more energy a sector uses in its production process, the more it will be vulnerable to price increases. Under any implementation scenario, energy prices will increase. In a sector such as aluminium, for example, where on average energy comprises about a third of the cost of production, the potential exposure is obvious.

(2) The ability to pass cost increases along to consumers as increased price of the sector's final product: This ability depends fundamentally on the availability of substitutes, either in the form of other goods that satisfy the same needs, or in the form of production from foreign firms in the same sector. So transport costs are important, as is the global nature of the product's market.

At the firm level, as opposed to the sectoral level, the degree of domestic competition is also important; other things being equal, the more monopoly power, the better able a firm is to pass along cost increases in the form of increased prices. The nature of the good in question also matters; is it a luxury good of which consumers will buy more when prices decrease, or is it a staple that will be bought in relatively steady volumes regardless of price?

(3) Opportunities for abatement: Firms or sectors in which there are ample unexploited low cost opportunities for abatement obviously have an advantage over those where there is no 'low-hanging fruit' (either because it has already been harvested, or because the state of technology is not well advanced). Porter and von der Linde, elaborating what has become known as the 'Porter hypothesis', argue that, at least in some sectors and some firms, these opportunities are potent enough for the net effect of tighter regulations to be actually positive in terms of competitiveness.[31]

This all said, we must keep in mind that what isn't as clear, though, is what the impacts might be on industry when we are dealing with a much more ubiquitous and 'central' element to energy and production such as carbon. There has to date been much speculation, but very little empirical research on this, since, when it comes to climate change mitigation, we have yet to actually come to a point where industry anywhere, even in Europe, has yet to have had significant restrictions on their operations beyond business as usual activities or over and above their competitors.

Assuming, however, that we will be venturing into a post 2012 climate change regime where mitigation commitments will have enough of an impact that 'free riders' will become a concern there are 2 broad solutions. The most preferable and probably most effective one would be to ensure that all major economies take on "comparable" efforts and/or targets to reduce their greenhouse gas emissions or implement global sector wide agreements for particularly vulnerable industries such as aluminium. The problems here though are not easily solved. First and foremost, there is the huge political challenge in getting major developing economies to agree to take on any commitments any time in the near future, but even if they did, what exactly, would "comparable effort" look like between developed and developing countries, particularly at the sectoral or firm level, and would it be sufficient to cover the competitiveness concerns of industry?

[30] See Carbon Trust 2004: The European Emissions Trading Scheme. Implications for Industrial Competitiveness, http://www.carbontrust.co.uk/Publications/publicationdetail.htm?productid=CT-2004-04&metaNoCache=1 (accessed 12 July 2008)

[31] See Porter, M. and C. von der Linde 1995: Green and Competitive. Harvard Business Review, September 1995, 120–34.

Which brings us to the second broad set of solutions and here, of course, we are referring to domestic protective actions, whether in the form of Border Tax Adjustments (as promoted by France), compulsory allowance purchases (Lieberman-Warner Bill) or fuel standards (California). Of course, this is fraught with its own set of issues not the least of which is whether it would survive any WTO challenge. But even if it did, how would one calculate the "right" level of charges? Which countries would be subject such import duties?

In conclusion, as challenging as these issues are, we should not use them as a pretext for not beginning to take actions independent of where the rest of the world may be heading. In fact, as Sir Nicholas Stern reminded us, climate change action makes good economic sense, if properly designed. Early actions, his study concluded are required for environmental and cost effectiveness reasons. And the most effective means of addressing the "uneven playing field" issue is to put in place as soon as pragmatically possible, a global, robust trading system key which allows all players to significantly cut down on the costs of meeting their mitigation requirements.

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UNILATERAL CLIMATE POLICY AND IMPLICATIONS FOR TRADE POLICY

by Susanne Dröge, SWP

Introduction

Given the broad introduction on Kyoto, Post-Kyoto and the WTO and Climate Change, Competitiveness and Trade by Malena Sell and John Drexhage, this contribution focuses on two issues and narrows down the debate: First, the problem of leakage of emissions following unilateral climate policy measures. Second, the emissions trading schemes (ETS) as the major tool in addressing emissions from industrial production.

Why is unilateral climate policy an issue in a phase where we have new impetus for a global climate treaty under the United Nations Framework Convention on Climate Change (UNFCCC)?[32] During the last years, and based on the Kyoto Protocol, it has mainly been the EU pushing the idea of a very ambitious global climate policy, and at the same time implementing regional and national policy measures, regardless of the ratification status of the Kyoto Protocol.[33] However, recently the United States, New Zealand and Australia have also made moves towards emissions trading schemes at regional (US) and national levels. If further unilateral climate policies come into effect, there will be parallel regional emissions trading schemes around the globe. Of course there are plans to link these schemes in order to create a growing market for carbon at the international level.[34] However, it was already difficult to integrate Norway into the European ETS, according to DG Environment. This indicates that further linking of ETS will be a challenging task if there should be strict control of the validity of the traded certificates. And this again implies that one needs to be prepared to live in a world with different regional carbon prices for some time – regardless of what the UNFCCC will achieve in Copenhagen 2009 as a new global climate regime. Different regional carbon prices are creating incentives for production relocation and substitution of domestic products by imports. Both effects imply that there will be worries about loss in competitiveness and leakage of greenhouse gas emissions from national territory. Part of a global deal therefore should be to find remedies to equalise the carbon price differentials based on multilateral agreement, instead of unilateral measures. This is especially important if trade policy tools are considered as the allegation of acting in a protectionist way could be the major obstacle in achieving agreement at all.[35]

Unilateral Climate Policy: Evolving ETS

While the current ETS proposed at the US state levels and by US Senate Bills are not very ambitious, the proposal made by the European Commission on 23rd January 2008 for the EU ETS after 2012 foresees a stricter regime with full auctioning of allowances, a wider coverage

[32] This is laid out in the Bali Action Plan agreed at the UNFCCC 13th Conference of the Parties on 14th December 2007, see UNFCCC 2007: Ad Hoc Working Group on Long-term Cooperative Action under the Convention. Proposal by the President. Conference of the Parties, Thirteenth Session, Bali, 3-14 December 2007; FCCC/CP/2008/L.7/Rev.1, 14 December 2007, http://unfccc.int/files/meetings/cop_13/application/pdf/cp_bali_act_p.pdf (accessed 2 June 2008).

[33] See European Commission 2007: An Energy Policy for Europe. Communication from the Commission to the European Council and the European Parliament. COM(2007) final, 10.1.2007, SEC(2001) 12, Brussels: European Commission; European Commission 2008: Proposal for a Directive of the European Parliament and of the Council Amending Directive 2003/87/EC so as to Improve and Extend the Greenhouse Gas Emission Allowances Trading System of the Community. COM(2008) 30 final, 23.1.2008, Brussels: European Commission.

[34] See International Carbon Action Partnership – a European initiative to link emission trading schemes. http://www.icap-carbonaction.com/members.htm

[35] See World Bank 2008: International Trade and Climate Change. Economic, Legal, and Institutional Perspectives. Washington D.C.: The World Bank; Cosbey, A. 2007: Trade and Climate Change Linkages. A Scoping Paper Produced for the Trade Ministers' Dialogue on Climate Change Issues. Canada: International Institute for Sustainable Development.

of sectors as well as a lower and decreasing amount of total allowances.[36] For the energy-intensive industries, amongst them cement, steel, aluminium, and chemicals, there will be free allocation subject to a process until 2010 that should help identify the sectors that should be eligible. The future emission cap is supposed to be set and allocated at the EU level, although some new member states are opposed to this. Given this potential regional increase in prices for carbon, there are a number of issues for concern: (a) how to avoid negative competitiveness effects?, (b) how to avoid leakage?, (c) should trade policy tools be used to address both concerns? (d) what are the political costs of trade measures for climate policy purposes?

In order to address the leakage of emissions that could be a consequence of a stricter ETS, early drafts for the new directive included border measures like border taxes. This tool is no longer included in the current version, only the goal that leakage should be avoided is mentioned and that temporarily there should be free allocation of certificates to exposed industries. In 2011 the Commission plans to come up with a decision on which industries should be supported.

The challenge, not only for the EU but also for the overall multilateral climate policy regime under the UNFCCC is to put in place an effective carbon equalisation system to neutralise any distorting effects to the delivery of national climate targets caused by trade exposure.

Results of a Climate Strategies study[37] illustrate for the UK how energy-intensive industries would be affected by a carbon price of €20 per tonne of CO_2. The following chart (Figure 1) illustrates the effects by assigning to each sector on the vertical axis the potential value added which is at stake if the industries would have to buy their allowances. On the horizontal axis the share in GDP is illustrated, adding up to a total share of slightly more than 1%. Cement, basic iron & steel and refined petroleum are amongst the sectors with highest effects on production costs and the latter two have, besides pulp and paper a major share in GDP. The costs include indirect impacts from allowances bought by the electricity sector.

It is important to note that in all debates on carbon leakage we are talking about a very small set of sectors. The contribution of these sectors to the UK's GDP is only 1%.[38] However, these industries will suffer high costs from auctioning and they contribute considerably to CO_2 emissions. Being aware of which sectors we are talking about and their role in the economy puts into perspective the trade-and-climate debate in this field. The empirical findings offers some arguments in favor of solutions that on the one hand ease the cost pressure to a certain degree – without taking away innovation incentives – and on the other hand are clearly addressing leakage by working in all directions of trade flows. If the innovation incentive from carbon pricing should prevail, a benchmark is needed for each of these sectors. As suggested by Ismer and Neuhoff[39], a border tax that uses best available technology as a criterion for cost adjustments, both foreign and domestic suppliers could be among those producers that need to pay for their high emissions once they trade their products.

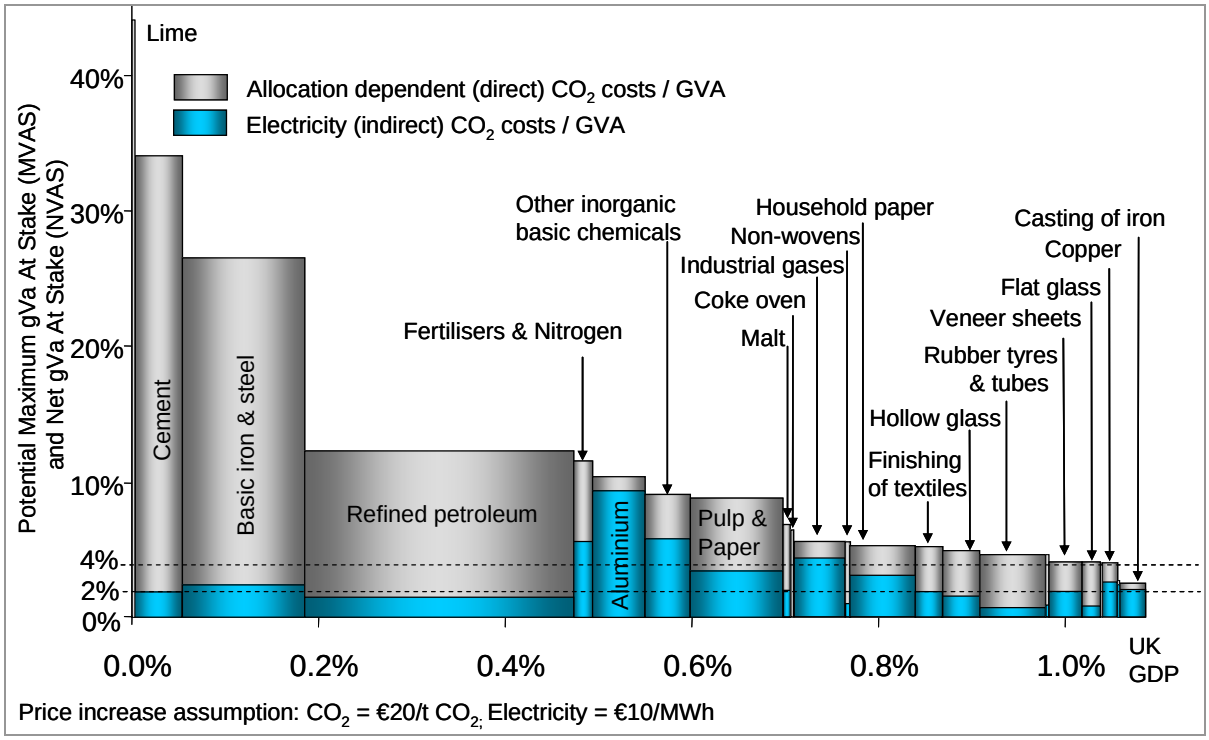
[36] See European Commission 2008: Proposal for a Directive of the European Parliament and of the Council Amending Directive 2003/87/EC so as to Improve and Extend the Greenhouse Gas Emission Allowances Trading System of the Community. COM(2008) 30 final, 23.1.2008, Brussels: European Commission.

[37] Hourcade, J.-C.; Demailly, D.; Neuhoff, K. and M. Sato 2007: Differentiation and Dynamics of EU ETS Industrial Competitiveness Impacts. Climate Strategies Report 2007, http://www.climate-strategies.org.

[38] A German study on the competitiveness effects of the EU ETS is in its final stage, commissioned by UBA to the German Öko-Institut.

[39] See Ismer, R. and K. Neuhoff 2007: Border Tax Adjustment: A Feasible Way to Support Stringent Emission Trading. European Journal of Law and Economic, Vol. 24, 137-164.

Figure 1: CO_2 cost screen: Sectors potentially exposed to unilateral CO_2 pricing in the UK



Source: Hourcade, J.-C.; Demailly, D.; Neuhoff, K. and M. Sato 2007: Differentiation and Dynamics of EU ETS Industrial Competitiveness Impacts. Climate Strategies Report 2007.

Beyond the European Union

The crucial dimension of the border adjustment debate lies beyond the EU. On the one hand, the US is very clear about border measures. In both Senate Bills (Lieberman/Specter; Warner/Bingaman) it is foreseen to demand from importers to buy emission allowances from a federal pool – not at the regional carbon market. While the EU makes its action against leakage dependent on the progress at the international level, the US proposals do not include this conditionality. Rather, if the national economic interest demands protection of industries, the measures are going to be part of the climate policy package, no matter what this implies for trade relations.[40]

One of the major points for the use of trade policy tools for climate policy packages is that if one wants to include at the international level cost adjustments, one needs to translate the concepts (e.g. allowances for importers) into the terms of the global trade system of the WTO. Border cost adjustments could be seen as border taxes, and there are many technicalities related to this. But according to lawyers and economists, technicalities and legality issues could be dealt with. The exemption in Art. XX GATT that allows trade measures if a global resource needs to be protected and if no other, less trade distorting measure is available, is being regarded as an option. Yet, this provision has not been tested for climate policy matters. In order to be tested, a WTO legal case would have to be initiated. The idea of adjusting costs from an ETS (border *cost* adjustment) is broader in character

[40] See Brewer, Thomas L. 2007: U.S. Climate Change Policies and International Trade Policies. Intersections and Implications for International Negotiations. Paper Prepared for a Seminar of the Georgetown University Center for Business and Public Policy, posted to www.usclimatechange.com on 27 November 2007.

than border *tax* adjustment (BTA) under the World Trade Organization (WTO). BTAs systems have been used for adjusting taxes like value added tax (VAT) following the destination principle. However, any unilateral policies would contradict the multilateral WTO approach of trade regulation. The unilateral approaches that are currently evolving, including the announcement of import tariffs against goods from Non-Annex I countries (of the UNFCCC) tend to deepen the trade-and-environment conflicts between developed and developing countries, and this undermines further the potential for finishing the Doha round of multilateral trade negotiations.

There are also other measures that could be taken for border cost adjustments, such as quotas or technical regulations and standards. But these are actually more difficult to implement than border taxes. Of course, besides using trade policy tools, the carbon leakage issue could be dealt with through free allocation of emission rights. This, however, could be seen as a subsidy which contradicts trade rules. Moreover, free allocation does not prevent leakage – industries could still decide to close down, sell the emission rights and import the emission-intensive parts of their production chain from countries with laxer carbon pricing. A third remedy could be sectoral agreements for the energy-intensive industries.[41] These will need long negotiations and a firm footing at the state level (as opposed to voluntary approaches) plus international agreement on how to handle standards and control of implementation. Especially Japan is pushing for sectoral agreements as part of a new global climate deal under the UNFCCC. All these considerations indicate that the measures that could address carbon leakage induced by a stricter EU ETS will not be easy to implement given the already existing complexities in the debates, especially in the debates on trade and climate policy.

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Ismer, R. and K. Neuhoff 2007: Border Tax Adjustment: A Feasible Way to Support Stringent Emission Trading. European Journal of Law and Economic, Vol. 24, 137-164.

[41] See Baron, R.; Reinaud, J.; Genasci, M. and C. Philibert 2007: Sectoral Approaches to Greenhouse Gas Mitigation. Exploring Issues for Heavy Industry. IEA Information Paper, November 2007. Paris: OECD/IEA.

Hourcade, J.-C.; Demailly, D.; Neuhoff, K. and M. Sato 2007: Differentiation and Dynamics of EU ETS Industrial Competitiveness Impacts. Climate Strategies Report 2007, http://www.climate-strategies.org.

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TRADE IN ENVIRONMENTAL GOODS AND SERVICES RELEVANT TO CLIMATE-CHANGE MITIGATION: OPPORTUNITIES AND CHALLENGES FOR NEW INDUSTRIES IN THE EUROPEAN UNION

by Mahesh Sugathan, ICTSD

Introduction

This paper draws upon some of the main findings and research commissioned by ICTSD as well as the World Bank on liberalizing trade in environmental goods and services and will discuss the implications of these findings in terms of opportunities and challenges for the EU industries and eco-innovation.

The paper will begin with a definition of the environmental industry as laid out by OECD and go onto describe the two broadly accepted categories of environmental goods – namely 'traditional environmental goods' and 'environmentally preferable products.' It will highlight the distinction amongst these with suitable examples of goods that would be relevant from the standpoint of climate change mitigation. It will then go on to describe why environmental goods has acquired particular significance now (given their inclusion within a separate WTO negotiating mandate at the Doha Ministerial Conference in 2001) as well as the potential benefits from liberalisation. It will then look at two sets of analyses – the first by the World Bank that gives an indication of the trade impacts of liberalizing 'climate-friendly' goods and the other by Dr. Veena Jha (for ICTSD) on the various drivers of environmental goods trade especially those that are not linked to trade policy and the emerging dynamic comparative advantage in these products. It will briefly touch on the importance of energy efficient products and refer to the complexities surrounding the discussion of energy-efficient products in the WTO environmental goods and services negotiations. This will be elaborated on in the next part of the paper that describes briefly the state of play in environmental goods and services negotiations at the WTO and the various issues and challenges that have arisen in this context. The paper will then conclude with the implications of these developments as well as research findings for the European private sector in terms of promoting eco-innovation as well ensuring wider access to 'climate-friendly' goods and services.

Definition and Classification of Environmental Goods and Services

Paragraph 31(iii) of the Doha mandate calls for a reduction, or as appropriate, elimination of tariffs and non-tariff barriers (NTBs) on environmental goods and services. The lack of a universally accepted definition on environmental goods and services has meant that trade delegates have struggled over the scope of goods and services that would be taken up for liberalisation. There have however been working definitions of the environmental industry including one developed by the Organisation for Economic Cooperation and Development (OECD) which defines the environmental industry as "activities which produce goods and services to measure, prevent, limit, minimise or correct environmental damage to water, air and soil, as well as problems related to waste, noise and ecosystems." Conceivably any good that would measure, prevent, limit, minimize or correct environmental damage would fall into these categories and the OECD also drew up an illustrative list of such goods and services for research purposes under three broad headings: pollution management, cleaner technologies and products, and resource management. The UN Conference on Trade and Development (UNCTAD) later also proposed the category of environmentally preferable products (EPPS) that were defined as "activities which produce goods and services to

measure, prevent, limit, minimise or correct environmental damage to water, air and soil, as well as problems related to waste, noise and ecosystems."

Drawing on these two definitions, it is conceivable to construct a broad two-fold categorization of environmental goods. The first category would include what may be called *traditional environmental goods* where the main purpose or the end-use of the product would be to remedy or address an environmental problem. However this is not to say that the product may not have other uses. It is conceivable that along with addressing an environmental problem the product might well have a non-environmental function as well. However environmental remediation or prevention of environmental damage would be a primary objective of the product. A good example is equipment to treat polluted water or a catalytic convertor. The second category would include that of *environmentally preferable products* (EPPs) where the primary purpose of the product is not environmental remediation or prevention. However, during the course of production, consumption or use or the disposal of the EPP, less damage is caused to the environment as compared to a substitute product that fulfils the same objective or purpose. Good examples would be steel produced with a carbon neutral process (environmental benefit during production) solar cars as opposed to gasoline driven cars (environmental benefit during use) and jute bags as opposed to plastic bags (environmental benefit during disposal). The important thing to note is that for every EPP there exists a substitute or 'like product' with a similar use that is not as environmentally friendly.[42]

With regard to environmental services which are being negotiated separately within the Council for Trade in Services, WTO Members are free to adopt their own classification approaches. Classifying environmental services as a category for WTO negotiations has been easier than pinning down the definition of environmental goods although overlaps may exist with other service categories that have an 'environmental end-use' such as construction services or consultancy services. There has not yet been any delineation of 'climate-friendly' services as a separate category and these may be captured by a whole range of environmental services from solid waste management to construction and engineering in addition to installation and repair services for environmental goods. Some existing environmental services such as 'cleaning services' for exhaust gases may also be relevant to climate change.

The Significance of Environmental Goods Negotiations at the WTO for Climate Change Mitigation

The definitional issue has certainly affected progress on trade liberalisation of these goods at the WTO. Prior to the Doha round any 'environmental goods' were subsumed within the broader framework of industrial and possibly (depending on interpretation) agricultural goods negotiations. What the Doha round did was to provide these goods with a distinct identity within the negotiations on liberalisation without defining what they were. The Doha mandate also calls for 'elimination' of tariffs and non-tariff barriers 'as appropriate'. Despite the lack of a definition a number of countries have proposed lists of specific goods they deem 'environmental' for liberalisation. A number of these products have included products and technologies such as wind energy equipment and solar panels that clearly have a role in climate change mitigation.

[42] See Claro, E., Lucas, N., Sugathan, M., Marconini, M. and E. Lendo 2007: Trade in Environmental Goods and Services and Sustainable Development. Domestic Considerations and Strategies for WTO Negotiations. ICTSD Environmental Goods and Services Series, Policy Discussion Paper. Geneva: ICTSD.

Both the Inter-governmental Panel on Climate Change (IPCC) as well as the Stern Review has highlighted the potential gains from trade liberalisation in clean technologies. The scope of goods that are included for accelerated liberalisation may be important from an eco-innovation perspective. This is because market expansion through the lower trade barriers will be an incentive for greater innovation in these goods to ensure continuing competitiveness. To the extent that trade in these products drives diffusion and access to cleaner energy technologies and sources and improvement of energy efficiency it can contribute positively to efforts at putting economies on a 'low-carbon' trajectory. Some experts[43] are of the opinion that it may be desirable to restrict the types of technologies that are included for trade liberalisation so that only the truly 'clean' technologies are included as opposed to only 'relatively' cleaner ones. From a climate perspective this would for instance imply granting full-liberalisation to solar panels or hydrogen fuel-cells that may produce zero emissions but perhaps not for technologies that only partially reduce emissions. As the following sections will show, within the context of WTO negotiations a number of products that could contribute to climate change mitigation have proved contentious despite their relevance to climate change mitigation. A good example is that of energy-efficient consumer products which are diverse and characterised by varying standards and relative efficiencies as well as continuous technological change.

The world EGS Market is estimated at USD 550 billion and of this the EU is estimated to account for one-third.[44] The most rapid rates of growth however are occurring in developing countries[45] and here opportunities may emerge through trade liberalisation for EU firms to tap local markets especially as tariff-protection is higher in the developing countries compared to the developed countries.[46]

Going Beyond Trade Policy: Recognising the Role of 'Non-Trade' Drivers in the Diffusion of 'Climate-friendly' Environmental Goods

However various studies show trade liberalisation alone may not be enough in terms of promoting wider diffusion and access of environmental goods and technologies, particularly in developing countries. There may require not only a flow of goods but also a flow of knowledge and know-how and the promotion of capacity building within developing countries.[47]

A study undertaken by Dr. Veena Jha for the International Centre for Trade and Sustainable Development has shown that a number of drivers other than tariffs may have a significant influence in determining the import demand for environmental goods and the extent to which they can be a major participant in environmental goods trade. Dr. Jha analysed, at the time of writing, the most recent list of environmental goods proposed for liberalisation in the WTO. These comprise a set of 153 products put forward by the so-called 'friends of environmental goods' comprising Canada, EU, Korea, Japan, New Zealand, Norway, Taiwan, Switzerland

[43] See Mytelka, L. 2007: Technology Transfer Issues in Environmental Goods and Services. An Analysis of Sectors Relevant to Air-pollution and Renewable Energy, ICTSD Trade and Sustainable Energy Series, No. 6, Geneva: International Centre for Trade and Sustainable Development.

[44] See ECOTEC (n.d): Analysis of the EU Eco-Industries, their Employment and Export Potential. A Final Report to DG Environment. Birmingham: ECOTEC Research and Consulting Limited. Accessible at http://ec.europa.eu/environment/etap/pdfs/ecotec_exec_sum.pdf.

[45] See Kennett, M. and R. Steenblik 2005: Environmental Goods and Services. A Synthesis of Country Studies, OECD Trade and Environment Working Paper, No. 2005-03, Paris: OECD.

[46] See Hamwey, R. 2005: Environmental Goods. Where Do the Dynamic Trade Opportunities for Developing Countries Lie? Cen2Eco Working Paper, December 2005. Accessible at http://129.3.20.41/eps/it/papers/0512/0512015.pdf.

[47] See Mytelka, L. 2007: Technology Transfer Issues in Environmental Goods and Services. An Analysis of Sectors Relevant to Air-pollution and Renewable Energy, ICTSD Trade and Sustainable Energy Series, No. 6, Geneva: International Centre for Trade and Sustainable Development.

and the US. Categories relevant to climate change in this list include 'Heat and Energy Management' (HEM) and 'Renewable Energy' (RE) as well as 'Solid Waste Management' products. In many categories of environmental goods, Dr. Jha finds that factors other than tariffs such as Gross Domestic Product (GDP), Foreign Direct Investment (FDI), enforcement of environmental regulations (shown by Environmental Performance Indices) and the number of bilaterally funded 'environmental' projects may be more important than tariffs in determining import demand. However within the categories of heat and energy management and renewable energy products of relevance to climate change mitigation, imports appear to be more sensitive to tariff reduction.[48]

The World Bank also conducted an analysis identifying relevant climate mitigation technologies within the proposed set of 153 goods and came up with a set of 43 products. These comprise a diverse set of products ranging from wind turbines and solar panels to water saving showers. Global trade in these products according to the Bank doubled from USD 67 billion to USD 119 billion from 2002 to 2005 with rapid growth in both imports and exports. However, this set of products is not exhaustive and does not capture many climate relevant technologies not included in '153' WTO list such as technologies that might be important to address emissions for instance from the agricultural sector. However for this limited set of products it was found that both maximum bound as well as applied tariffs were higher for developing countries.[49]

Dr. Jha's analysis finds that even those products that are sensitive to tariffs within the categories of 'heat and energy management' as well as 'renewable energy' cover only 26 of the 43 products in the World Bank's list. When assessing the role of other drivers in imports of goods in these categories Dr. Jha finds surprisingly that imports of products in renewable energy category are negatively correlated with level of GDP. This could be because with rising levels of GDP, developing countries build up their own capacity to produce these products. But imports of RE and HEM products are also positively correlated with improvements in environmental quality in the countries as measured by the general Environmental Performance Index (EPI) of countries. The EPI has been a developed by the Yale Center for Environmental Law and Policy, Yale University; Center for International Earth Science Information Network (CIESIN), Columbia University; in collaboration with the World Economic Forum, Geneva, Switzerland and the Joint Research Centre of the European Commission, Ispra, Italy.[50]

In general, high EPI ranking implies a better framework of implementation of environmental regulations, as well as better chances of attainment of environmental targets. Dr. Jha also finds a strong import correlation with technical assistance projects for 30 products in the World Bank list. Another interesting finding is that the top ten developing country exporters in the category of RE products are the same as the top ten developing country importers. Further China and Hong Kong together alone account for 50 percent of developing country imports and exports.[51] This implies the significance of Chinese production and demand in these goods particularly given the country's significance in global carbon mitigation efforts. However in projections until 2015 developing countries were found to have a declining comparative advantage in RE products while they were found to have an increasing comparative advantage in HEM products. However this is only applicable to a handful of

[48] See Jha, V. (forthcoming): Environmental Priorities and Trade Policy for Environmental Goods. A Reality Check. ICTSD Environmental Goods and Services Series, No.7, Geneva: International Centre for Trade and Sustainable Development.
[49] See World Bank 2007: Warming up to Trade? Harnessing International Trade to Support Climate Change Objectives. Washington DC: World Bank.
[50] See Jha, V. (forthcoming): Environmental Priorities and Trade Policy for Environmental Goods. A Reality Check. ICTSD Environmental Goods and Services Series, No.7, Geneva: International Centre for Trade and Sustainable Development.
[51] See Jha, V., ibid.

middle-income developing countries with a sufficiently well-developed productive and technological capacity such as China, Mexico and Malaysia.

As mentioned before the 153 list of products and consequently the baskets of products analysed by the World Bank and Dr. Jha does not include energy-efficient products because of the controversy involved in categorizing these as 'environmental goods' in the WTO negotiating context. This is despite the fact that much of the immediate savings needed for reaching climate change mitigation could come from energy efficiency according to the Inter-governmental Panel on Climate Change.[52]

Non-tariff barriers are also important. While, tariff removal according to the World Bank (2007) in four basic clean energy technologies (wind, solar, clean coal and efficient lighting) would result in a 7.2 percent increase in trade volumes, eliminating both tariff as well as non-tariff barriers would result in a 13 percent rise in trade volumes.

The World Bank[53] also quotes research by Hakura and Jaumotte[54] which states that trade serves as a channel for technology transfer for developing countries. However the main driver for tech-transfer is intra-firm trade which is less prevalent between developed and developing countries than inter-firm trade. Hence other approaches to technology access are important e.g.: investment, joint-ventures, licensing, development aid, temporary relocation of employees etc.[55] EU firms may be interested in looking at these various options so as to increase opportunities for collaboration with developing country firms.

Climate-Friendly Environmental Services

Analysis by OECD has pointed to the close synergy between trade in environmental goods and environmental services.[56] However, according to Jha[57] further analysis and data collection, especially related to environmental services FDI will be necessary to establish the extent to which trade in environmental services is also a driver of environmental goods imports. Jha states that initially services providers in developing countries may need to import various goods necessary for the delivery of the environmental service. However later, as the market for equipment and inputs associated with environmental services expands there will be an increase in the number of local suppliers as well as the sophistication of goods products they can offer leading to greater sourcing from within the country.

While environmental services negotiations have not focused a lot of attention on climate-friendly services it is undeniable that trade in services like designing and engineering for energy-efficiency (eg: buildings) may also be relevant as would installation and maintenance services for energy-efficient goods and technologies. It will be important from an eco-innovation perspective to thus focus not only on goods but also on services.

[52] See IPCC 2007: Summary for Policymakers. In: Climate Change 2007: Mitigation. Contribution of Working Group III to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change [B. Metz, O.R. Davidson, P.R.Bosch, R. Dave, L.A. Meyer (eds.)], Cambridge and New York: Cambridge University Press.
[53] See World Bank 2007: Warming up to Trade? Harnessing International Trade to Support Climate Change Objectives. Washington DC: World Bank.
[54] See Hakura, D. and Jaumotte, F. 1999: The Role of Inter- and Intraindustry Trade in Technology Diffusion. IMF Working Paper, No. 99/58. Accessible at http://ssrn.com/abstract=880585.
[55] See World Bank 2007: Warming up to Trade? Harnessing International Trade to Support Climate Change Objectives. Washington DC: World Bank.
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[57] See See Jha, V. (forthcoming): Environmental Priorities and Trade Policy for Environmental Goods. A Reality Check. ICTSD Environmental Goods and Services Series, No.7, Geneva: International Centre for Trade and Sustainable Development.

Developments in the WTO Negotiations on Environmental Goods and Services

So far WTO negotiations on environmental goods (EGs) have seen little progress mainly because of differing perceptions on *how to liberalise* i.e. the approach to liberalisation. Most countries that have submitted specific lists of environmental goods prefer a *list* approach whereby tariffs would be lowered and bound or eliminated for an agreed list of goods. Other Members, especially Argentina and India would prefer liberalisation for any product or service if it is intended for a pre-determined environmental project with the liberalisation extending for the duration of the project. The reasoning behind this approach is that most products proposed for liberalisation as environmental goods have 'dual-uses' i.e. they can be used for both environmental as well as non-environmental purposes. The project approach according to India and Argentina would ensure that these goods were imported only for truly environmental uses as identified by specific environmental projects. However opponents of this approach have also criticized this approach as being inconsistent with WTO rules and not offering sufficient predictability for exporters. Brazil has also informally proposed a 'request-offer' approach whereby Members could request liberalisation in EGs of export to them while offering liberalisation in EGs of export interest to other Members.

One of the other fundamental problems in negotiating liberalisation of environmental goods is the manner in which these goods are classified under Harmonised Classification System (HS) used in international trade. Goods at the level of six-digits usually have a harmonized six-digit customs code among all WTO Members. The 6-digit category itself may be dual-use in that may contain at a more detailed level both environmental goods as well as goods used for non-environmental purposes. At this more detailed level (at the 10 or 14 digit level) it may be possible to isolate certain goods used solely for environmental purposes such as pumps for sewage and wastewater treatment but then there is no common customs code to identify them at the border and hence at least similar descriptions of such products may become necessary. Further it may not be possible to differentiate goods produced in an environmentally friendly manner for instance for liberalisation as they would be physically similar and fall under the same harmonized 6-digit code. This is also the problem with energy-efficient consumer products. In these cases differentiating through some sort of labelling becomes the only feasible method if they are to be given preference by customs. Hence eco-products that are environmentally beneficial but otherwise physically similar to non-eco ones may find it hard to benefit from a trade preference at least through WTO negotiations. On the other hand certain products may intrinsically be 'dual-use' irrespective of where they fall within the customs classification. A good example is a pipe which can be used for transporting wastewater as well as petroleum.

From an eco-innovation perspective it might be useful if one is seeking accelerated liberalisation of new 'eco-products', to ascertain where they fall within the HS classification (and thus the levels of tariff protection they enjoy) and whether there may be a need to modify the HS system so as to capture such products within a separate category.

Within EG negotiations, Qatar has proposed in addition to the 153 products mentioned previously, natural gas fired generation systems and advances gas-generation systems. Qatar has cited their relative climate friendliness as an argument for their inclusion. In December 2007, the United States and the European Union informally proposed for liberalisation from this category of 153 products a set of 43 products that had been identified by the World Bank as relevant for climate mitigation. Zero tariffs by 2013 were proposed for these products. Brazil has also informally proposed biofuels and biofuel technologies but ethanol is classified as an agricultural good while biodiesel is classified as an industrial good. The question however is whether agricultural goods also fall within the scope of environmental goods negotiations? WTO Members still differ on this issue.

Other important issues within the context of EG negotiations is the issue of non-tariff measures such as standards which has yet to be discussed in a meaningful manner, the issue of financial assistance and access to technology for developing countries. With regard to intellectual property rights (IPRs) an ICTSD study undertaken by Professor John Barton[58] shows that IPRs in the three sectors wind, solar and biofuels were not generally a barrier to diffusion and competition, except for some instances in the case of wind-energy technologies. However in certain emerging renewable energy technologies such as in second-generation biofuels they had the likelihood of becoming barriers. In this regard the IPR policies of more advanced developing countries could have implications for foreign direct investment in emerging eco-product industries.

On environmental services negotiations that are taking place within a separate negotiating body (the Council for Trade in Services), there has been little progress although the EU is major *demander* on liberalisation. In their recent informal proposal the US and the EU have also included 'climate-friendly' services along with relevant environmental goods for liberalisation. However there is a need to clearly define 'climate-friendly' services for liberalisation. Many services relevant to climate mitigation will usually be classified by WTO Members as part of broader services such as engineering or consultancy rather than as an environmental service *per se*.

It is also clear that progress in other areas of WTO negotiations such as agriculture will be important for any breakthrough in negotiations on environmental goods and services.[59]

Conclusions and Implications for eco-innovation and access to 'climate-friendly' goods and services

The paper has drawn attention to some recent research findings with regard to drivers of trade in environmental goods as well as the issues surrounding EGS liberalisation at the WTO. What are the implications for eco-innovation and the challenges and opportunities for EU industries from these findings? These can be laid out as follows:

- EGS negotiations must 'tune into' the knowledge within 'climate' and 'development' communities and also trade analysis. There is also a need to 'mainstream' knowledge from technology identification work based on UNFCCC, Pascala-Socolow's work on 'wedges'[60], Stern and IPCC reports etc. This will enable the private sector to understand what really drives trade in climate-friendly products and other eco-products.
- Market expansion for EGS can encourage greater eco-innovation by EU companies. Joint-ventures with developing country firms may encourage local innovation efforts. However in terms of trade liberalisation proper specification and coverage of the correct products and services will be important.

[58] See Barton, J.H. 2007: Intellectual Property and Access to Clean Energy Technologies in Developing Countries. An Analysis of Solar Photovoltaic, Biofuel and Wind Technologies. ICTSD Trade and Sustainable Energy Series Issues Paper, No. 2, Geneva: ICTSD.

[59] See Claro, E., Lucas, N., Sugathan, M., Marconini, M. and E. Lendo 2007: Trade in Environmental Goods and Services and Sustainable Development. Domestic Considerations and Strategies for WTO Negotiations. ICTSD Environmental Goods and Services Series, Policy Discussion Paper. Geneva: ICTSD.

[60] See Pacala S. and R. Socolow 2004: Stabilization Wedges. Solving the Climate Problem for the Next 50 Years with Current Technologies. Science, Vol. 305, 13 August 2004, 968-972.

- Intellectual property (IP) has so far not found to be a major barrier in wind, solar and biofuel technologies according to Barton.[61] Where IP may be an issue, Mytelka[62] calls for the creation of a 'knowledge fund' where patent holders could deposit their patents of utility to developing countries.
- Trade liberalisation of EGS alone may not equate to greater imports or to widespread *diffusion* and *access*. It is fundamental to recognise the role of other drivers that would facilitate such diffusion and access including regulatory policies in potential EGS markets. The cost of such technologies and services would be important if demand particularly in developing countries is to take-off.
- The challenges of the EG negotiations particularly the proposals on the *project approach* highlight that even though many industries in the EU will regard trade liberalisation in environmental goods as an opportunity, many developing countries have expressed concerns regarding liberalisation impacts on their domestic industries. This is because most environmental goods proposed within the WTO negotiations also have other, non-environmental uses as well. EGS negotiations must be sensitive to 'development' related concerns such as those relating to impacts of liberalisation on fledgling small and medium sized enterprises and also offer market access opportunities for products from developing countries.
- Complementary measures need to include 'project-driven' technical assistance but also support to build domestic capacities and know-how. Flows of 'tacit knowledge' is equally important as the flow of goods. This will greatly contribute to creating sustainable markets for such products within developing countries.
- Government support to ensure widespread deployment of climate friendly eco-products will be important in addition to efforts by the private sector. There is a need to ensure that developing countries also benefit from such assistance and are not put at a competitive disadvantage. It is worthwhile to consider if the WTO will have a role in creating the proper incentives and disciplines for subsidies relevant to 'climate-change' mitigation.
- Multilateral and regional trading systems must also respond to new scientific, regulatory and policy developments on EGS and provide an environment conducive to innovation.

[61] See Barton, J.H. 2007: Intellectual Property and Access to Clean Energy Technologies in Developing Countries. An Analysis of Solar Photovoltaic, Biofuel and Wind Technologies. ICTSD Trade and Sustainable Energy Series Issues Paper, No. 2, Geneva: ICTSD.

[62] See Mytelka, L. 2007: Technology Transfer Issues in Environmental Goods and Services. An Analysis of Sectors Relevant to Air-pollution and Renewable Energy, ICTSD Trade and Sustainable Energy Series, No. 6, Geneva: International Centre for Trade and Sustainable Development.

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THE RELEVANCE OF WTO ACTIVITIES AND RULES IN THE CLIMATE CHANGE DEBATE

by Ludivine Tamiotti[63]*, WTO*

The issue of climate change, *per se*, is not part of the WTO's ongoing work programme and there are no WTO rules specific to climate change. However, WTO activities and rules are relevant to climate change because mitigation and adaptation measures may intersect with international trade in a number of different ways.

WTO Activities

There are clear interactions between trade liberalization and climate change: trade openness can help efforts to mitigate and adapt to climate change, for example by promoting an efficient allocation of the world's resources (including natural resources), raising standards of living (and hence the demand for better environmental quality) and improving access to environmental goods and services.

Also, trade opening may have an effect on greenhouse gas emissions, as, put simply, increased trade implies more production, more consumption and more transportation (and a corresponding increase in the use of fossil fuels). Trade economists have identified three key effects of trade liberalization on the environment: the scale, composition and technique effects. The "technique effect", pursuant to which trade can lead to improvements in energy efficiency, is particularly relevant in the context of the Doha negotiations on trade and environment: it reflects a key opportunity for trade to contribute to climate change mitigation by increasing the availability of climate-friendly goods.

In the on-going Doha Round negotiations, aimed at furthering trade opening, a number of aspects have a direct bearing on sustainable development and can therefore contribute positively to efforts to mitigate and adapt to climate change. For instance, Members are working on the liberalization of environmental goods and services (Doha Declaration, paragraph 31(iii)). The aim is to reduce or eliminate import tariffs and non-tariff barriers on environmental goods. These negotiations are seen by many as a potential immediate deliverable by the trading system for climate change mitigation efforts.

The goods discussed so far cover a number of key climate change mitigation technologies that could contribute positively to the fight against climate change. The recent report of Working Group III of IPCC identified a number of key mitigation technologies that have been discussed in the negotiating group on trade and environment, for instance: hydropower turbines, tanks for the production of biogas, solar water heaters, and landfill liners for methane collection. According to a recent World Bank study on trade and climate change, elimination of both tariffs and non-tariff barriers to clean technologies could result in a 14 per cent increase in trade.

WTO Members are also discussing ways to ensure a harmonious co-existence between WTO rules and specific trade obligations in various multilateral environmental agreements (MEAs) (Doha Declaration, paragraph 31(i)). Drawing from experiences in the negotiation and implementation of MEAs at the national level, negotiators are seeking ways to improve national coordination and cooperation in this respect. Such mechanisms may be central to

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the success of climate change mitigation and adaptation efforts undertaken at national and international levels.

Moreover, it is clear from the rules of the WTO and the UNFCCC that both regimes do not operate in "clinical" isolation (see *US - Gasoline*). First, Article 3.5 of the UNFCCC and Article 2.3 of the Kyoto Protocol provide that measures taken to combat climate change should not constitute a means of arbitrary or unjustifiable discrimination or a disguised restriction on international trade and should be implemented so as to minimize adverse effects, including on international trade, and social, environmental and economic impacts on other Parties. Moreover, WTO rules leave sufficient policy space to accommodate, under certain conditions, the use of trade measures to protect the environment.

At the inter-institutional level (Doha Declaration, paragraph 31(ii)), Members are also exploring ways of enhancing information exchange and cooperation between the WTO and MEA secretariats. Concrete elements are being discussed to improve or complement existing practices and cooperation mechanisms.

As well, WTO's regular work provides a platform for addressing the linkages between trade and climate change. The Committee on Trade and Environment can serve as an incubator for ideas to advance the trade and environment agenda and is the main gateway should Members decide to explore further the linkages between climate change and trade.

The Committee on Technical Barriers to Trade (TBT) also provides an important forum to discuss technical regulations adopted by governments to mitigate climate change. The climate change-related technical regulations discussed in the TBT Committee so far appear to principally concern product requirements. Examples of regulations discussed so far include: fuel economy standards for cars; eco-design requirements for energy-using products; energy efficiency programmes for consumer products and emission limit values for diesel engines.

WTO Rules

The WTO is also relevant because national measures to mitigate and adapt to climate change may have an impact on international trade (as they may modify conditions of competition) and may be subject to WTO rules. The WTO rules and jurisprudence (the WTO "tool box") can be relevant, therefore, to the examination of climate change measures.

The climate change challenge has fostered a broad array of measures that can be examined from the perspective of their key objective. Some measures aim at internalizing environmental costs by setting a price on carbon (e.g. carbon taxes, emissions trading schemes). Other measures intend to improve energy efficiency (e.g. standards and regulations, including labelling schemes, on energy consumption in the production process and energy efficiency of products). And finally, there are some measures aimed at facilitating the development of, and access to, renewable and cleaner technologies (e.g. subsidies for climate-friendly technologies and sources). In complement to the implementation of such domestic instruments, the possibility to introduce border measures aimed at offsetting the resulting competitiveness asymmetries and preventing carbon leakage has also been widely discussed in the literature (e.g. border tax adjustment).

The design of climate change measures will need to take into account the potential trade impact of these measures and the relevance of Members' rights and obligations under WTO rules. Broadly speaking, WTO rules and jurisprudence (the WTO "tool box" of rules) that relate generally to environmental issues (including GATT Article XX, the PPMs (processes

and production methods) issue, and the definition of a like product) are relevant to the examination of climate change measures.

The general approach under WTO rules has been to acknowledge that some degree of trade restriction may be necessary to achieve certain policy objectives as long as a number of carefully crafted conditions are respected; in other words, WTO jurisprudence has confirmed that WTO rules do not trump environment. In fact, WTO Members' autonomy to determine their own environmental objectives has been reaffirmed on a number of occasions (e.g. in US-Gasoline, Brazil-Retreaded Tyres). GATT rules and exceptions exist to ensure a balance between the right of Members to take regulatory measures, including trade restrictions, to achieve legitimate policy objectives (e.g. the protection of human, animal or plant life and health, and natural resources) and the rights of other WTO Members under basic trade rules. Since the entry into force of the WTO in 1995, the WTO dispute settlement body has had to deal with a number of disputes concerning such measures. Four disputes are particularly relevant: the US-Gasoline case (clean air), the US-Shrimp case (turtles), the EC-Asbestos case (human life and health) and the Brazil-Retreaded Tyres case (human, animal and plant life and health).

A number of WTO rules could be relevant to measures aimed at mitigating climate change, *inter alia*, disciplines on tariffs, the general prohibition of quantitative restrictions, the non-discrimination principle, rules on subsidies, rules on technical regulations, disciplines relevant to trade in services, rules on trade-related intellectual property rights.

As countries consider measures to address the climate change challenge, the trade and climate change regimes will come into closer contact. It is essential to ensure coordination and positive synergies between the two regimes. Needless to say that the best approach to such a global challenge is a consensual and international agreement on climate change.

LIKE-PRODUCTS, ENERGY STANDARDS AND LABELLING

by Roland Ismer[64], Ludwig-Maximilians-University of Munich

A. Introduction

Consensus seems to emerge between economists and legal scholars that although carbon pricing mechanisms are necessary, by themselves they cannot be the only tool for decarbonizing the economy.[65] Pricing mechanisms work best where the economics agents making their decisions are fully informed on the consequences of their actions. Yet, information is costly to attain. Thus, agents tend to make these decisions based on incomplete information. Furthermore, there may be insufficient incentives to invest where benefits will not be reaped by the investor, but by third parties, as is for example the case in landlord/tenant relationships. Moreover, economics agents are not necessary fully rational when making their choices, but are guided by social and institutional norms or may even be outright myopic.

Governments may employ voluntary or mandatory non-pricing instruments to overcome these deficiencies.[66] Private institutions may also – on their own or in co-operation with the government – provide voluntary instruments, whereas mandatory ones require some form of adoption by the state.[67] Of the non-pricing instruments, voluntary or mandatory energy labelling and regulation in the form of mandatory energy standards seem particularly noteworthy.

Energy labels show that a third party has determined that a product is in conformity with certain standards and thus uses less energy than other products in the same category.[68] They may thus help to mitigate information problems. They may also contribute to the establishing of a standard through its success on the market or serve as a precursor to eventual government regulation.

As an example for *voluntary labelling* by the government, a recent European Union Regulation (EC No 106/2008)[69] establishes the rules for the efficiency labelling programme for office equipment, the so-called Energy Star Programme. For products meeting the requirements of the label, programme participants may use the Energy Star logo on the products and on related promotional material. Compatibility with the US programme is ensured.[70] The role of the Energy Star programme also extends to government procurement, since the Community institutions as well as central government authorities, subject to a *de*

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[65] Stern 2007: The Economics of Climate Change. The Stern Review. Cambridge: Cambridge University Press, 377ff.

[66] Lübbe-Wolff 2001: Instrumente des Umweltrechts. Leistungsfähigkeit und Leistungsgrenzen. Neue Zeitschrift für Verwaltungsrecht (NVwZ), 2001, 481-493.

[67] Generally on labelling see Dröge 2001: Ecological Labelling and the World Trade Organization. DIW Discussion Papers, Discussion Paper No. 242, accessible at www.diw.de/documents/publikationen/73/38485/dp242.pdf (last visited 10 March 2008).

[68] This definition of labelling is similar to the one given by UNCTAD 1994. For further discussion of other types of labels cf. Dröge (Dröge 2001: Ecological Labelling and the World Trade Organization. DIW Discussion Papers, Discussion Paper No. 242, accessible at www.diw.de/documents/publikationen/73/38485/dp242.pdf (last visited 10 March 2008) who denominates as eco-seals the category that is referred to here as labels.

[69] Official Journal L39 of February 13, 2008, 1. The regulation replaces Regulation (EC) No 2422/2001. For another more comprehensive scheme see Regulation (EC) No 1980/2000 of the European Parliament and of the Council of 17 July 2000 on a revised Community eco-label award scheme, Official Journal L237 of September 21, 2000.

[70] Cf. Article 4 para. 4 of Regulation (EC) No 106/2008 and the agreement between the USA and the EC on the coordination of energy-efficiency labelling programs for office equipments, Official Journal L381of December 28, 2006, 26.

minimis threshold, shall procure only products that meet the specific energy requirements of the label.[71]

An instance for a *voluntary label offered by private institutions* is the EUGENE label for green electricity.[72] It seeks in particular to promote environmental additionality (i.e. the development of *new* green generation for which the consumers have not already paid).

In contrast, for household electrical appliances the EU has introduced *mandatory labelling*. Information relating to the consumption of electric energy, other forms of energy and other essential resources and supplementary information by these devices must be brought to consumers' attention through a fiche and a label.[73] The introduction of the labelling scheme for refrigerators for example is estimated to have delivered about one third of the 29% improvement in the energy efficiency of refrigeration products between 1992 and late 1999.[74]

Mandatory energy standards go beyond the mere provision of information. Rather, they prescribe that a particular energy efficiency target must be reached (performance standards) or even specify how that target must be reached (design standards). Standards can have two aims. Mostly, they are used to help in the diffusion of existing technologies. In particular, they aim at driving the least efficient products out of a mature market with a relatively slow rate of product evolution. An example for this are implementing measures based on the (framework) Eco-Design Directive that aim to improve the environmental performance of the energy using product throughout its life cycle.[75] Such implementing measures[76] may e.g. stipulate design requirements regarding energy consumption of a product. In a similar vein, though not limited to energy input, there is a discussion in the US to underpin the introduction of an emissions trading scheme with standards for the maximum carbon intensity of products such as steel.[77] Mandatory energy (performance) standards set for a fixed date in the future can also go beyond the mere diffusion of existing technologies and contribute to the development of new technologies. Examples would be situations where a product has predictable innovation potential through transfer of technology which already is employed in other goods or where a medium term innovation is demanded which requires big up-front investments such as the Californian emissions standards. To achieve the aim, governments may also grant a temporary monopoly for innovators.

Such measures need to be designed carefully. Labelling and standards create compliance costs, but they may also cause adverse effects. For example, it has been demonstrated that in certain circumstances the introduction of a labelling scheme may harm rather than benefit the environment.[78] Thus where demand increases for goods with the label the demand increase may offset any benefits from the more environmentally friendly production. Moreover, labels provide a possibility for market segmentation which might allow to serve consumers who have no preference for environmentally friendly products with a less clean product than before. Depending on the exact market structure, this may offset the benefit for

[71] Article 6 of Regulation (EC) No 106/2008.
[72] www.eugenestandard.org, last visited on March 10, 2008.
[73] (Framework) Directive 92/75/EEC of 22 September 1992, Official Journal L 297 of October 13, 1992, 16. For an overview of implementing rules cf. http://europa.eu/scadplus/leg/en/lvb/l32004.htm (last visited on March 10, 2008).
[74] Stern 2007: The Economics of Climate Change. The Stern Review. Cambridge: Cambridge University Press, 387.
[75] Directive 2005/32/EC, Official Journal L191 of July 22, 2005, 29.
[76] See e.g. Directive 96/57/EC, Official Journal L 236 of September 18, 1996, 36 for domestic refrigeration appliances, which is considered to be an implementing measure for the framework directive.
[77] Verrill 2008: Maximum Carbon Intensity Limitations and the Agreement on Technical Barriers to Trade, Carbon and Climate, Law Review, 2008, No. 1, 43-53.
[78] Bougherara; Grolleau and Thiébaut 2005: Can Labelling Policies Do More Harm than Good? An Analysis Applied to Environmental Labelling Schemes. European Journal of Law and Economics, Vol. 19, No. 1, 5-16; Mattoo and Singh 1994: Eco-labelling. Policy Considerations. Kyklos, Vol. 47, No. 1, 53-65; Melser and Robertson 2005: Eco-labelling and the Trade-Environment Debate. World Economy, Vol. 28, No. 1, 49-62; Morris 1997: Green Goods? Consumers, Product Labels and the Environment, London: Institute of Economic Affairs.

the environment from the changed consumption pattern by the environmentally minded consumers. However, dynamic aspects need to be taken into account as well: in an innovative market, labelling may allow environmentally minded consumers to support a more eco-friendly product initially. The product may then become the norm specification either through its success on the market or through government orders, which rely on the demonstrated feasibility of large scale market penetration.

Further grounds for caution towards labels and energy standards are warranted from a world trade perspective. The increasing use of such non-pricing instruments is not devoid of problems: developing countries in particular claim that these instruments promote "eco-protectionism" (or "carbon protectionism" for that matter), especially since the standards and labels are often set after consultation of domestic industry only.[79] Thus, it is hardly surprising that the issues of labelling and standards form the subject of an intense discussion at the WTO.[80]

The present paper aims to give an overview of the legal issues surrounding energy labelling and standards. For that purpose it will in the following, after a brief look at some basic concepts (B), be looking in more detail at world trade law restrictions regarding unrelated processes and production methods (PPMs) (C) and product-related PPMs (D). Section (E) takes a brief look at private-sector labelling, while Section (F) concludes.

B. Basic Concepts

I. Technical Regulations and Standards

For world trade law purposes, among the non-pricing instruments available to governments, one may distinguish between mandatory and voluntary instruments. In accordance with Annex I to the Agreement on Technical Barriers to Trade (TBT), a *technical regulation* – such as the implementing measures of the Eco-Design Directive – is a document which lays down product characteristics or their related processes and production methods, including the applicable administrative provisions, with which compliance is mandatory. The regulation may also include or deal exclusively with terminology, symbols, packaging, marking or labelling requirements with respect to the produce, process or production method. From this, three criteria may be derived for a technical regulation: the document must apply to an identifiable, though not necessarily expressly identified product. Second, the document must lay down in a positive or in a negative manner one or more characteristics of the product.[81] Third, compliance with the requirements must be mandatory.[82]

A *standard* for the purposes of the TBT Agreement is defined in Annex I of that agreement as a document approved by a recognized body, that provides, for common and repeated use, rules and guidelines or characteristics for a product or related processes and production methods with which compliance is *not mandatory* [emphasis added here]. However, it should be noted that when the present paper speaks of "Energy Standards", it does not follow the definition in the TBT Agreement; instead, Energy Standards are in the present paper understood as mandatory and thus qualify as technical regulations in the terminology of the

[79] For more details on the discriminatory effects of eco-labelling cf. WTO 1996: Report of the Committee on Trade and Environment. Background, Analysis, Discussions and Proposals, WT/CTE/1, Geneva: WTO.
[80] WTO 2004: Trade and the Environment at the WTO, Geneva: WTO, accessible at www.wto.org/english/tratop_e/envir_wto_e.pdf (last visited 10 March 2008), 18. For an application to electricity labelling cf. Dröge et al. 2004: National Climate Change Policies and WTO Law. A Case Study of Germany's New Policies. World Trade Review, Vol. 3, No. 2, 161-87, 166ff.
[81] Appellate Body Report, EC – Asbestos, paras. 67-69.
[82] Appellate Body Report, EC – Sardines, para. 180.

TBT Agreement.[83] Therefore, the EnergyStar would be a voluntary label in the terminology of the paper, but – because it is not mandatory – a standard for purposes of the TBT Agreement.

While technical regulations are exclusively in the domain of the government, standards (in the sense of the TBT Agreement) can also be set by private sector institutions. Regarding such voluntary private sector measures, the question arises to what extent they have to be in conformity with WTO law, which of course is addressed only to states.[84]

II. Measures Regarding Products versus PPMs

Moreover, it needs to be distinguished what the measures refer to: do they concern the products only or do they also refer to production methods? The definitions of both standards and technical regulations for the purposes of the TBT Agreement comprise products as well as production methods. Yet, referring to the negotiation history, the Appellate Body[85] and the majority of scholars[86] holds the view that the TBT Agreement[87] is applicable only for requirements with respect to the product itself and to so-called *product related PPM* (processes and production methods), i.e. those processes that impart a clearly distinguishing characteristic on the product. More revealingly, related PPMs are also known as incorporated PPMs. In theory, for products and product related PPMs, the obligations under GATT are also applicable ("different and additional"). Yet there are very few instances in which GATT creates further-reaching obligations.[88] Therefore, in the following, where the TBT Agreement is applicable, only the obligations under that agreement are discussed.

In contrast, production processes that do not impact on the product are commonly referred to as *non-product related PPM*. They are also known as unincorporated PPMs. Where non-product-related PPMs differ, the TBT Agreement is not applicable. There is an ongoing debate whether distinctions based on non-product related PPMs are prohibited by world trade law or at least should be outlawed. Especially developing countries support these propositions.[89] A focus for the debate have been proposals by the European Union to "favourably discuss" the trade implications of labelling based on a life-cycle analysis of a product, which typically takes into account the all aspects of the product's life cycle from raw materials to production methods, consumption and disposal. However, consensus has not

[83] The terminology used here follows Stern (Stern 2007: The Economics of Climate Change. The Stern Review. Cambridge: Cambridge University Press). Yet other terminology is used by Buck and Verheyen (Buck and Verheyen 2001: International Trade Law and Climate Change. A Positive Way Forward. Friedrich Ebert Stiftung Discussion Paper, http://library.fes.de/pdf-files/stabsabteilung/01052.pdf (last visited 10 March 2008) under whose definition standards can be mandatory or voluntary.

[84] On this cf. Chang 1997: GATTing a Green Trade Barrier. Eco-labelling and the WTO Agreement on Technical Barriers to Trade. Journal of World Trade Law, Vol. 31, No. 1, 137-159; Voland 2007: Verbraucherschutz und Welthandelsrecht. Munich: Beck and below at E.

[85] Appellate Body Report, EC – Asbestos, paras. 64 ff.; 71 ff.

[86] Chang 1997: GATTing a Green Trade Barrier. Eco-labelling and the WTO Agreement on Technical Barriers to Trade. Journal of World Trade Law, Vol. 31, No. 1, 147; Dröge 2001: Ecological Labelling and the World Trade Organization. DIW Discussion Papers, Discussion Paper No. 242, accessible at www.diw.de/documents/publikationen/73/38485/dp242.pdf (last visited 10 March 2008), 10f.; Joshi 2004: Are Eco-Labels Consistent with World Trade Organization Agreements? Journal of World Trade, Vol. 38, No. 1, 72f.; Marceau and Trachtman 2002: TBT, SPS, and GATT: A Map of the WTO Law of Domestic Regulation. Journal of World Trade, Vol. 36, No. 5, 811-881. Critical of this view e.g. Howse and Regan 2000: The Product/Process Distinction. An Illusory Basis for Disciplining ''Unilateralism'' in Trade Policy. European Journal of International Law, Vol. 11, No. 2, 249-289. Verrill (Verrill 2008: Maximum Carbon Intensity Limitations and the Agreement on Technical Barriers to Trade, Carbon and Climate, Law Review, 2008, No. 1, 46) argues that rules regarding maximum carbon content are regulated by the TBT Agreement.

[87] In contrast, the SPS Agreement, which generally overrides the TBT agreement where health and safety measures are concerned should in most cases not be applicable as the labels will generally not be of a sanitary or phytosanitary nature.

[88] See Pauwelyn 2002: Cross-agreement Complaints before the Appellate Body. A case study of the EC – Asbestos Dispute. World Trade Review, Vol. 1, No. 1, 74ff.

[89] WTO 2004: Trade and the Environment at the WTO, Geneva: WTO, accessible at www.wto.org/english/tratop_e/envir_wto_e.pdf (last visited 10 March 2008), 17. See also Buck and Verheyen (Buck and Verheyen 2001: International Trade Law and Climate Change. A Positive Way Forward. Friedrich Ebert Stiftung Discussion Paper, http://library.fes.de/pdf-files/stabsabteilung/01052.pdf (last visited 10 March 2008) contemplate whether the use of technical regulation for unrelated PPM would be prohibited by the TBT Agreement altogether. However, such an approach does not seem warranted by the wording and the negotiation history.

been reached in this respect. Neither is such prohibition contained in WTO case law as yet. Therefore, the following analysis will measure non-product related PPMs against the yardstick of the GATT.[90]

The above distinction between related and unrelated PPMs can be illustrated by way of two examples: the fact that palm oil harvested on an area from which pristine forests were recently cleared would not impact on the final product. Thus, any standard or technical regulation would not be covered by the TBT Agreement. In contrast, a label demanding that cotton must not contain residues of pesticides from production, would be measured against the yardstick of the TBT Agreement.[91]

Multi-issue labels are labels that seek to sum up information regarding several parameters in one single label. The relevant information may concern both product-related PPMs and non-product related PPMs. Examples are the above-mentioned labels based on life-cycle analysis. For such mixed labels processing information for both types of PPMs, it is not quite clear whether they fall completely out of the scope of the TBT Agreement. However, it appears more convincing to apply the TBT Agreement partially, i.e. as far as the product related factors of the label goes, provided that these factors are sufficiently separable.[92]

C. Measures Regarding Non-Product Related PPMs

To labelling and Energy Standards for non-product related PPMs, the TBT Agreement does not apply. Instead, regarding non-product related PPMs both mandatory and voluntary[93] labels have to be consistent with the provisions of the GATT.[94]

I. Most Favoured Nation Treatment and National Treatment

The GATT contains in its Article I:1 and III:4 the most favoured nation and the national treatment clauses respectively. Both provisions[95] prohibit not only explicit discrimination. Rather, a seemingly neutral labelling requirement, which on the face of it, treats all products equally irrespective of their origin, may nevertheless contain an implicit discrimination because it affects products from one state worse than from other states.[96]

Article I:1 GATT obliges all Members to extend to any like product originating in any Member state any favour, privilege or immunity that is granted to any product originating in any other country with respect to all matters referred to in Article 3:4 GATT. The object and purpose of the provision is to "prohibit discrimination among like products originating in [...] different countries".[97] Under Article III:4 Sentence 1 GATT, 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

[90] See also Gandhi 2005: Regulating the Use of Voluntary Environmental Standards within the World Trade Organization Legal Regime. Making a Case for Developing Countries. Journal of World Trade, Vol. 39, No. 5, 878.
[91] Joshi 2004: Are Eco-Labels Consistent with World Trade Organization Agreements? Journal of World Trade, Vol. 38, No. 1, 72.
[92] Similar view held by Jessen and Gehring 2005: Technische Handelshemmnisse (TBT). In: Hilf and Oeter (eds.): WTO-Recht. Baden-Baden: Nomos, 354f.; Tietje 1995: Voluntary Eco-labelling Programmes and Questions of State Responsibility on the WTO/GATT Legal System. Journal of World Trade, Vol. 29, No. 5, 134.
[93] Diverging view held by Johsi (Joshi 2004: Are Eco-Labels Consistent with World Trade Organization Agreements? Journal of World Trade, Vol. 38, No. 1, 72) who considers voluntary labels to fall outside the scope of Article III:4 GATT. However, in my view, this does not follow from the cases cited there in support of the proposition.
[94] See also the discussion at footnote 89.
[95] Yet the WTO Panel has been reluctant with respect to implicit discriminations under the most favoured nation requirement.
[96] Ehring 2001: De Facto Discrimination in WTO Law. Jean Monnet Working Paper No. 12/01, accessible at www.jeanmonnetprogramme.org/papers/01/01301.html (last visited 10 March 2008).
[97] Appellate Body Report, Canada – Autos, para. 84.

of all laws, regulations and requirements affecting their internal sale, offering for sale, purchase, transportation, distribution or use.

Both provisions apply where “like products” are concerned. There is no single understanding of “likeness” for the whole of the GATT. Rather, as the Appellate Body put it, the “concept of 'likeness' is a relative one that evokes the image of an accordion. The accordion of likeness stretches and squeezes in different places as different provisions of the WTO Agreement are applied. The width of the accordion in any one of those places must be determined by the particular provision in which the term 'like' is encountered as well as by the context and the circumstances that prevail in any given case to which that provision may apply.”[98] Moreover, an unavoidable element of individual, discretionary judgement is called for.[99] Yet, it is widely accepted that when ascertaining “likeness” four criteria can be relied on: “(i) the properties, nature and quality of the products; (ii) the end-uses of the products; (iii) consumers' tastes and habits; and (iv) the tariff classifications of the product”.[100]

For the purposes of Article III:4 GATT, the term “like” is to be interpreted to apply to products that are in a competitive relationship. The scope of Article III: 4 GATT is broader than Article III:2 first sentence GATT, but not broader than the combined scope of Article III:2 first and second sentences GATT.[101] This has led the Appellate Body to the conclusion that asbestos fibres with a different degree of carcinogenicity were not “like”.[102] In contrast, there seems to be little pertinent case law on the matter regarding Article I:1 GATT. Yet, given the fact that Article I:1 GATT contains just as Article III:4 GATT only one “like”, it seems plausible to extend the case law regarding Article III:4 GATT.[103] It seems, however, reasonable to say that the fact that a product does not meet the requirements of and is thus not awarded a like products non-product related energy label would not generally make it “unlike”. For, so far, there has not been a dispute settlement report which found “unlikeness” based on non-product related PPMs.

Moreover, both provisions demand that there be a treatment no less favourable than that accorded to the competing product, i.e. the domestic product or product from any other country. Where Energy Standards and labels can be awarded to products from all countries, only an indirect discrimination may occur. Article III:4 has been interpreted in such manner as to apply not only to law and regulations which directly govern the conditions of sale or purchase but also any laws or regulations which might adversely modify the conditions of competition between the domestic and the imported products on the internal market.[104] Similar considerations should apply to Article I:1. Together with Article III:1 GATT under which Members must not use measures falling under Article III:4 so as to afford protection, this implies that the aims and effects of the label have to be assessed.[105]

For energy labels this means that – although there is as to yet no pertinent case law – in principle they can violate Articles III:4 and I:1 GATT. The more they provide an advantage to domestic producers and the more this is evident for (or even aimed at by) the government the more suspect they become. Under Article I:1 although again, there is no case law on the

[98] Appellate Body Report, Japan – Alcohol, para. 21.
[99] Appellate Body Report, EC – Asbestos, para. 101.
[100] Appellate Body Report, EC – Asbestos, para. 102. These criteria are based on the Report of the Working Party on Border Tax Adjustments, adopted 2 December 1970, BISD 18/97.
[101] Appellate Body Report, EC – Asbestos, para. 99.
[102] Appellate Body Report, EC – Asbestos.
[103] In the Panel Report, Indonesia – Autos, para. 14.141, the Panel held that the considerations that had led it to assume a “like car” under Article III:2 GATT also allowed it to consider it a “like car” under Article I:1 GATT.
[104] Tietje 1995: Voluntary Eco-labelling Programmes and Questions of State Responsibility on the WTO/GATT Legal System. Journal of World Trade, Vol. 29, No. 5, 140.
[105] Critical on this “return” of the aims and effects test in a different guise see. Herrmann; Weiß and Ohler 2007: Welthandelsrecht, 2nd ed., Munich: Beck, para. 517.

matter yet, it would appear to be generally more difficult to demonstrate the existence of an indirect discrimination.[106]

The issue becomes even thornier for Energy Standards. Regarding technology diffusion, the introduction of standards can be problematic when the market for products admissible under the standard is largely dominated by domestic incumbents, whereas the prohibited products are largely supplied from abroad. This would be even more so where domestic industry was actively involved in the standard setting. Conversely, the involvement of international associations of manufacturers or of standard setting bodies would make it harder to establish the discrimination.

II. Justification Under Article XX GATT

Where the national treatment or the most favoured nation treatment requirements have not been met, Article XX GATT gives Members the possibility to provide a justification therefore. Under the two-tier structure of Article XX GATT, both the requirements of paragraphs (b) or (g) and of the introductory sentence (châpeau) have to be met.[107] Generally, Members may choose the level of protection they consider appropriate.[108]

1. Article XX (b) GATT

Article XX para. (b) GATT allows Members to take measures "necessary to protect human, animal or plant life or health". The Appellate Body in its Brazilian Tyres report has made it clear that the provision also covered "measures adopted in order to attenuate global warming and climate change".[109] The same report also found that an import ban as the measure in question was necessary only if the contribution of the measure to the achievement of the objective was "material, not merely marginal or insignificant".[110] However, the Appellate Body went on to say that the GATT Member invoking Article XX para. (b) GATT may base its reasoning that the measure makes a material contribution both on qualitative and on quantitative analysis. Moreover, the results from certain actions may "only be evaluated with the benefit of time."[111] And finally, it has to be emphasized that the report had to deal with a trade ban which is a far more trade restrictive measure than a labelling requirement.

Putting together the pieces and transferring them to energy labels, it should be noted that a labelling scheme constitutes a less trade-restrictive measure than both Energy Standards and an import ban. Therefore, GATT Members should be relatively free to invoke Article XX (b) for labelling schemes regarding energy consumed in producing the good. In my view they have to meet two requirements regarding energy labels: firstly, GATT Member implementing the labelling scheme must *bona fide* assume that the labels help saving energy if the customer chooses a labelled product over another which does not receive the label. Secondly, the process awarding the label should be sufficiently reliable so that both false positives (i.e. products receiving the label although they do not deserve it) and false negatives (products that although they qualify for the label and file the necessary application do not get it) are avoided with a reasonable probability. Otherwise, the label would not convey sufficient information and thus would not be necessary.

[106] Cf. also the rather brief remarks in the Panel Report, US – Tuna/Dolphin, para. 5.42 where it held that Article I:1 GATT was not violated because the label was granted irrespective of the tuna's country of origin.
[107] On this two-tiered test cf. Appellate Body Report, US – Gasoline, para. 22 and Appellate Body Report, US Shrimp, paras. 119 f.
[108] Appellate Body Report, EC – Asbestos, para 168.
[109] Appellate Body Report, Brazilian Tyres, para. 159.
[110] Appellate Body Report, Brazilian Tyres, para. 221.
[111] Appellate Body Report, Brazilian Tyres, para. 157.

Requirements for Energy Standards would be stricter since arguably they would imply (or at least come very close to) an import ban for goods not meeting the requirements.[112] They would therefore have to meet the material contribution test. It would be a fallacy to interpret the material contribution test as aiming at the absolute emissions reduction and that therefore standards for rare products such as gramophones would not be justifiable. Rather, for *technology diffusion* the material contribution should be measured in terms of the relative impact. The possibility to do this would depend on the distribution of producers on the market. Where the energy efficiency by all producers is very similar, cutting off the least efficient would not entail a significant gain in energy efficiency. In contrast, in cases in which there are some "outliers", banning them would make a material contribution relative to their market share of the products. The same holds true for situations of a market with dispersed technologies. When standards are used to support the development of new technologies, for example through the granting of a temporary monopoly, the relative impact cannot be decisive. For, the incentive to meet the innovation target would be significantly reduced if PPMs that almost met the target could not be treated significantly less favourably. Instead, the efficiency would have to represent a sufficient improvement on the energy consumption by production standards prevailing at the time the Energy Standard is set.

2. Article XX (g) GATT

Article XX para. (g) GATT permits measures "relating to the conservation of exhaustible natural resources". The global climate can be qualified as such an exhaustible natural resource.[113] Under the logic developed by the Appellate Body in the US – Shrimp case, questions of any jurisdictional limitation do not arise with respect to Article XX (g) GATT for the case of the global climate.[114] The term "relating to" can be understood as "directly connected" to the conservation policy.[115] It seems difficult as case law stands at the moment to envisage less demanding criteria for justification under this heading than under Article XX (b) GATT.

3. Châpeau

As the second step, the châpeau requires that the measure in its application must neither constitute an (1) arbitrary or (2) unjustifiable discrimination between countries where the same conditions prevail, nor a (3) disguised restriction on international trade. All three criteria have to be met.[116] The standard must generally be lower than the one under Article III GATT, as otherwise there could never be a justification for violations of that provision. When interpreting the provisions, the context of the norm and, in particular, the preamble to the WTO agreement as well as the preamble to the Decision on Trade and Environment all of which confirm the WTO's undertaking to pursue the aim of sustainable development need to be respected. A balance must be struck between the right of a WTO Member to invoke an exception under Article XX GATT and the duty of that same WTO Member to respect the treaty rights of the other WTO Members.

[112] There is an ongoing discussion under the GATS stimulated by the Appellate Body Report, US – Gambling, which assumed that the prohibition of on-line gambling in the US did not only regulate the modalities of how the service gambling can be provided but altogether banned the provision of the service "on-line gambling" with the consequence that it fell under Article XVI GATS. However, the impact of that report – which given the restricted scope of Article VI GATS as the provision equivalent to Article III:4 GATT, but the comprehensive scope of Article XVI GATS, may be motivated by the desire to secure the applicability of world trade law at all – on the GATT is not fully clear.

[113] Cf. Ismer and Neuhoff (Ismer and Neuhoff 2007: Border Tax Adjustment. A Feasible Way to Support Stringent Emission Trading. European Journal of Law and Economics, Vol. 24, No. 2, 137-164) for further references.

[114] Appellate Body Report, US Shrimp, para. 133.

[115] van Calster 1999: The WTO Appellate Body in Shrimp/Turtle. Picking Up the Pieces. European Environmental Law Review, Vol. 8, No. 4, 111-119.

[116] Appellate Body Report, US – Gasoline, para. 25.

Factors taken into account when assessing whether these requirements have been met have included the following. First, the fact that other countries would be forced to adopt virtually the same approach as the state taking the measure. Second, the failure to engage in serious negotiations with the other WTO Members before taking the measure.[117] Third, a differential treatment among various countries. Regarding the second factor, although it can hardly be said to be the case for climate protection, in particular seeing the history of the negotiations for the Kyoto Protocol, prior consultation of other countries would make the labelling scheme more palatable. The first and the third factor would also have to be observed when implementing a label or Energy Standard. As a consequence, it would be for example problematic if a government imposed an Energy Standard which can reasonably only be fulfilled by a domestic company in the possession of a pertinent patent.

III. Example: Austrian Timber Label

An example may serve to illustrate the working of the provisions: In the 1990s, Austria introduced a mandatory labelling scheme for tropical timber from Asia.[118] The label required that the wood be produced using sustainable forestry. The ASEAN countries – rightly – complained that the scheme, which concerned non-related PPMs, violated both the most favoured nation clause under Article I:1 GATT and the national treatment requirement of Article III:4 GATT. Regarding justification, it may be argued that the measure aimed at conservation of rain forests and thus at conservation of a natural resource. Though it is unclear whether the facts that the rain forests were situated in another countries and that – different from the US Shrimp case – species would not migrate to Austria would make it impossible to invoke Article XX (g) GATT, Austria could in any event also advance mitigation of climate change under that provision. Yet the requirements of the châpeau would not be met as the exclusion of other pristine forests from the labelling requirement would constitute an arbitrary discrimination. Thus, the measure violated Austria's obligations under the GATT.

D. Measures Regarding Related PPMs

I. Mandatory Labelling and Energy Standards as Technical Regulation

In accordance to what has been pointed out before, mandatory labelling requirements and Energy Standards qualify as technical regulations. Where they refer to related PPMs, they have to be in conformity with Article 2 of the TBT Agreement.[119] As there is only very limited case law on this provision, the following analysis has to rely on the wording of the provision as well as, to the extent it is pertinent, on the case law regarding Article III:4 GATT.

Article 2.1 stipulates both the most favoured nation and the national treatment requirements. Thus, with regard to such measures, a product imported from any WTO Member shall be accorded treatment no less favourable than the treatment accorded to like products of domestic origin or products from any other country. Thus, for example, when Japan planned to introduce fuel efficiency standards for all new cars, the European Union threatened to bring action since it was of the opinion that the measure would have given Japanese producers with their larger offer of small and fuel-economic cars an undue advantage over their European competitors.[120]

[117] Appellate Body Report, US – Gasoline, para. 28.
[118] On this see e.g. Dröge (2001).
[119] The following will only discuss the substantive, but not the procedural provisions (on the latter cf. e.g. Verrill 2008: Maximum Carbon Intensity Limitations and the Agreement on Technical Barriers to Trade, Carbon and Climate, Law Review, 2008, No. 1, 50 f.) On the relationship of the TBT Agreement to the GATT see above at B II.
[120] Brewer 2004: The WTO and the Kyoto Protocol. Interaction Issues. Climate Policy, Vo. 4, No. 1, 3-12.

The national and most favoured nation requirements only apply to “like” products. As there is no case law on the matter yet for the TBT Agreement, case law developed for Article III GATT, and in particular Article III:4 GATT has to be relied on.[121] The same is true for the term “treatment no less favourable”. Thus the above analysis of the “aims and effects” test also holds here. Furthermore, it should be noted that Article 2.1 of the TBT Agreement does not provide for the possibility of a justification of a discrimination. In that respect, the provision differs both from the GATT and from Article 2.2 of the TBT Agreement.[122]

Moreover, Article 2.2 demands that the technical regulations do not create unnecessary obstacles to international trade. Technical regulations must not be more trade-restrictive than necessary to fulfil the legitimate objective, taking account of the risks non-fulfilment would create for the climate (which falls under the term “environment”).[123] Under Article 2.2 TBT, there is no proportionality test between the legitimate objective and the trade restriction;[124] instead, although there is no case law on the question of what is meant by “unnecessary” under Article 2.2 of the TBT Agreement, the term should be understood as under Article XX(b) GATT. Thus, the restriction has to serve the pursuit of the legitimate objective and a material contribution test has to be applied. Furthermore, as expressly stated by Article 2.2 Sentence 2 of the TBT Agreement, there must not be a less trade restrictive measure which yields the same level of protection for the legitimate objective and which is acceptable for the WTO Member.

Some problems may in future be held in store by Article 2.4. It is sometimes suggested[125] that under this provision, where relevant standards exist or their completion is imminent, states are obliged to base their regulations on such standards. A deviation from such standards would be permissible only where the standards would be an ineffective or inappropriate means for the fulfilment of the legitimate objectives pursued. In particular, it would then generally not be possible to go beyond the standard to achieve a higher level of protection.[126] This might entail the problematic consequence that for example where minimum Energy Standards were agreed internationally say for computers, the European Union would not be allowed to set a more stringent requirement.

The Panel and the Appellate Body have not ruled explicitly on this question yet. However, the wording of the preamble seems quite clear that no country shall be prevented from taking measures necessary for the protection of the environment. The same is true for Article 2.4, which only demands that the states are obliged to “base” their regulations on such standards, which is also the case where the methodology of the standards are applied but more restrictive limits are set. The freedom of the WTO Members to determine their desired level of protection has also been confirmed by the Panel in the EC-Sardines case.[127] Such understanding of the term “base” also has the advantage that the international standard setting organizations do not determine the level of protection which would be questionable given the somewhat undemocratic ways in which some standards come to be agreed.[128]

[121] Joshi 2004: Are Eco-Labels Consistent with World Trade Organization Agreements? Journal of World Trade, Vol. 38, No. 1, 76.
[122] Voland 2007: Verbraucherschutz und Welthandelsrecht. Munich: Beck, 137. Different view held e.g. by Desmedt 2001: Proportionality in WTO Law. Journal of International Environmental Law, Vol. 4, No. 3, 441-480.
[123] On the applicability of the precaution principle to this norm see Motaal 2005: Is the World Trade Organization Anti-Precaution? Journal of World Trade, Vol. 39, No. 3, 491f.
[124] Neumann and Türk 2003: Necessity Revisited. Proportionality in World Trade Organization Law after Korea–Beef, EC–Asbestos and EC–Sardines. Journal of World Trade, Vol. 37, No. 1, 199-233; Voland 2007: Verbraucherschutz und Welthandelsrecht. Munich: Beck, 143ff.
[125] Herrmann/Weiß/Ohler (2007), para. 575; Voland 2007: Verbraucherschutz und Welthandelsrecht. Munich: Beck, 152ff.
[126] Herrmann; Weiß and Ohler 2007: Welthandelsrecht, 2nd ed., Munich: Beck, marg. no. 575.
[127] Panel Report, EC – Sardines, para. 7.120.
[128] Krajewski 2001: Democratic Legitimacy and Constitutional Perspectives of WTO Law. Journal of World Trade, Vol. 35, No. 1, 167-186.

Finally, such understanding would also appear incompatible with the logic developed by the Appellate Body in the US – Shrimp case under which prior consultations with other countries were required under the chapeau of Article XX GATT.[129]

II. Voluntary Labelling as TBT-Standard

As opposed to mandatory labelling, voluntary labels are qualified as standards for TBT purposes.[130] Therefore, under Article 4.1 of the TBT Agreement, WTO Members are under the obligation to ensure that their central government standardizing bodies[131] accept and comply with the Code of Good Practice when they award voluntary labels.

Under the Paragraph D of the Code of good practice for the preparation, adoption and application of standards, which forms the Annex 3 to the TBT Agreement, the standardizing body shall accord treatment to products originating in the territory of any other WTO Member treatment no less favourable than that accorded to like products of national origin and to like products originating in any other country. If the term "like product" were given the same meaning here as under Article 2 of the TBT Agreement, this would imply that the standardizing body would not be allowed to distinguish based on non-product related PPMs. However, it seems more appropriate to assume that Paragraph D only covers product-related PPMs. Hence, one should not draw the conclusion that any non-product related PPMs could not form the basis of a technical regulation or standard under the TBT Agreement.[132]

E. Private Labelling

Whereas private Energy Standards as defined in the present paper cannot exist, private standardizing bodies are widespread. They are generally not bound by WTO law.[133] Nevertheless, these bodies can sign up to the Code of Good Practice. The Deutsche Institut für Normung was the first to have done so.[134] Governments shall take such reasonable measures to ensure that local government and non-governmental standardizing bodies within their territories accept and comply with the Code of Good Practice.

Private labelling further raises the question under what circumstances it may constitute a requirement in the sense of Article III:4 GATT. As already stated, purely private measures, i.e. where the advantage is conferred merely by the free choice of the consumer,[135] do not fall within the scope of WTO law. Obligations under WTO law are only created when there is some kind of link to the government. What link would be required is not entirely clear. Some scholars demand significant government intervention.[136] The Panel held in the Canada – Autos case that Article III:4 GATT also applies to conditions that an enterprise accepts in order to receive an advantage.[137] Actions by private parties fall under the provision only if there is a nexus between that action and the action of a government such that the

[129] Appellate Body Report, US – Shrimp, paras. 123 ff.
[130] Tietje (Tietje 1995: Voluntary Eco-labelling Programmes and Questions of State Responsibility on the WTO/GATT Legal System. Journal of World Trade, Vol. 29, No. 5, 123-158), who is very critical on voluntary labelling.
[131] Regarding central government responsibility for local bodies the same holds true as for private bodies, see below at C.III.
[132] Joshi 2004: Are Eco-Labels Consistent with World Trade Organization Agreements? Journal of World Trade, Vol. 38, No. 1, 69-92.
[133] Chang 1997: GATTing a Green Trade Barrier. Eco-labelling and the WTO Agreement on Technical Barriers to Trade. Journal of World Trade Law, Vol. 31, No. 1, 156.
[134] Jessen and Gehring 2005: Technische Handelshemmnisse (TBT). In: Hilf and Oeter (eds.): WTO-Recht. Baden-Baden: Nomos, 357.
[135] Panel Report, US – Tuna/Dolphin, para 5.42.
[136] E.g. Chang 1997: GATTing a Green Trade Barrier. Eco-labelling and the WTO Agreement on Technical Barriers to Trade. Journal of World Trade Law, Vol. 31, No. 1, 156.
[137] Panel Report, Canada – Autos, para. 5.21. The finding was not disputed before the Appellate Body.

government must be held responsible for that action.[138] This is somewhat reminiscent of the case law of the European Court of Justice and in particular its “Buy Irish”-ruling where the Irish government's considered intention to substitute domestic products for imported products on the Irish market led to the assumption of a breach of the free movement of goods under the EC Treaty.[139] In any event, establishing the required link to the government becomes even more difficult for international NGO.[140]

In this context, it should be noted that some developing countries have demanded that the Code of Good Practice for the Preparation, Adoption and Application of Standards be applied to all labelling programmes.[141] However, consensus has so far not been reached on the matter and is not to be expected any time soon.

F. Conclusion

The above analysis has shown that the unilateral use of labelling and Energy Standards needs to make sure that such measures do not result in unjustified discrimination of foreign producers. For energy labels and Energy Standards may – although there is as to yet no pertinent case law – in principle violate Articles III:4 and I:1 GATT as well as Article 2 of the TBT Agreement. The more they provide an advantage to domestic producers and the more this is evident for (or even aimed at by) the government the more suspect they become. However, the rather strict tests established in the Brazilian Tyres[142] case are not applicable to energy labels and only to a limited degree to Energy Standards. Moreover, a clarification seems warranted that the TBT Agreement is not to be understood as limiting the WTO Members in their choice to aim for a higher level of protection of the climate through labels and standards as long as their measures are based on the internationally agreed standards. In contrast, private labelling will raise world trade law questions only if there is a sufficient degree of involvement by a government.

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[138] Panel Report, Canada – Autos, paras. 10.106 f. For a more detailed discussion cf. Gandhi 2005: Regulating the Use of Voluntary Environmental Standards within the World Trade Organization Legal Regime. Making a Case for Developing Countries. Journal of World Trade, Vol. 39, No. 5, 866.
[139] ECJ of 24 November 1982, C-249/81, European Court Reports 1982, 4005.
[140] Gandhi 2005: Regulating the Use of Voluntary Environmental Standards within the World Trade Organization Legal Regime. Making a Case for Developing Countries. Journal of World Trade, Vol. 39, No. 5, 865.
[141] Cf. Gandhi 2005: Regulating the Use of Voluntary Environmental Standards within the World Trade Organization Legal Regime. Making a Case for Developing Countries. Journal of World Trade, Vol. 39, No. 5, 879f.
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EC TRADE POLICY AND CLIMATE CHALLENGES: AN OVERVIEW OF EC TRADE POLICY APPROACHES TO CLIMATE CHANGE

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1. EU Climate Objectives and Targets

The contribution of EU trade policy to climate change efforts should be seen in the context of the European Union's climate change objectives. The EU has taken up a leading role in the fight against climate change, and has set ambitious targets for limiting EU green house gas emissions and for increasing the share of renewable energy in energy consumption.

The European Council in March 2007[143] underlined the leading role of the EU in international climate protection and stressed that "international collective action will be critical in driving an effective, efficient and equitable response on the scale required to face climate change challenges." The European Council underlined negotiations on a global and comprehensive post-2012 agreement, which should build upon and broaden the Kyoto Protocol architecture and provide a fair and flexible framework for the widest possible participation. These negotiations were launched at the UN climate conference in Bali in December 2007, and are to be completed by 2009.

The European Council in March 2007 also endorsed "an EU objective of a 30 % reduction in greenhouse gas emissions by 2020 compared to 1990 as its contribution to a global and comprehensive agreement for the period beyond 2012, provided that other developed countries commit themselves to comparable emission reductions and economically more advanced developing countries to contributing adequately according to their responsibilities and respective capabilities". The European Council confirmed that the "EU makes a firm independent commitment to achieve at least a 20 % reduction of greenhouse gas emissions by 2020 compared to 1990".

The European Council also reaffirmed the Community's long-term commitment to the EU-wide development of renewable energies beyond 2010 and endorsed a binding target of a 20 % share of renewable energies in overall EU energy consumption by 2020; and a 10 % binding minimum target to be achieved by all Member States for the share of bio fuels in overall EU transport petrol and diesel consumption by 2020, to be introduced in a cost-efficient way.

The European Commission on 23 January presented a package of proposals relating to climate change and energy ("the Barroso package on Climate and Energy"[144]) for the EU to be able to deliver on the political commitments undertaken by the European Council in 2007. The proposed measures include:

- an improved emissions trading system (ETS) covering more emissions and allowing firms in one EU country to buy allowances in any other
- an emission reduction target for industries not covered by the ETS (e.g. buildings, transport, waste) so that everyone is contributing

[143] See Council of the European Union 2007: Presidency Conclusions – 8/9 March 2007. 7224/1/07, REV1, Brussels: Council of the European Union.

[144] See European Commission 2008: 20 20 by 2020, Europe's Climate Change Opportunity. Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions. COM(2008) 30 final of 23 January 2008, Brussels: European Commission.

- legally enforceable targets for increasing the share of renewables in the energy mix – the targets will reflect each country's individual needs and its potential
- new rules on carbon capture and storage and on environmental subsidies.

The proposals aim at a more environment-friendly Europe, but they will also help create a more industry-friendly, jobs-friendly, and consumer-friendly EU. The commission hopes to see the package adopted by the end of 2008.

2. The Contribution of Trade Policy

Climate change mitigation is an urgent global priority that requires the support of all relevant policies. Considerations should focus on cost-efficient and environmentally effective approaches, as reflected in the European Council conclusions of March 2007.

Trade policy contributes to economic growth and can increase welfare and sustainable development through efficiency gains. The Marrakesh Agreement establishing the World Trade Organisation recognises that trade relations should be conducted in a manner "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".

Specific considerations for a trade policy contribution to achieving climate objectives are set out in the following.

Liberalisation of Trade in Environmental Goods and Services

The single most important contribution of trade policy is to facilitate the access to environmental goods and services through liberalisation of trade. The elimination or reduction of tariffs and non-tariff barriers to trade in environmental goods and services can help disseminate environmentally effective knowledge and skills; it can diffuse green technology and allow access to such technology in a more cost-efficient manner. This can drive up environmental standards and energy efficiency globally, thus contributing to lowering green house gas emissions and adapting to a low-carbon society. Europe has a comparative advantage in technologies central to addressing climate change. Enhanced market access through the liberalisation in environmental goods and services therefore represents an economic interest for European companies.

At the WTO Doha Ministerial meeting in 2001, WTO members agreed to "the reduction or, as appropriate, elimination of tariff and non-tariff barriers to environmental goods and services"[145]. Negotiations for the liberalisation of environmental goods and services are ongoing in the WTO Committee on Trade and Environment under the Doha Development Agenda (DDA). From the outset, the EU has been a main proponent of liberalisation of environmental goods and services, and has made suggestions for specific environmental products for liberalisation. In 2007, the EU, jointly with the United States, suggested liberalisation of trade in 43 products that contribute specifically to climate change mitigation.

[145] WTO 2001: Ministerial Declaration of 14 November 2001. WT/MIN(01)/DEC/1, 20 November 2001.

Bilateral Trade Negotiations

Objectives relating to environment and sustainable development are also pursued as part of ongoing negotiations for free trade agreements. The EU is currently negotiating free trade agreements with important trading partners under its Global Europe strategy, aiming at improving the global competitiveness of the EU and its industry. Among the negotiating partners are South Korea, India, ASEAN countries and Ukraine, as well as Central America and the Andean Community.

The EU aims to build commitments to environmental and social objectives into these agreements, through cooperation, dialogue and monitoring mechanisms, as well as commitment to international agreements and standards. Achieving the ultimate objective of the United Nations Framework Convention on Climate Change and its Kyoto Protocol are among the objectives. The EU also aims in these free trade agreements at an early liberalisation of environmental goods and services and regulatory cooperation, including on standards and energy efficiency.

Certification of Natural Resource Based Products

Natural resource based products can have a direct impact on green house gas emissions and hence on climate change. The challenge lies in ensuring that such products are produced in a manner that minimises any negative environmental impact. This is particularly the case with timber and other forestry related products, as well as bio ethanol.

With respect to forestry products, the EU engages with producing countries under the Forest Law Enforcement, Governance and Trade (FLEGT) Action Plan[146] which aims to respond to the need for a legal and sustainable use of forests and the more equitable trade in timber products. The FLEGT Action Plan sets out both demand- and supply-side measures, including, public procurement policies favouring legal and sustainable timber, private sectors' initiatives, financing and investment safeguards, capacity-building through development cooperation. The targeted regions and countries contain together nearly 60% of the world's forest and supply a large proportion of internationally traded timber. They include: Central Africa, Russia, Tropical South America and Southeast Asia. A centrepiece of the Action Plan is the negotiation of Voluntary Partnership Agreements (VPA)[147] between the EU and timber producing countries which aim to prevent illegal timber from entering the EU market. The VPA offers an approach by which timber exported to the EU is identified through a FLEGT licence issued by countries that have signed such agreements.

As regards bio fuels, the Commission on 23 January presented a Proposal for a directive of the European Parliament and of the Council on the promotion of the use of energy from renewable sources[148]. The proposal aimed to establish an overall binding target of a 20% share of renewable energy sources in energy consumption and a 10% binding minimum target for bio fuels in transport to be achieved by each Member State, as well as binding national targets by 2020 in line with the overall EU target of 20%. Specifically for bio fuels and other bio liquids, the proposed directive sets up a system to guarantee the environmental sustainability of the policy, ensuring *inter alia* that the bio fuels counting towards the targets achieve a minimum level of greenhouse gas savings. The sustainability

[146] See European Commission 2003: Forest Law Enforcement, Governance and Trade. Proposal for an EU Action Plan. Communication from the Commission to the Council and the European Parliament. COM(2003) 251 final of 21 May 2003, Brussels: European Commission.

[147] See FLEGT Briefing Notes 2004: Voluntary Partnership Agreements. Briefing Note No. 7, http://ec.europa.eu/development/icenter/repository/7_flegt_br7_2004_en.pdf, (accessed 8 July 2008).

[148] See European Commission 2008: Proposal for a Directive of the European Parliament and of the Council on the Promotion of the Use of Energy from Renewable Sources. COM(2008) 30 final, Brussels: European Commission.

criteria are designed to promote the use of sustainable bio fuels and discourage poorly performing ones and thus to maximise their environmental effectiveness. This legislative proposal is currently under consideration by the Council and the European Parliament.

3. Trade Policy Should Work in Tandem with Related Policies

Addressing the climate challenge will require coordinated efforts across policies. A number of specific issues are directly related to trade policy.

Development of and access to green technology is a key issue in allowing economies to adapt to a low carbon society. Particularly important is the development of technology to enhance energy efficiency and technology that provides low-carbon alternatives for industry and house-holds. As mentioned above, the liberalisation of trade in environmental goods and services can help disseminate such technologies. This can help boost competitiveness, but can also help developing countries access climate related technology that is relevant for climate change mitigation.

Another policy element is the development of a sustainable industrial policy to help foster eco-innovation and energy efficiency and to encourage international sectoral approaches to energy efficiency and to lowering carbon emissions. The European Commission is preparing an action plan on sustainable consumption and production, including a sustainable industrial policy and eco-labelling.

Trade policy can play an important role in support of climate change objectives. The main contribution of trade is through market opening and building competitiveness to help adapt to a low-carbon economy. The contribution of trade policy should be seen in the context of overall climate objectives and in interaction with other policy areas.

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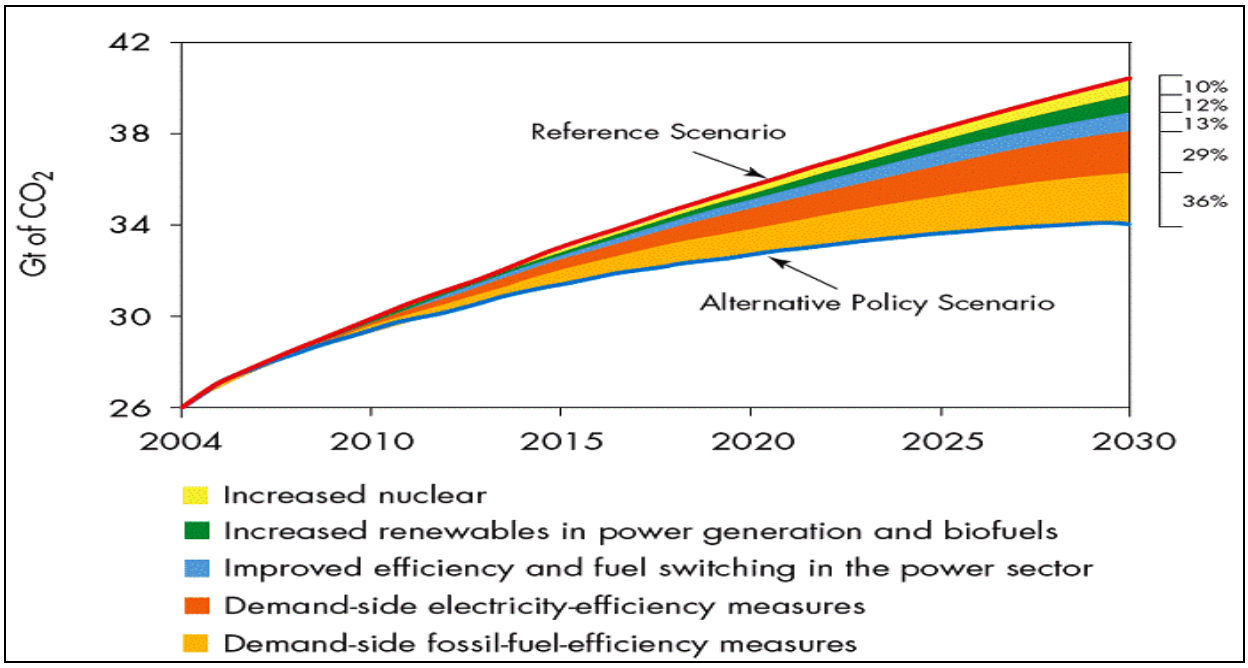
OPPORTUNITIES AND CONSTRAINTS FOR AN INTEGRATED EUROPEAN CLIMATE AND TRADE POLICY

by Ulrich Hoffmann, UNCTAD

The interplay between international trade, climate change and development is multi-faceted. Its key underlying premise is that rapid climate change and its economic, social and environmental consequences require a profound restructuring of the patterns and ways in which products and services are produced and consumed leading to a more carbon-efficient society. The key elements of an integrated approach in this regard are:

- The need to have a clear and predictable strategy. This is very important for setting incentives for investment and for research and development.
- Clear priorities need to be set. As can be seen from figure 1, energy efficiency should be prioritized because it accounts for two-thirds of potential greenhouse gas (GHG) emission savings under the alternative policy scenario developed by the IEA[149]. Second on the list of priorities should be the drive towards a sustainable energy mix.
- Special emphasis should be given to a gradual internalization of carbon costs. This should also include addressing market distortions and perverse energy subsidies.
- The mitigation and adaptation approaches should be based on international co-operative approaches that include regulatory, market based and voluntary measures.

Figure 1: Greenhouse gas (GHG) emissions (scenarios)



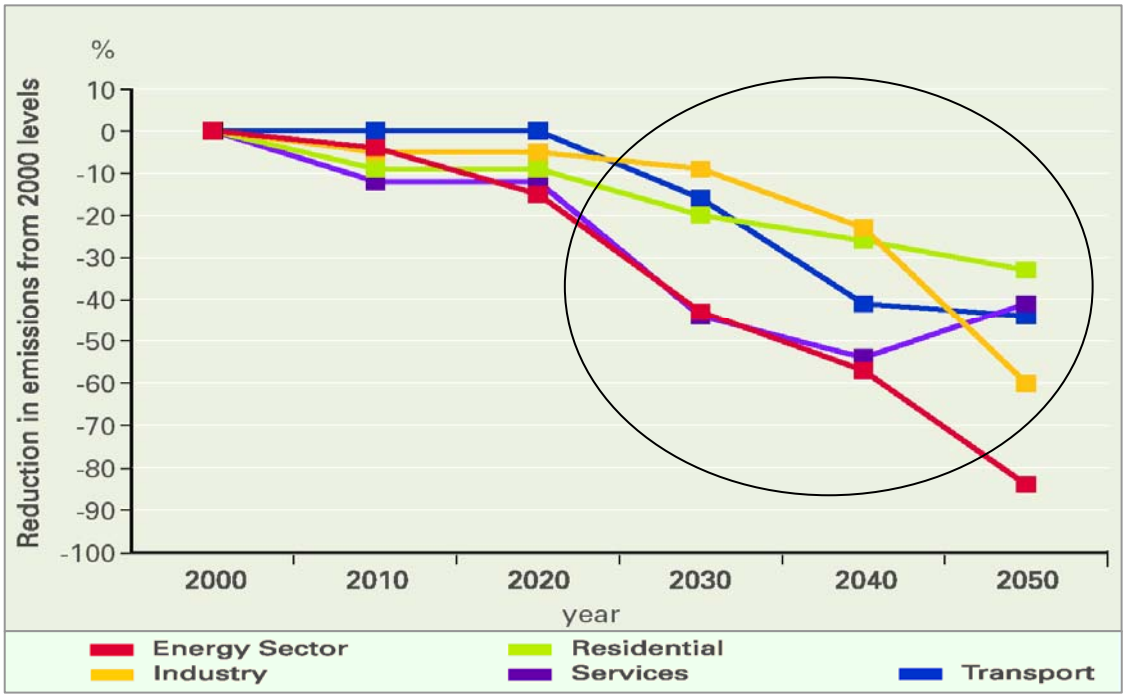
Source: IEA 2007: World Energy Outlook 2006. Paris: IEA.

[149] IEA 2007: World Energy Outlook 2006. Paris: IEA.

In a number of sectors, such as building management and construction (globally, the proportion of carbon emissions generated by buildings is about 15 per cent[150]), the application of currently available technology and devices would allow significant GHG emission savings (estimated in the order of 60 per cent[151]) that could already be achieved in a short period of time. Many of the required changes in the building and construction sector are 'lower-hanging fruit' that could be readily implemented through changing construction codes, related standards and management methods. There could also be linked incentives for enhanced use of renewable energy, notably biogas use for heating, solar-hot water systems and photovoltaic systems for electricity generation, which provide an integrated solution.

Figure 2, however delineates that in many sectors new, break-through technologies for drastic "decarbonization" of economies are yet to be developed. Therefore, clear guidance, incentive and priority setting for research and development are of utmost importance.

Figure 2: UK Modeled CO_2 Emission Reductions by Sector[152]



Source: Markal-Macro model

A Coherent Policy Package on Climate Change Mitigation with Beneficial Trade and Development Effects

Based on the guiding principles set out above, a coherent policy package of the European Union member countries should contain the following main elements:

- clear priorities for and systematic support to research and development, primarily focused on energy efficiency and a more sustainable energy mix;

[150] UNEP 2007: Building and Climate Change. Status, Challenges and Opportunities. Paris: UNEP. Accessible at: www.unep.fr/pc/sbc/documents/Buildings_and_climate_change.pdf.
[151] Environmental Change Institute 2006: The 40% House. London: Environmental Change Institute. Accessible at: www.40percent.org.uk.
[152] Scenario showing least cost route to 60% reduction by 2050.

- using fiscal and financial instruments such as carbon taxes, the removal of perverse subsidies and the use of subsidies that lead to effective internalization of carbon costs (both the internalization of negative externalities and the internalization of unaccounted environmental benefits, e.g. related to renewable energy or environmental/nature services);
- continuation and gradual expansion of cap-and-trading systems in the EU that internalize some costs of carbon through the gradual extension to more sectors of the EU-wide emissions trading scheme, based on clear and transparent rules;
- The EU may also develop a clear, coherent, predictable and co-operative approach to carbon offset requirements vis-à-vis third countries. This is very important to avoid trade friction. The accommodation of carbon credits resulting from projects within the Clean Development Mechanism in developing countries should be part of such offset schemes.
- Government procurement should also be used as a pro-active tool to enlarge the market for carbon efficient products and energy sources.
- Energy-efficiency standards and voluntary labeling initiatives or programs on achieving carbon neutrality deserve key attention. They should be developed and implemented in a transparent, inclusive and co-operative way, because they are likely to have significant impact on trade and related trade interests.

Against this background the EU should actively participate in developing the architecture for co-operative international approaches. These need to take into account the principle of shared, but differentiated responsibilities. The rapidly industrializing developing countries, for instance, have expanded material and energy-intensive heavy industries because of the huge catch-up need for infrastructure building and a solid basis for industrial development as well as related standards of living. Moreover, there has been significant redeployment of energy-intensive heavy industry sectors from North to South. In China, for instance, heavy industry has increased from 51 to 66 per cent of industrial output in the period 1990-2004 (heavy industry has a three times higher energy intensity than light industry).

Table 1 illustrates the large gap in energy intensity. Table 2 identifies a number of the most energy-intensive industries in India and the US that will require special attention in any successful co-operative international approaches. Table 3 illustrates the potential of truly co-operative approaches, for example through transfer of technology, in enhancing energy efficiency in developing countries.

Table 1: Economy wide carbon intensity (MMTCE/Billion of 97US$s)

	Emissions (MMTCE)		GDP (Billions 97US$s)		Carbon Intensity (MMTCE/$)	
Country	1990	2000	1990	2000	1990	2000
China	617	780	427	1,119	1.445	0.697
India	153	249	268	495	0.571	0.503
Germany	271	226	1,879	2,257	0.144	0.100
United States	1,352	1,578	6,836	9,370	0.198	0.168
Japan	269	310	3,673	4,390	0.073	0.071

MMTCE - million metric tons of carbon equivalent

Source: Montgomery, W. D. and Tuladhar, S. D. 2005: Impact of Economic Liberalization on GHG Emission Trends in India. Charles River Associates, May 2005, 8.

Table 2: Carbon Intensity (MMTCE/billions of dollars) by sector

Industry	India	USA
Agriculture	0.006	0.048
All other sectors	0.006	0.009
Chemicals	0.464	0.234
Electricity	3.976	2.589
Iron and Steel	0.654	0.151
Manufacturing	0.213	0.020
Mining	0.132	0.000
Services	0.145	0.059

Source: Montgomery, W. D. and Tuladhar, S. D. 2005: Impact of Economic Liberalization on GHG Emission Trends in India. Charles River Associates, May 2005, 9.

Table 3: Carbon intensity of the Indian economy and its change as a function of the deployment of current technologies used in the US and Japanese industry

	Own Industry and Technology (pre 2000)	With Own Technology and US Industry Mix	With US Technology and Own Industry Mix	With US Technology and US Industry Mix	With Japan Technology and Own Industry Mix
India	0.388	0.225	0.201	0.098	0.082

Source: Montgomery, W. D. and Tuladhar, S. D. 2005: Impact of Economic Liberalization on GHG Emission Trends in India. Charles River Associates, May 2005, 10.

Co-operative International Approaches

Co-operative international approaches first need to set targets for emission reductions. Then, one needs to develop common approaches. They may contain the following clusters:

- Standards:
  They may include internationally agreed product-efficiency standards. They may also include voluntary sector-focused initiatives on energy-efficiency process standards, an idea recently floated by the Government of Japan in G-8 consultations on climate change issues.
- Liberalization of trade in environmental goods and services:
  The negotiations on the liberalization of trade in environmental goods and services in the current Doha Round of the WTO may offer opportunities for easier and cheaper access to equipment and related services for renewable energy as well as energy-saving devices and services.[153] However, the liberalization of tariff and non-tariff barriers per se will not have the desirable effect, unless supplemented by effective market-creation measures and related policy intervention.
- Fostering transfer of technology:
  International initiatives should be taken to facilitate the diffusion of low-carbon technologies. This should apply to the transfer of publically held technology and the transfer of proprietary technology, notably through foreign direct investment. Recent

[153] This also has a close link to combating air pollution.

discussions among the G-8 and post-Bali UNFCCC debate on proper funding mechanisms for the transfer of technology are steps in the right direction. It will have to be seen, however, whether the flexibilities under the TRIPS Agreement are sufficient to allow an effective transfer of the concerned carbon-efficient technologies and related tacit knowledge.

- International emissions trading:
  There should be a gradual expansion of the emissions trading scheme of the EU beyond its members (both in terms of sectors and forms of transactions) and the encouragement of voluntary emission-trading schemes. This should include improving the use of CDM (expanding its current use beyond Brazil and China as the prime beneficiaries of CDM projects), and clarifying carbon offset requirements for imports. Such expansion of international emission-trading schemes will also be a powerful instrument of attracting investment, know how and technology to less developed countries, where the marginal cost of carbon abatement tends to be much lower than in developed countries.
- Remove perverse carbon subsidies:
  Unjustifiable subsidies for fossil fuel use should be phased out.
- Promoting sustainable forms of agriculture:
  Sustainable forms of agriculture such as organic agriculture or sustainably managed forests can play an important role in climate change mitigation and adaptation. In many cases, they are also a prime source of income and employment for the rural poor. Under this bullet, one also needs to effectively address illegal logging and timber trade.

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CLIMATE CHANGE, ECO-INNOVATION, AND EU TRADE POLICY: A CRITICAL ASSESSMENT

by Daniel Mittler, Greenpeace International

EU Climate Policy: Some positive Signs

EU climate policies are not sufficient. The EU's current unilateral target of minus 20% reductions by 2020 is not in line with the declared aim of the EU to keep global mean temperature rise below 2 degrees Celsius compared to pre-industrial levels. The EU must commit to at least a domestic cut of minus 30%; the EU has pledged to do so, only when the second commitment period of the Kyoto Protocol has been agreed upon. Nonetheless, there is much to be welcomed in the EU's climate policy. The policy aim of staying as far below 2 degrees as possible is the right one. That the EU did commit to a 2020 target in 2007 was the right signal to markets and the rest of the world community. This signal helped to deliver the vital launch of new negotiations for the post 2012 period at the global climate negotiations in Bali in December 2007[154]. If the EU, over the years, had not backed the Kyoto Protocol the way it did, it may never have come into force, thus leaving us without a base to build upon for the more stringent emissions cuts in developed countries that the science demands for the coming years.

Reality Check: Innovation is still being blocked, often by Germany

Yet, there is little to no coherence in the EU's climate, trade and industrial policies. The European Trading System, so far, has been ineffective; it has provided windfall profits for climate-damaging industries, such as the coal industry, rather than cut emissions[155]. Germany, while claiming a leadership role in European climate protection policy, has been and still is blocking high efficiency standards for cars in the European Union. This has led to Germany's car industry simply missing the boat on efficiency innovation; rather than eco-innovate, the industry continues to produce excessively heavy and fast cars, which have no role to play in a transport policy that takes dangerous climate change seriously. The current debate on increasing fuel efficiency of cars at the EU level is a crucial test for the eco-innovation agenda. History has shown that binding standards are an effective means to bring about industrial innovation. Germany must therefore back tough fuel efficiency standards for cars at the EU level – or loose credibility. Last year's decision by the EU to retain tariffs on imports of energy efficient light bulbs is not an encouraging sign, though. Germany intervened in 2007 on behalf of the German light bulb producer Osram, in order to retain punitive tariffs on energy efficient light bulbs being imported into the EU from China[156]. While EU leaders regularly travel to China and call for more action on climate change, the EU, due to Germany's lobbying, failed to back even this simple measure to support the export of climate-saving products *from* China. The rhetoric of trade being a solution to climate change and Germany's interest in supporting eco-innovation reached the barrier of special interests very visibly.

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[154] See Greenpeace International 2007: Backgrounder on Bali Agreements. Greenpeace Briefing 15 December 2007. Accessible at http://www.greenpeace.org/raw/content/international/press/reports/the-bali-decisions.pdf (accessed 13 July 2008).

[155] See Point Carbon Advisory Services 2008: EU ETS Phase II. The Potential and Scale of Windfall Profits in the Power Sector. Accessible at http://assets.panda.org/downloads/point_carbon_wwf_windfall_profits_mar08_final_report.pdf (accessed 14 July 2008).

[156] See Anonymous 2007: EU Will Retain Light Bulb Tariff. BBC News on 29 August 2007, http://news.bbc.co.uk/2/hi/business/6968809.stm (accessed 13 July 2008).

Trade Liberalization and the WTO as a Problem

In recent months, many have stressed the *potential* trade in general and the global trade system more specifically have to contribute to the solution of climate problems. However, today it has also been pointed out that the Doha Round talks at the World Trade Organization are stuck. We would all be in real trouble, therefore, if saving the climate were to depend on saving the Doha Round (which, incidentally, would in our assessment have overall negative consequences for the environment). At the same time, some fundamental problems that the WTO system poses for advancing innovation and climate protection have been brushed aside a little too easily today. For example, the fact that WTO rules do not take into account production and process methods (PPMs), is serious. It matters whether a table was produced with illegal timber or with wood that results from effective eco-system management. It matters whether chemicals poisoned their producers in production or not, even if this fact is not visible when the chemical crosses an international border. It also matters that the WTO is unable to properly address subsidies[157]. The WTO effectively legalizes many extremely damaging subsidies – e.g. for industrial agriculture, a major climate destroyer[158] – while at the same time ideologically opposing subsidies in the name of free trade. The WTO-legalization of damaging subsidies is highly hypocritical. But the WTO's general opposition to subsidies, in principle, is also less than helpful. Subsidies can, after all, be a positive incentive to drive eco-innovation – for example when they support sustainable agriculture or renewable energies. They must therefore be welcomed (when rightly used), rather than put under general suspicion due to free trade dogma. WTO law, furthermore, does at times undermine international environmental law – as it was the case in the WTO ruling on the dispute on genetically modified goods between the US and the EU[159]. And even when WTO law does not undermine environmental law, the fact that there is no certainty in the relationship between environmental law and trade law, does make trade law de facto stronger (as the WTO has the most powerful multilateral dispute settlement mechanism on this planet). The lack of legal certainty between the two regimes, is also used by many to undermine climate-friendly and progressive policies by simply stating that "policy x is not compatible with the WTO". This may, as the WTO's Ludivine Tamiotti has argued today, not always be *legally* the truth of the matter. But the "WTO threat" remains an undeniable reality in environmental policy making. Recently, the myth that stricter regulations are WTO-incompatible was, for example, used to oppose the EU's chemical policy innovation known as REACH (it certainly helped to water down the legislation). My colleagues in Brussels were told several times, that the EU's reluctance to create binding rules to prevent illegal, unsustainable timber from being imported into the EU was due to "concerns that such a ban would be attacked at the WTO". This is a significant obstruction – through myths about WTO law – to an effective climate policy, as up to one fifth of global emissions result from deforestation. Border Tax Adjustments, also, can be WTO-legal, if they are done in the right way and, for example, used by the European Union to penalize the United States for not having signed up to the Kyoto Protocol[160]. Nonetheless, the argument, that such tariffs could

[157] See Knirsch, J.; Mittler, D.; Kaiser, M.; Sack, K.; Thies, Ch. and L. Edwards (n.d.): Deadly Subidies. Accessible at http://www.greenpeace.org/raw/content/international/press/reports/deadly-subsidies.pdf (accessed 13 July 2008), Amsterdam: Greenpeace International.

[158] See Bellarby, J. ; B. Foereid; A. Hastings and P. Smith (n.d.): Cool Farming. Climate Impacts of Agriculture and Mitigation Potential. Accessible at http://www.greenpeace.org/raw/content/international/press/reports/cool-farming-full-report.pdf (accessed 13 July 2008), Amsterdam: Greenpeace International.

[159] See Currie, D. EJ. (n.d.): Genetic Engeneering and the WTO. An Analysis of the Report in the 'EC-Biotech' Case. Accessible at http://www.greenpeace.org/raw/content/international/press/reports/genetic-engineering-and-the-wto.pdf (accessed 13 July 2008), Amsterdam: Greenpeace International.

[160] See New Economics Foundation 2003: Free Riding on the Climate. The Possibility of Legal, Economic and Trade Restrictive Measures to Tackle Inaction on Global Warming. Accessible at http://www.neweconomics.org/NEF070625/NEF_Registration 070625add.aspx?returnurl=/gen/uploads/fcle3ufmrk3r2h55tbg3nw4520082004164028.pdf (accessed 13 July 2008). London: New Economics Foundation.

fall foul of WTO rules has been used by EU trade commissioner Mandelson to oppose such measures – and we also heard such claims from the German trade ministry (BMWi) today.

The WTO being used indirectly to put into question innovative, progressive standards and policies is known as "*chilling*". In my observation of policy practice over the last decade or so, it is one of the least researched but most powerful ways, in which the global trade rules stand in the way of eco-innovation.

EU Trade Policy: Part of the Problem

EU trade policy ignores the imperatives of climate protection, despite recent attempts to argue that the EU's export-oriented agenda is in fact about saving the climate (see below). EU trade policy makers fail to implement even *their own* sustainability impact assessments of their trade policies. In 2005, for example, EU-funded researchers found that further liberalization of forest products would be harmful to forest protection (at least until proper governance structures have been established in timber exporting countries)[161]. Nonetheless, the EU has pursued, since then, a rapid liberalization agenda under the Non Agriculture Market Access (NAMA) negotiations – which include forest products. If they succeed, and an ambitious liberalization drive is agreed under the NAMA section of the Doha Round, this will be harmful for the forests, and hence for climate protection[162]. (A similar story of even EU funded studies being ignored whenever they point to negative impacts of trade liberalization can be told when it comes to ocean protection[163].) The new "Global Europe" agenda of the EU, meanwhile, is clearly driven by export interest of European industries and fails to take into account environmental – or social – impacts[164]. Even the EU's Environmental Goods and Services agenda – about which we also heard much today – is part of the problem, not the solution. At first glance, improving market access for environmental goods and services would appear to be welcome from an environmental perspective. After all, we all do want such things as wind turbines to spread across the globe as fast and easily as possible. But a closer look at the WTO negotiations quickly reveals problems. At the WTO negotiations, it remains unclear exactly what constitutes environmental goods. Therefore, also harmful products could potentially be included in this list. Many products, also, can be used for green *and* harmful purposes, depending on their end use, which is not visible when they turn up at a border[165]. The EU, together with the US, has made a proposal of earmarking 54 specific goods and services for rapid liberalization prior to the Bali climate talks at the end of 2007. This, too, however, was a counterproductive move. The EU/US list is completely one sided. Sectors are earmarked, in which the developed world has offensive market interests. The proposal therefore incensed developing country negotiators and policy makers. The EU proposal – rightly, in my view – seemed simply an attempt at using the popular issue of climate change to make the EU's old-fashioned market access agenda look more palatable – or even noble. In terms of the atmosphere at the Bali climate talks, this proposal was harmful rather than helpful (also because it was done jointly with the United States, who are (rightly) not seen as credible players at the climate negotiations). If there is one concrete thing the EU could do to help the climate negotiations achieve a successful conclusion at Copenhagen in

[161] See Kirkpatrick, C. and C. George 2005: Sustainability Impact Assessment of Proposed WTO Negotiations. Overall Project Final Report for Sector Studies Agriculture, Distribution Services, Forests. Accessible at http://www.sia-trade.org/wto/final%20 report%20page.shtml (accessed 13 July 2008).
[162] See Mittler, D. and J. Knirsch 2007: Improved Market Access at the Expense of the Environment? The Environmental Risks of the NAMA Negotiations at the WTO. Environmental Politics, Vol. 16, No. 1, February 2007, 113-123.
[163] See Allain, M. 2007: Trading Away Our Oceans. Accessible at http://www.greenpeace.org/international/press/reports/trading-away-our-oceans (accessed 13 July 2008).
[164] See Fuchs, P. 2007: Global Europe. Die neue EU-Handelspolitik im Wahn der Wettbewerbsfähigkeit. Berlin: WEED.
[165] See ibid. for further discussion

2009 through its trade policies, it would be to drop the push for Environmental Goods and Services liberalization! Such a move would create trust between countries and would enable other more effective means of, for example, spreading renewable energies to new markets more likely to move forward. These more effective mechanisms include bilateral support, for example, for the development of 'feed in laws' in developing countries or a Clean Technology Deployment Mechanism, which the EU should back and negotiate at the United Nations Framework Convention on Climate Change (UNFCCC).

Innovation Agenda must not be an Excuse for Delay

It should be noted, as well, that while innovation may be desirable, the eco-innovation agenda must never be used as an excuse for delaying action. US President Bush, for example, likes to talk about the need for technological innovation in order to suggest that only in many decades, not now, can emission reductions really – or economically – be achieved. Nothing could be further from the truth. In the energy sector, for example, we have the technologies available *now*, to cut global emissions by almost 50% by 2050 – without the use of nuclear power or unproven Carbon Capture and Storage technologies for the coal sector[166]. If we invest in existing, market-ready technologies for saving energy and producing it with sustainable renewable sources, we can even save money by doing so[167]. Technology deployment can often be a more urgent agenda than technology innovation.

EU must lead the Way

Rather than hope that some way can be found to marry trade liberalization and climate protection, the EU should lead the way on climate protection and eco-innovation through setting and delivering on emission reduction targets. The EU, for example, should immediately start working towards delivering the minus 30% domestic emission cut that the EU acknowledges will be necessary for the world to have a chance to stay below a 2 degree Celsius rise in global mean temperature. If the EU can prove to the rest of the world, that emission reductions on a large scale can be done, this would be the most powerful signal for innovation the EU could send. In order to achieve this 30% reduction, the EU must set clear standards – e.g. on car fuel efficiency or energy efficiency of appliances (including banning the use of conventional light bulbs). Through these standards, European industries will be spurned on to a new age of eco-innovation. In a similar vain, the EU must fix its Emission Trading System; over allocation of permits must be ended and a higher price for carbon secured. This higher price, in turn, will drive innovation by making carbon emission reductions truly matter in the bottom line. The EU should also develop a proposal for a Clean Technology Deployment Mechanism under the UNFCCC to deliver technology transfer to the developing world. Also, the EU must take responsibility to ensure that the fast growing – and highly trade related – sectors of aviation and shipping are effectively tackled in the post 2012 global climate agreement. If these emission sources are not adequately addressed, more and increasing trade will continue to further climate destruction. Ensuring action on aviation and shipping emissions, will be one of many steps needed to ensure coherence between EU climate and trade policies. Policy-wise, that coherence, so ruefully lacking today, could itself be the biggest eco-innovation the EU could achieve!

[166] See Greenpeace International; European Renewable Energy Council 2007: Energy [R]Evolution. A Sustainable World Energy Outlook. Accessible at http://www.energyblueprint.info (accessed 14 July 2008).
[167] See Greenpeace International; European Renewable Energy Council 2007: Future Investment. A Sustainable Plan for the Power Sector to Save the Climate. Accessible at http://www.greenpeace.org/raw/content/international/press/reports/future-investment.pdf (accessed 13 July 2008).

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RESUME: KEY ISSUES FOR AN ECOLOGICAL INDUSTRIAL POLICY

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Introduction

For many years the global debate on trade and climate change lay dormant. Recently, however, it has re-emerged as a topic of key political importance. The Workshop on "Eco-Innovation, International Trade, WTO and Climate: Key Issues for an Ecological Industrial Policy" dealt with current issues in this debate. In addition it looked at how these issues impinged on eco-innovation and ecological industrial policy. The Workshop consisted of three sessions. The first session was on the international framework for trade and its relationship to a resource-efficient economy. The second session dealt with the contribution of trade policy to combat climate change. The third session dealt with the development of an integrated European climate and trade policy. Each of the three sessions featured presentations by international experts on trade and climate change, followed by a discussion between experts, representatives of NGOs and policymakers.

This summary is structured according to the issues discussed at the Workshop – a more satisfactory approach than looking at each session in turn as many issues reoccurred in each session. The issues can be divided into two broad categories: concrete instruments and more general institutional and procedural matters.

On the issue of carbon leakage – the movement of energy-intensive industries from countries with a carbon price to countries without a carbon price – participants debated possible measures such as border tax adjustments and sector-specific standards. Participants also looked at the potential contribution of trade policy to climate change mitigation, including the initiative to liberalise trade in environmental goods and services and possible subsidies for renewable technologies. The issue of technology transfer to developing countries was raised in many of the presentations; here consensus reigned, so the issue was not discussed separately.

Many questions arose concerning the WTO rules and their compatibility with climate change measures. There were also questions about how the various initiatives would influence eco-innovation and ecological industrial policy. These questions cut across various issues and received much attention throughout the course of the Workshop.

Concrete Instruments

Border Tax Adjustments/Border Measures

Participants in the Workshop discussed border tax adjustments and their influence on eco-innovation. It was pointed out that adjusting border taxes would not necessarily create much of an incentive for eco-innovation. At the same time, different types of adjustments would have different effects: border tax adjustments for imports would foster eco-innovation by giving foreign producers an incentive to cut emissions, while border tax adjustments for exports would not foster eco-innovation. A related question discussed at the Workshop was whether border tax adjustments would constitute a form of protectionism, and whether they could therefore be justified under the WTO rules. It was considered that adjustments to border taxes do not discriminate against foreign producers and do not completely eliminate the disadvantage for domestic producers. However, they might still be perceived as protectionist, especially by trading partners such as China. The precise economic impact of

border tax adjustments was held to be unclear; decisions would be a matter of political priorities and costs.

Participants further discussed other border measures, such as an obligation for importers to buy credits or emission rights. It was mentioned that there are already precedents in the European Union for requiring importers to take part in domestic environmental schemes. One such example is the Directive on Waste Electrical and Electronic Equipment, which requires importers to join existing recycling networks or to set up their own recycling system.

Sector-specific Measures

Many countries are interested in setting sector-specific standards for carbon emissions. For example, this topic has been raised by Japan. However, participants in the Workshop pointed out several problems. One participant mentioned that the solutions proposed by industry were very disappointing and did not go far enough. While OECD countries favour sector-specific approaches, developing countries are suspicious of this, seeing it as a back-door approach to introducing commitments for them. Industry standards could constitute an important complementary measure to setting a carbon price.

Subsidies

The issue of subsidies and their effects provoked heated debate at the Workshop. One question raised was how the WTO should deal with subsidising renewable technologies in the future. It was discussed whether the "green box" should be expanded, that is to say those subsidies that are permitted under WTO rules because they are not considered trade-distorting.

Environmental Goods and Services

Liberalisation of trade in environmental goods and services (EGS) could make an important contribution to mitigating climate change. However, some participants considered this wishful thinking in the context of the current negotiation process. The mandate on EGS was held to be unclear. There has been an attempt to fast-track certain goods at the WTO, but disagreement remains over which goods should be included and whether EGS should be grouped as a list of goods or be project-based. Next steps in the negotiations over EGS are difficult to foresee and depend on the willingness of delegations.

Negotiations over EGS were furthermore considered to be highly dependent on progress in other areas of the Doha round, especially over agriculture and non-agriculture market access. If these negotiations fail, there would be no incentive for developing countries to agree to liberalising EGS. Participants in the Workshop expressed varying degrees of optimism and pessimism over the outcome of the Doha round. Some participants strongly criticised the Commission's approach of launching the EGS proposal together with the US just prior to the UNFCCC Conference in Bali, as it was thought that this placed an unjustified focus on developed countries.

Clean Development Mechanism

Issues between developed countries and developing countries were also discussed at the Workshop in the context of the Clean Development Mechanism (CDM). The CDM allows countries which have a cap for climate gas emissions under the Kyoto protocol to realise a part of their reduction requirements in countries that do not have a cap. This is intended to allow developed countries to realise their reductions at lower costs, while stimulating cleaner development in developing countries. The extent to which CDM credits can be used in the European Emissions Trading Scheme (ETS) is restricted. This limitation of CDM credits in the ETS was felt to contradict the objective of realising reductions where they are cheapest.

It was pointed out that current CDM projects are concentrated in China and Brazil, and many developing countries are not benefitting at all due to competition from these two players. A long-term commitment is therefore needed to include more developing countries in the mechanism.

Institutional and Procedural Matters

WTO Rules

Several potential conflicts between climate change measures and WTO rules were discussed at the Workshop. On the Agreement on Technical Barriers to Trade (TBT), the question was raised as to whether member states would be allowed to go beyond future international standards. This was thought to be possible thanks to the wording of the relevant article of the TBT Agreement, which refers to the obligation to comply with international standards as a "basis". There is a voluntary code of good practice for voluntary and private standards in the context of TBT which can only be enforced by the countries. Some participants felt that the WTO rules could be adapted, while others thought that the solution was not to change WTO laws and rulings but to clarify them through case law.

Eco-innovation

Trade can help mitigate climate change by driving eco-innovation rather than protecting established industrial sectors. Participants in the Workshop felt that policies such as emissions trading schemes could damage certain sectors (such as renewable technologies) if they were not strong enough. The real progress achieved by the UNFCCC process was considered to be the establishment of a carbon price. This carbon price was considered an essential incentive for eco-innovation, although most participants agreed that complementary measures were also needed. In this regard, the question of standards was discussed again. It was mentioned that regulation through standards can also act as a key driver of innovation. At the same time, it was pointed out that many countries allow offsets on these standards, which could slow down the innovation process.

The EU economy was felt to have comparatively few concerns in terms of its competitiveness in the context of emissions trading. The EU is a net energy importer, so using less energy will pay off in the future. It was also mentioned that the costs incurred by the energy sector due to the ETS could easily be transferred to the consumer due to the quasi-monopolistic structure of the market.

The Post-2012 UNFCCC Framework

As regards the post-2012 UNFCCC framework, participants discussed whether – in the case of a global agreement being reached – adjustments to border taxes would be a multilateral rule rather than a unilateral measure. One participant also asked whether the focus would then be on eco-innovation or on protecting energy-intensive industries.

Another participant argued that carbon markets would only be integrated over the long term: due to different emission trading systems, differing carbon prices would continue to exist well beyond 2012 – a matter that should be taken into account in the ongoing debate.

The post-2012 framework is a moving target. Some things are already clear, however. The issue of leakage will have to be addressed by countries that have an ETS. In this respect, adjustments to border taxes could form part of an incentive scheme aimed at making innovation interesting.

One challenge for the future is how to include input from trade in the negotiations over a post-2012 climate framework. If interesting proposals are developed about how trade can contribute to mitigating climate change, the question then arises of how these proposals can be best introduced into the climate arena.

Negotiations within the WTO or the UNFCCC?

Choosing the appropriate arena for introducing measures on trade and climate change is an important issue. At the Workshop, debate focused on the liberalisation of environmental goods and services (EGS). It was suggested that if the negotiations on this topic prove to be intractable, it would be easier for a smaller group of countries to agree to liberalisation and deal with the topic in the UNFCCC process, rather than within the WTO. Participants responded that the current process is deadlocked. Although the WTO is multilateral, its members can engage in additional consultations.

At the same time, the liberalisation of EGS is mainly aimed at developing countries, which have the biggest problems with access to green technologies. A further objective is the creation of win-win situations for environmental improvement and development. The current deadlock within the WTO is a result of conflicts between developing countries and OECD countries, and it is difficult to see how developing countries would agree to an initiative outside the WTO. In this way, the chance to create win-win situations would be lost. One participant also mentioned that countries could lower their tariffs unilaterally, but that the WTO process provides added value through predictability and certainty.

The suggestion of making the UNFCCC the forum for negotiating trade issues relating to climate change was criticised by one participant, who expressed concern that it would bring the "north-south conflict" into UNFCCC discussions and create unnecessary tension. It is widely recognised that the climate issue is so important that it has to be more than a topic dealt with by environment ministries. In addition, the UNFCCC process has been very successful so far, whereas getting other actors in might slow down the process.

Concerns over trade often put the brakes on climate change policies, although such concerns are rarely based on facts. To allay these concerns, one participant pointed out that a clear statement was urgently needed by world leaders stating that social and environmental concerns always take priority.

Conclusion

The final statements by participants in the Workshop indicated general agreement on the importance of the relation between trade and climate change for climate protection now and in the future. There was a broad consensus that discussions on the interface between trade and climate change will continue to develop and will remain high on the political agenda. Furthermore, Ecological Industrial Policy was considered an important element in the discussion on trade and climate change: this should be an area of focus in the search of an adequate political response to climate change.

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   The International Institute for Sustainable Development (IISD) is in the business of promoting change towards sustainable development. Through its research and through effective communication of its findings, IISD engages decision-makers in government, business, NGOs and other sectors to develop and implement policies that are simultaneously beneficial to the global economy, the global environment and to social well-being. In the pursuit of sustainable development, IISD promotes open and effective international negotiation processes.

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   Adelphi Research is an independent, non-profit institute that develops and implements innovative sustainable development strategies. By carrying out a broad range of applied research, analysis, and public policy consulting, Adelphi Research increases awareness and understanding of the political, economic and technological forces driving global change. Adelphi Research promotes innovative and sustainable solutions based on constructive international dialogues among policy-makers, business leaders, expert bodies, and civil society groups. To advance environmental, economic and social policies and put sustainable development into practice, Adelphi Research develops and fosters integrative strategies that draw on the full potential for societal innovation.

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   Greenpeace is a global campaigning organisation that uses creative confrontation to protect and conserve the environment and to promote peace. Greenpeace does not solicit or accept funding from governments, corporations or political parties. Greenpeace neither seeks nor accepts donations that could compromise its independence, aims, objectives or integrity. Greenpeace relies on the voluntary donations of individual supporters, and on grant support from foundations. Greenpeace is committed to the principles of non-violence, political independence and internationalism. In exposing threats to the environment and in working to find solutions, Greenpeace has no permanent allies or enemies. Greenpeace has been campaigning against environmental degradation since 1971.

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   The International Centre for Trade and Sustainable Development (ICTSD) was established in Geneva in September 1996 to contribute to a better understanding of development and environment concerns in the context of international trade. As an independent non-profit and non-governmental organisation, ICTSD engages a broad range of actors in ongoing dialogue about trade and sustainable development. ICTSD facilitates interaction between policy-makers and those outside the system to help trade policy become more supportive of sustainable development. By helping parties increase capacity and become better informed about each other, ICTSD builds bridges between groups with seemingly disparate agendas.

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    The **WTO** is an organization for the discussion, negotiation and resolution of trade issues covering goods, services and intellectual property. Its essential functions are administering and implementing the multilateral and plurilateral trade agreements that constitute it, acting as a forum for multilateral trade negotiations, resolving trade disputes, overseeing national trade policies and cooperating with other international institutions. Detailed information is available at: http://www.wto.org.