



International Centre for Trade
and Sustainable Development

Emerging Issues in the Interface between Trade, Climate Change and Sustainable Energy

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EXECUTIVE SUMMARY

The quest for a sustainable energy future is taking place against the backdrop of momentous economic, political and environmental change. Increasing energy consumption, driven especially by the rapid growth of emerging economies such as China and India, rising oil prices, the entry of the OPEC countries into the World Trade Organization (WTO), and growing concerns over energy security are forcing a re-alignment of the energy sector. Renewable energies such as solar, wind, geothermal and modern biomass are on the rise, with wind power being the fastest growing energy source in the world. The Kyoto Protocol, parallel initiatives and a possibly more stringent and inclusive post-Kyoto agreement starting in 2012, serve as important drivers.

Countries need to be able to enact trade policies that support the aims of the UN Framework Convention of Climate Change (UNFCCC) and Kyoto Protocol, i.e. that favour sustainable energy sources over fossil fuels. In doing so, they must also abide by their commitments under the WTO agreements. This paper argues that the aims of the UNFCCC and the Kyoto Protocol can be aligned with WTO commitments in most cases. However, it is important to note that as the UNFCCC does not mandate specific policies and measures but sets targets that countries must reach through their own policies, WTO trade rules – through disciplines on subsidies, border measures, technical requirements, government procurement and taxes – determine the options countries have to use economic and other regulatory tools. Therefore, it is also important for countries to actively pursue in trade negotiations the right to retain and expand the necessary policy space allowing them the flexibility to enact policy in support of climate change mitigation and adaptation.

In addition, the Doha negotiations provide an opening for countries to ensure that the multilateral trade rules support climate change policy. New opportunities include negotiations on the accelerated liberalisation of environmental goods and services (EGS), which could be harnessed for the promotion of sustainable forms of energy use and trade. Subsidy reform, an essential liberalisation component in the Doha Round negotiations, suggests potential lessons for the energy sector. The WTO Agreement on Agriculture and current negotiations will affect carbon management globally, as changes in land use patterns have major impacts on the carbon balance. The overhaul of agricultural subsidies provides an opportunity to promote genuinely sustainable agricultural production and practices, including the expansion of biofuels.

The entry of the oil-exporting countries into the WTO may prove significant for the international trade and use of energy, and could mark a reduction in OPEC's strategic control over the current pricing and production trends of the oil industry. It may even have implications for how the WTO treats the environment, and thus affect global action on climate change. Once the OPEC countries become members, they may lobby to have energy sources disciplined by WTO rules. WTO members may therefore have to tackle heads-on the issues of distinguishing between energy sources that emit high levels of greenhouse gases (fossil fuels) and those that do not (renewable energy). Developing countries may, in this case, find it in their interest to use this opportunity to secure equitable access to energy and policy space.

Emerging Issues in the Interface between Trade, Climate Change and Sustainable Energy

1. Introduction and Context

Global action to address climate change is occurring at a time of momentous geopolitical, economic and environmental change. As the Kyoto Protocol entered into force in February 2005, oil prices had risen to US\$45 a barrel with few signs of falling, rapid economic growth in China and India was driving up energy consumption rates worldwide and greenhouse gas emissions were rising at a rate of 1.9 percent a year.¹ The International Energy Agency (IEA) projects that energy demand and prices will continue to soar, with the world set to use 60 percent more energy in 2030 than at present.

International trade in energy is realigning to these shifts of consumption demand and type. With demand for oil now outpacing production, the possibility of shortages has raised prices and increased its volatility. Political stability is becoming more tied to energy security, even as further improvements are made in energy efficiency. In response, the new major economic actors are seeking to secure their long-term energy needs, pursuing oil development deals even in countries shunned by the traditional major oil importers. These new economic and political alliances are redrawing the geopolitical landscape, raising the global competition for energy resources and the possibility of a dispute over untapped fossil fuel reserves.

The transition from fossil fuels to sustainable energy is also producing structural changes to the energy industry. With oil still one of the cheapest and most convenient energy sources, traditional oil producers will see no flagging in their total sales for years to come. OPEC alone is predicted to have its share of the global oil trade rise from its current one-fourth to almost half by 2020,² as reserves elsewhere are gradually exhausted. But with the push for renewable energy sources and lower greenhouse gas emissions -- driven by the Kyoto Protocol, parallel initiatives and a possibly even more stringent and inclusive post-Kyoto agreement starting in 2012 -- these oil producers will see their share of the global energy trade gradually diminish, and with it their political clout. Already the use of renewable energies such as solar, wind, geothermal and modern biomass energy is on the rise, with wind power being the fastest growing energy source in the world. Out of this shift new energy players will emerge, and the politics of energy security will be redefined as countries seek to fill more of their energy needs from domestic renewable sources.

A third factor that is inducing structural changes to the trade and use of energy is the entry into the WTO of the oil-exporting countries, most notably OPEC members but also Russia and Central Asian countries. With half of the world's oil reserves, their accession negotiations are in effect a bargain between energy exporters and importers. WTO members are using their leverage to seek to force these countries to abandon dual pricing policies -- selling energy much cheaper domestically than for export -- or join the Energy Charter Treaty. OPEC's cartel powers may

¹ Goldemberg, José. "The Case for Renewable Energies." Thematic Background Paper for *Renewables2004*, Bonn: February 2004.

² IEA (2004a) World Energy Outlook. International Energy Agency.

possibly be curbed, if WTO members press for an agreement on competition, or the liberalization of these countries' oil industries, by requesting them to schedule commitments for energy services under the General Agreement on Trade in Services (GATS).³

These demands on oil exporters will be coming not only from the traditional major oil importers such as the US, the EU and Japan. China and India will be backing this pressure. They need cheap oil even more, since they use it less efficiently and, with their lower oil taxes, have less room to cushion themselves against price spikes. The UK, for instance, produces US\$2,859 GDP per barrel of oil, while China produces just US\$695.⁴ Nor is it just the major oil importers that will be behind this push; almost all of the Least Developed Countries (LDCs) are oil importers and can afford least of anyone today's high prices. Two billion people in developing countries still lack access to modern energy services, and the poorest countries are most vulnerable to the effects of climate change.

With countries taking their first important steps towards reducing greenhouse gas emissions, global efforts to reduce climate change must be seen in the context of: growing consumption demands; diversifying energy sources; economic growth in developing countries that is repositioning financial and political power; and a globalising economy that is in the process of transforming international trade patterns and therefore subject to unpredictable and new stresses that can have worldwide impact.

To support a shift towards a sustainable energy future, trade negotiators, market and non-state actors must be aware of how these trends interact, and exploit the opportunities they provide. The Doha negotiations are an opening for countries to ensure that the multilateral trade rules support climate change policy not just until the next round, but until climate change is no longer a threat. There are real challenges ahead, and a full appraisal of them can help focus efforts and prioritise needs. In the current energy market there are both economic and regulatory barriers that are constraining the emergence of an energy system based on renewable sources. Not only do these need reforming, but governments will have to take the lead in developing national policies to transform our fossil fuel-based economy into one that is sustainable.

2. Opportunities and Obstacles for Energy Reform

2.1 The Doha negotiations⁵: Making the WTO work for sustainable energy

At the global level, trade liberalization and climate change mitigation and adaptation are currently managed under separate and complex legal regimes. In the transition towards a sustainable energy future, opportunities and challenges abound with regard to harnessing the multilateral trading system towards this cause. However, a better understanding of the linkages between trade rules and the United Nations Framework Convention on Climate Change (UNFCCC) is needed for poor countries to navigate this new policy context and find cross-cutting policy solutions that are supportive of sustainable development.

³ Personal communication from Werner Corrales.

⁴ IEA (2004a) World Energy Outlook. International Energy Agency.

⁵ The WTO Doha Round negotiations were launched in 2001 and were originally scheduled to conclude at the beginning of 2005 but have been seriously delayed.

The Doha Round negotiations at the WTO provide new opportunities to support the steps countries need to take towards a sustainable energy future. The negotiations on the accelerated liberalisation of environmental goods and services (EGS) – conducted with a view to phasing out tariffs and non-tariff barriers – have the potential to promote sustainable forms of energy use and trade. Subsidy reform, an essential liberalisation component across sectors in the Doha Round negotiations, also suggests potentially beneficial outcomes. WTO Members are committed to phasing out agricultural export subsidies and substantially cutting domestic support. Based on the experiences in the agriculture as well as the fisheries negotiations, the feasibility of disciplining energy subsidies in the WTO context could be explored in future negotiations.

The WTO Agreement on Agriculture and current negotiations in this area will also affect carbon management globally, as changes in land use patterns have major impacts on the carbon balance. Global shifts in cropping patterns are expected to result from the eventual agreement that will bring down tariffs, phase out export subsidies, and reform and decrease internal agricultural support programmes. The overhaul of agricultural subsidies provides an opportunity to promote genuinely sustainable agricultural production and practices. The promotion of practices that increase carbon sequestration, as well as production of crops that serve as feedstock for biofuels – clean-burning, carbon-neutral fuels derived from agricultural crops that can be used to partially replace liquid petroleum products – could potentially expand following reform to the Green Box.

Last but not least, in order for countries to develop sustainable energy policies, certain preconditions must be in place. While the UNFCCC does not mandate specific policies and measures but rather sets targets that countries must reach through their own policies, WTO trade rules – through disciplines on subsidies, border measures, technical requirements, government procurement and taxes – to a great extent determine the options countries have to use economic and other regulatory tools. These may impose constraints on countries implementing climate and sustainable energy measures. Multilateral trade negotiations will need to take into account the need to preserve sufficient policy space, as well as understand existing policy spaces, for governments to undertake climate change mitigation and adaptation measures.

2.2 Challenges to reforming unsustainable energy use

Less than two weeks after the Kyoto Protocol entered into force, China passed its first renewable energy law. The Law on Renewable Energy declared renewable energy as a priority for the country's energy development strategy, and commits China to achieving 10 percent renewable energy by 2010. To reach that target the law establishes policies and market incentives that have been used to great success in countries such as Germany and Spain.

One policy it adopts is a 'Feed-In Law' that has been attributed as one of the major factors behind Germany's enormously successful wind energy sector.⁶ By requiring energy distributors to purchase renewable energy produced in its supply area at a minimum price, Germany's 'Feed-in Law' assured investors of a stable market for renewable energy. Producers found it easier to

⁶ Sawin, Janet L. National Policy Instruments: Policy Lessons for the Advancement & Diffusion of Renewable Energy Technologies Around the World. Thematic Background Paper for *Renewables2004*, Bonn: January 2004.

obtain loans, which spurred technological innovation and over time created economies of scale. In the past five years, Germany's wind power doubled its share of the domestic energy market. The purpose of China's law is similar: in a country where renewable energy accounts for less than 3 percent of total energy production, the law is intended to signal to investors that renewable energy is in China for the long haul.

Yet the fact that many observers called China's 10 percent goal unrealistic equally demonstrates the sizable obstacles ahead. In 2004, almost 70 percent of China's energy consumption came from coal, most of it consumed at highly inefficient rates. It plans to add 1.1 billion tons of coal production capacity by 2020, more than one and half times its current total coal consumption. And China's dramatic GDP growth of near 10 percent is still outpaced by its energy consumption rate, which grew 13.5 percent in 2003. All this bodes ill for global climate change: the International Energy Agency (IEA) predicts that by 2030 China will have passed the US as the world's biggest greenhouse gas emitter.

China is only the most extreme example of a trend that is occurring worldwide. It is a well established fact that the greenhouse gas emissions of the past two centuries, mostly from developed countries, have contributed to raising temperatures worldwide by 0.6 C.⁷ With developed countries struggling to reduce their emissions and industrialization gaining speed in developing countries, global emission rates are rising at a fast pace. The threat to the environment is real. At the very least, the earth's temperature is predicted to increase by 1.4 C over the next century. If economic growth continues on its current trajectory, and emissions are not reduced, temperature will rise by 5.8 C, with disastrous consequences for the environment.

Worrying about rising energy demand misses the more important point. A high energy demand is not the most pressing problem; the problem is our dependence upon fossil fuels. Fossil fuels are currently among the cheapest energy sources in the world. They are also the best adapted to the transportation and manufacturing needs of an industrialized economy, hence their attractiveness to all countries with high energy demands, especially developing countries with their growing energy appetites. While our reliance on fossil fuels is not the only factor in climate change – half of Brazil's energy comes from 'clean' hydro-electricity, yet its burning of rainforest by farmers and loggers has made it one of the world's top emitters of greenhouse gas emissions – the low costs and convenience of fossil fuels have created a destructive cycle from which it is difficult to move away.

Not an impossible task, though. The low costs and convenience of fossil fuels did not occur naturally. They are the result of longstanding policies by developed countries, as part of national energy security strategies, to subsidize and support the production of coal, oil and natural gas, whether sourced domestically or abroad. Even today, despite what we know about climate change and despite the enormous profit margins in the oil industry, the fossil fuel industry still receives as much as US\$151 billion worldwide in annual subsidies, either as consumption or production subsidies.⁸ It is only recently that renewable energy has begun to receive more research and development funds than the fossil fuel industry (though both are dwarfed by the amount devoted to nuclear power). In real terms, however, research spending on renewable

⁷ UNFCCC. http://unfccc.int/essential_background/items/2877.php

⁸ Pershing, Jonathan and Jim Mackenzie. "Removing Subsidies: Leveling the Playing Field for Renewable Energy Technologies." Thematic Background Paper for *Renewables2004*, Bonn: March 2004.

energy has dropped by more than half compared to the amount spent twenty years ago.⁹ This despite the evidence that energy transitions never occur without substantial government investment and support.¹⁰

The purpose of the policies supporting fossil fuels was to secure a cheap and, at the time, plentiful source of energy that allowed the major countries to feed their growing energy needs. Today fossil fuels are neither cheap nor plentiful, and the policies are harming both the environment and the development of new energy sources. Decades of reliance upon fossil fuels has entrenched a set of economic actors that resist the obvious need to shift into renewable energies, and use their economic clout to lobby governments to protect their interests. Governments are understandably reluctant to reduce subsidies that might lead to job losses, yet a clear view of the economic opportunities that renewable energy can create would allay these fears. Germany, which sustains its coal workers with more than five times the amount of the nearest country, has been gradually phasing out its subsidies and re-directing its support to wind power. Through its Feed-In Law, it has helped create tens of thousands of jobs to replace those lost in the coal industry. Japan's '70,000 roofs' policy proves that the same can be done for solar energy: thousands of technicians are needed to install the solar modules.¹¹ And Brazil's ethanol program has shown the possibilities open in biomass production. Its ethanol is now cheaper per unit of energy than gasoline, and subsidisation ended in the late 1990s.¹²

These examples, however, stand out not just because they were so successful, but also because they are rare. While they provide lessons that can be replicated elsewhere, together they represent only a small fraction of today's energy capacity. High subsidies, low funding for renewable energies and counterproductive government policies have landed us in a situation in which, even as we face a possible shortage of fossil fuel, we do not have the knowledge or resources to create the energy technologies we need to replace them. In the short-term, therefore, the world's use of fossil fuels will increase before it decreases.

3. Trade Policies for a Sustainable Energy Future: Aligning Rules with Aims

The Kyoto Protocol is only a first step towards reducing greenhouse gas emissions, and expires in 2012. Without the US, and until developing countries commit to emission reductions, the Protocol covers just one third of the world's total emissions. Getting wider commitment to emission reductions for the post-Kyoto phase is essential, but it requires demonstrating to those who have doubts about the Protocol's efficacy that a mix of domestic and trade policies and the use of its flexibility mechanisms – emissions trading, the Clean Development Mechanism and Joint Implementation – can work.

To reach the targets established in the Kyoto Protocol, the Parties have at their disposal multiple regulatory measures. These measures, the Protocol states, "should not constitute a means of

⁹ International Energy Agency. <http://www.iaea.org/dbtw-wpd/textbase/stats/rd.asp>.

¹⁰ Pershing, Jonathan and Jim Mackenzie. "Removing Subsidies: Leveling the Playing Field for Renewable Energy Technologies." Thematic Background Paper for *Renewables2004*, Bonn: March 2004.

¹¹ Sawin, Janet L. National Policy Instruments: Policy Lessons for the Advancement & Diffusion of Renewable Energy Technologies Around the World. Thematic Background Paper for *Renewables2004*, Bonn: January 2004.

¹² Ibid.

arbitrary or unjustifiable discrimination or a disguised restriction on international trade.” At the same time, it obliges Kyoto Parties to implement these measures in ways that minimize adverse trade effects.¹³

Other than the provisions for emissions trading, the Kyoto Protocol does not contain Specific Trade Obligations (STOs). Some of the measures available to parties in the implementation of the Protocol, however, may have trade effects in certain cases: subsidies for renewable energy or research and development; carbon taxes; climate-friendly standards and labels for goods and services, such as fuel efficiency in automobile engines; regulatory quotas on renewable energy use; and government regulations that favour products and processes that are environmentally preferable because they cause less harm to the climate.

In implementing these measures, Kyoto Parties will have to abide by their WTO commitments. The two regimes are governed by different bodies of law. How they interact is both a legal and political matter: legal in that the WTO’s agreements establish principles and rules that govern behaviour, yet are open to interpretation by the Dispute Settlement Understanding (DSU); and political, as these agreements are subject to negotiations between WTO members. It is an evolving body of law, as is the Kyoto Protocol, and the two regimes can be made to support each other’s ends.¹⁴

To make this happen, Kyoto Parties need to have a sound understanding of both WTO jurisprudence and the motivations of political actors. Trade policies in support of the Kyoto Protocol (and those in the post-Kyoto stage) will induce structural changes to domestic economies, affecting industrial competitiveness, international trade and re-distributing wealth and social benefits. Governments need to be confident that these policies cannot be challenged under WTO rules to ensure that their efforts are not counterproductive. When designing these policies, governments must be aware of WTO case law, how precedents can be used to defend a policy and where to push for an expansive interpretation of an article. Where potential areas of conflict are identified, these need to be changed in the political forum through trade negotiations.

The current Doha Round is an opening for the Kyoto Parties to set new rules governing subsidies, environmental goods and eco-labels. The four major emerging economies – Brazil, India, China and Russia – are all parties to the Kyoto Protocol. Their support for policy flexibility should be enlisted; in the future, it will be these policies that they will need in order to reduce their emissions. China’s renewable energy law, for instance, requires domestic electricity distributors to purchase a quota of renewable energy.¹⁵ As another example, Brazil’s subsidies for its new biodiesel programme may fall under WTO discipline, since while the Green Box provides coverage to environmental measures, its guiding principle is that Green Box supports cause no or little trade distortion. If Brazil exports biodiesel in the future, fossil fuel exporters may question if indeed Brazil’s subsidies do not distort the energy trade.

Using WTO jurisprudence to guide their policies, and trade negotiations to advance their aims, Kyoto Parties can stake out the necessary policy space to give them the flexibility to reduce their

¹³ UNFCCC, art. 3.5, referred to by the Protocol and Protocol, art. 2.3..

¹⁴ Howse, Robert. “World Trade Law and Renewable Energy: The Case of Non-Tariff Measures.” UNCTAD. (Forthcoming)

¹⁵ Ibid.

greenhouse gas emissions. Parties are already hemmed in by a multitude of barriers: a rigid energy market, an entrenched set of actors resistant to change, a dearth of renewable energy technology and small economies of scale in those extant, consumers habituated to fossil fuel-style footprints, and for the developing country Parties, growing energy consumptions even as they suffer from a lack of financial resources. Climate change reduction will need innovative policies in the form of both carrots, and potentially sticks. Germany, Brazil and Japan's experiences have already demonstrated that government policy plays a far larger role in renewable energy development than natural resources do.¹⁶ While their policies have never been challenged by other WTO members as being discriminatory, Kyoto Parties need to ensure that these policies, and others that will be needed in the transition to a sustainable energy future, can withstand any that may arise.

3.1 WTO principles and climate change policies

The fundamental principle of the WTO is non-discrimination. Every WTO member agrees to treat the products of another member the same as it treats its own, or the same as it treats the products of any other member, in return for reciprocal treatment. These are the principles of National Treatment and Most Favoured Nation. If a member extends preferential treatment for a good to one member it must apply this equally to the same good of all other WTO members. The only exception to this is if the treatment is applied as part of a preferential trade agreement, such as the North American Free Trade Agreement (NAFTA), which the WTO permits if the agreement meets certain conditions.

Any trade measure implemented to reduce climate change emissions, by encouraging renewable energies or taxing an energy source based on its carbon content, will have to conform to these principles. For instance, a government policy that taxes energy from foreign wind power at a higher rate than domestic wind power would not be legitimate, since such a policy does not meet the test of non-discrimination. It is difficult to predict the legitimacy of other measures that stray into regions for which the WTO's agreements provide no guidance, or that conflict with narrow interpretations of WTO jurisprudence but not with expansive ones. The legality of these measures can only be decided by one of two means: by the ruling under the dispute settlement understanding (DSU), or by a WTO agreement. Precedent provides some guidance, and although not bound by jurisprudence, the WTO's DSU has traditionally relied upon precedent in its judgments. Because of this, it is possible to infer that many, if not all, of the Kyoto Protocol policies are potentially compatible with the WTO. Whether they are recognized by the WTO as compatible is of great importance, as most supporters of the Protocol believe the Protocol's climate change goals may not be achievable without this.

3.1.1. Subsidies

In economic terms, and as it is understood by the WTO, a subsidy is a financial benefit provided by a government, either to a specific company or industry, or as general support. Usually a government provides a subsidy to develop or support a domestic company or industry as part of a national industrial policy or to rectify what it perceives as market imbalances. Countries have

¹⁶ Sawin, Janet L. National Policy Instruments: Policy Lessons for the Advancement & Diffusion of Renewable Energy Technologies Around the World. Thematic Background Paper for *Renewables2004*, Bonn: January 2004.

traditionally used subsidies to develop ‘infant industries’ until they are efficient and competitive enough to compete with foreign companies.

The WTO’s Agreement on Subsidies and Countervailing Measures (ASCM) bans all export subsidies and specific subsidies that favour domestic use of goods over foreign goods. All other subsidies are permissible as long as they do not cause adverse trade effects to another member, something defined by the ASCM as an ‘injury’ or ‘serious prejudice.’ Until 2000, some subsidies were deemed non-actionable and exempted from these rules if they met specific criteria. The subsidies could be used for research and development; for the development of disadvantaged regions; and for the upgrading of technologies to meet new environmental standards. These subsidies are no longer permissible, however, as they were exempted from actionability for the years 1995-2000, and the exemption has not been renewed.

These non-actionable subsidies are of potential interest to the Kyoto Parties. Developing renewable or energy-efficient technologies is one of the strategic methods of achieving the Protocol’s targets, and it is also one of the greatest challenges facing the Parties. Technology development demands a large amount of initial capital, has many risks and, in the short-term, provides a low return on investment.¹⁷ Despite the climate and local health benefits such technologies would create for society, private investors are typically unwilling to invest, since a social good has little economic value to them. All of these factors provide reasons for governments to step into this vacuum, provide start-up funding and coverage for risks. As mentioned previously, no energy transitions have taken place without the financial support of the state.

Kyoto Parties may benefit from having the non-actionable subsidies restored. In the current Doha Round, however, the negotiations on the Agreement on Subsidies and Countervailing Measures have made hardly any progress and substantive changes are unlikely to be made in this round. Although Canada and the EU made a brief mention of their interest in discussing the environmental exception, this was never pursued.

Even if the environmental exception is restored, it has limits: it only allows 20 percent of the cost of upgrading to be covered by the government. In comparison, agriculture’s Green Box allows government support up to but not over 100 percent, as long as it does not have trade distortive effects.¹⁸ One option for Kyoto Parties is to consider adapting a Green Box to their needs. While the environmental exception is currently dormant and not expected to be revived in the near future, it may be useful to aim for a Green Box as a long-term goal. Its purpose would be to promote the development of renewable energy technologies. In the Doha negotiations on agriculture, none of the countries have denied the importance of the Green Box. Those who criticize agriculture’s Green Box have focused on holding governments responsible to demonstrate that green box supports have little or no trade distortion. It may be possible to argue for an energy Green Box, both for environmental reasons (climate change) and for economic reasons (market failure).

¹⁷ Pershing, Jonathan and Jim Mackenzie. “Removing Subsidies: Leveling the Playing Field for Renewable Energy Technologies.” Thematic Background Paper for *Renewables2004*, Bonn: March 2004.

¹⁸ Dana, David. “WTO Legal Impacts on Commodity Subsidies: Green Box Opportunities in the Farm Bill for Farm Income Through the Conservation and Clean Energy Development Programs.” Environmental Law & Policy Center. Chicago: 2004.

As important as subsidies are to kick-start an energy transition, they are only one economic incentive to support the development of renewable energy, and may not necessarily be the best, since subsidies by their very nature distort market conditions.

3.1.2. Taxation

A carbon tax is one of the strongest measures that governments have at their disposal to encourage renewable energy. Switzerland, Japan and several EU countries have already begun applying carbon taxes as one part of their climate policy mix.¹⁹ A carbon tax can be applied in various ways: as an excise tax on consumption; as an excise tax on energy inputs; as an excise tax based on energy production processes; and as a border tax adjustment (BTA).²⁰ For each tax, WTO jurisprudence and case law provides reason to believe that they can be applied in ways that do not conflict with WTO rules.

Nothing in the WTO prevents a member from deciding how much tax to apply to a good. It only requires that the tax be applied equally to domestic and foreign products that are similar or 'like.' WTO law deems products to be like if they are "directly competitive or substitutable." To apply a carbon tax to fossil fuels and exempting renewable energies from a similar tax requires proving to the WTO that the two energy sources are not like or "directly competitive or substitutable." It is obvious that fossil fuels are directly competitive; the issue then becomes to prove that they are not like or substitutable.

The 1970 GATT Working Party on Border Tax Adjustment clarified the concept of 'likeness.' In determining whether two products are 'like' each other, an assessment, it said, must consider the product's physical characteristics, its end uses and consumer habits.²¹ In the *EC-Asbestos* case, the dispute settlement panel extended this definition to encompass health risks. Applying this to fossil fuels and renewable energies, a case may be made that although both have the same end-uses, their physical differences and the environmental consequences they produce qualify them to be distinguished as unlike.

If upheld, this defense would allow WTO members to apply carbon taxes to fossil fuel inputs. To apply the tax to a good based on how it is produced is a different matter. As a general rule the WTO has not distinguished goods on the basis of how they are produced, i.e. on their "process and production methods" (PPM). None of the precedent cases rule out the possibility of arguing that similar end-use goods produced in different ways are 'unlike'; however, it will require either the judgment of a dispute settlement panel, or an agreement between WTO members, to recognize the distinction. This is one of the main issues in the current negotiations on environmental goods and services in the Doha Round (below).

If that argument fails, a carbon tax on production methods could be defended on the environmental exceptions in GATT Article XX, with the support of the WTO's Preamble recognizing sustainable development. In the *Shrimp-Turtle* dispute, the dispute settlement panel

¹⁹ Tarasofsky, *Ibid.*

²⁰ Howse, Robert. "World Trade Law and Renewable Energy: The Case of Non-Tariff Measures." Prepared for UNCTAD.

²¹ *Ibid.*

ruled that as a production method may have a negative impact on an exhaustible natural resource, the Article XX exception provides a legal rationale for a country to limit or impose tariffs upon goods produced in such a way. It did not consider the issue of whether the two products were 'like' products as defined in GATT Article III.

Countries that impose a carbon tax on their domestic goods and services may worry that the tax will reduce the competitiveness of domestic industries. In this case, a border tax adjustment could be applied on foreign imports and domestic exports to ensure that carbon tax aside, domestic and foreign producers are competing on an equal basis. A border tax adjustment on a foreign import would be a tax on foreign producers; a border tax adjustment on domestic exports would be a rebate for domestic producers. The latter should only be applied to goods destined for countries without carbon taxes and related border tax adjustments, otherwise a domestic producer would be paying two carbon taxes, the domestic carbon tax and a foreign border tax adjustment. The WTO allows members to apply border tax adjustments. However, the legality of applying a border tax adjustment based on a product's implicit carbon content is still undecided.²²

3.1.3. Environmental Goods and Services

The definition of an environmental good or service is one of the thorniest issues at the WTO, and an important one with regard to climate change mitigation. From an environmental perspective, it is obvious that renewable energy is preferable to fossil fuels, and energy-efficiency over inefficiency. But while it may seem like basic common sense, trying to make a distinction between these environmentally preferable products or processes and those that are not, while still respecting the WTO principles of non-discrimination and meeting the development goals of the Doha Round, has proven to be very challenging.

Making the distinction is necessary if governments are to foster technologies that emit low or no amounts of greenhouse gases, and goods that are energy-efficient. As part of the Doha mandate, WTO members are to negotiate on the reduction, or elimination, of tariffs and non-tariff barriers on environmental goods and services.. Lower tariffs would reduce the costs of these goods, thereby increasing their trade and providing an economic incentive to manufacturers to produce more of them. The distinction has implications not just for environmental goods and services, however. It also provides the rationale for carbon taxes, renewable energy quotas, eco-labels and standards. Having this distinction recognized by the WTO would significantly enlarge the policy space for governments to implement trade measures to help them reduce their greenhouse gas emissions.

The WTO principle of non-discrimination requires that 'like' products should be treated the same by all WTO members. To qualify as an environmental good (or service), the good must be distinct from or un-like an otherwise similar good. If it isn't, then WTO members have no right to give preferential tariffs to that good. The problem negotiators have encountered is agreeing on the criteria: is an environmental good simply one that is used for an environmental purpose, such as for cleaning an oil spill? Or is it also one that is less harmful to the environment than another similar product? Or one that is produced in ways that are less harmful to the environment than

²² Lodefalk, M and M Storey (2005). "Climate Measures and WTO Rules on Subsidies", *Journal of World Trade*, Vol. 39, No. 1.

other available methods? And would a product produced in an environmentally-preferable manner still be an environmental good even if it might not be recyclable?

These questions are framed in the negotiations as issues of 'end-use,' 'process and production method' (PPM) and 'environmentally preferable products.' In the negotiations, all members have agreed that goods and services whose 'end-use' is for an environmental purpose are legitimate. Beyond this basic criterion, there is no consensus. Developing countries have opposed incorporating process and production methods into the definition on the basis that it would create a de facto trade barrier for them, since it is only the wealthier countries that would have high standards, and only they have the financial and technical resources to comply with them. The EU, for its part, has proposed using environmental principles and goals embodied in Multilateral Environmental Agreements (MEAs) and the Millennium Development Goals as a guide to identify environmental goods and services²³. This would include sustainable energy, which has been identified as a crucial factor in alleviating poverty, one of the eight Millennium Development Goals. Using MEAs and other environmental agreements as a guide has been opposed by a majority of members, although it is worthwhile noting that a proposal by Qatar²⁴ to have natural gas considered an environmental good followed the EU's method.

Other members have pointed out the technical challenges that a PPM good would present for customs administration. The International Standard Organization is, at the moment, only able to identify goods based on objective criteria, such as definitions or references to a good's characteristics. Using criteria such as end-use, PPMs, environmental performance and sustainable materials poses technical difficulties. UNCTAD has suggested members may need to develop an international agreement on environmental goods, or amend the Harmonized System (HS).

A further difficulty of incorporating concepts like 'environment-friendly,' energy efficient or climate-friendly, is that such concepts are subjectively defined, and will vary upon science's understanding of our environment, the limits of our technological capacity and the value a country places upon the environment. Qatar has requested that natural gas be considered an environmental good, arguing that while it is not carbon-free, it has lower carbon content than oil, and will be an important energy source for the transition to sustainable energy. If it is approved as an environmental good, at what point does Qatar's natural gas cease to be environmentally-friendly? And should it lose its tariff-free status once this happens? This might require an update mechanism that judges the products on an environmental goods list in view of the most recent scientific knowledge and technological innovations, or what has been called a 'living list.' A further point can be made that once all goods are tariff-free, the economic incentive to use environmental goods and services will be lost. A question for Kyoto Parties to consider is how this incentive can be replaced, or if it should.

In general, developed countries have a comparative advantage in producing many of the technologies and products with an environmental end-use currently included in indicative lists of environmental goods developed by the Organisation for Economic Cooperation and Development (OECD) and Asia Pacific Economic Cooperation (APEC). Their export interests are apparent, while developing countries have yet to identify products of particular interest to them

²³ See for example, TN/TE/W/47 (17 February 2005).

²⁴ Negotiations on Environmental Goods: Efficient, Lower-carbon and Pollutant-emitting Fuels and Technologies. Submissions by Qatar. TN/TE/W/19 (28 January 2003).

in the negotiations. In this regard, the idea of including agricultural environmental goods of developing country export interest has been floated, although not yet in the form of a concrete submission. Including agricultural environmental goods would raise yet another set of definitional challenges, but could also energize the discussions and generate broader buy-in. Among products not yet clearly defined as being either industrial or agricultural are different forms of biofuels, which developing countries could produce for an export market (see section below on agriculture).

In the negotiations, the EU has proposed that technical assistance mechanisms for developing countries should be considered after an environmental goods list is agreed. Taking this stance, however, may make it harder to persuade developing countries who want to know the scope of the list, and therefore the financial technical challenges they will have to face and how much aid developed countries will provide, before they agree to it. These challenges will likely prove to be large. Of the 182 environmental goods on the combined APEC and OECD lists, only 28 are exported by developing countries.²⁵ In order to achieve forward-movement, the interests of developing countries will need to be at centre-stage.

3.1.4. Standards and Eco-Labels

Standards and eco-labels can allow a government to mandate producers to ensure that their goods or production methods are energy efficient or climate-friendly. They are also tools that can be used by non-governmental actors to persuade companies with large climate impacts to adopt voluntary standards and participate in label schemes that indicate they meet them. As used by both groups, standards and eco-labels will play a large role in enabling both producers and consumers to participate in emission reductions. By providing a consumer with information they might not otherwise have, a consumer can influence market patterns, technology development and greenhouse gas emissions through their purchases. Energy efficiency labels on industrial and home refrigeration technology, for instance, are a relatively simple means to drastically reduce energy use: an estimated 80 percent of the climate change impacts of refrigerating plants are due to energy consumption.

In the Doha Round, eco-labels and standards are being discussed as they relate to environmental goods and services, and within the negotiations on Non-Agricultural Market Access (NAMA). In the NAMA negotiations, a broad range of environmental standards and mandatory labelling, including fuel-efficiency standards for car engines and energy-efficiency labels for electric home appliances, have been raised as potential non-tariff barriers by WTO members.²⁶ The US and Korea have raised the most questions related to climate-friendly standards, which they argue are either a contravention of WTO rules (i.e. are discriminatory), or impose 'onerous' safety requirements. These countries would like to see the EU's energy efficiency labelling schemes on electric ovens and washing machines, for instance, have lower standards, which could be the result after a give-and-take negotiating process. The WTO agreement on Technical Barriers to Trade (TBT) does, however, allow technical standards for the purposes of fulfilling legitimate environmental objectives, such as climate objectives. They should not discriminate against other members' products, nor create unnecessary trade obstacles – in fact, they should be implemented

²⁵ Summary Report on the Tenth Meeting of the Committee on Trade and Environment in Special Session. October 2004.

²⁶ "Full Scale of WTO Challenge to Health and Environment Revealed." Friends of the Earth: May 2005.

so as not to be “more trade restrictive than necessary” in order to fulfil their stated objective. If these criteria are fulfilled, the energy efficiency standards or schemes are fully permissible. Voluntary schemes, for their part, fall outside the remit of the WTO.

Unlike most other WTO agreements, the TBT explicitly allows goods to be distinguished on the basis of how they are produced. It therefore presents an opportunity for countries to set standards on the basis of process and production methods. However, the TBT does not explicitly allow products to be distinguished on the basis of non-product related process and production methods. This would have to be tested by the DSU. Nevertheless, the TBT provides great flexibility for countries to encourage sustainable energy production and consumption. For trade negotiators, the TBT’s precedent could be extended to other negotiating areas, such as in broadening the definition of environmental goods and services.

3.1.5. Agriculture and Climate Change

Agriculture lies at the heart of the current round of trade negotiations. This is an area in which developing countries are seeking to rectify historic imbalances due to massive developed country subsidies and high levels of border protection, including tariff escalation. At the end of the Doha Round, more agricultural goods will likely be traded, and global cropping patterns changed. In terms of its impact, agriculture is a major driver of land conversion and environmental change. It can serve both as a source of carbon emissions and as a carbon sink, while also being directly impacted by atmospheric “carbon fertilization” and a changing climate, including unpredictable local weather patterns and increasing extreme weather events. In addition, increased global transport of agricultural commodities and produce will lead to higher emissions of carbon dioxide. Different crops and different regions of the world will be affected by climate change in different ways – exactly how is not yet known.

Carbon Sequestration

The global atmospheric carbon balance is significantly affected by agricultural land use worldwide. If land is converted from forest to agricultural land, carbon is released to the atmosphere, which enhances the greenhouse effect. Agriculture also binds carbon in crops and soil, and certain practices do more than others to sequester carbon. At the moment, agriculture’s ratio of emission to absorption is much higher than it needs to be, and can be reduced through changing tillage methods, reverting cropland to grassland and improving water and nutrient use. Better management practices include no-till or low-till agriculture, use of shelterbelts, terracing of slopes and organic farming. In the US, for instance, agriculture contributed 7 percent of the country’s total CO₂ emissions. Its crop soils have the potential to absorb enough carbon for the US to reduce its 1990 greenhouse gas emission level by 12-40 percent.²⁷ In Europe, some estimates suggest that changing agricultural practices on 20 percent of the land could take care of 9 percent of European reduction commitments under the Kyoto Protocol.²⁸ While there are few agricultural subsidy programmes focusing on carbon sequestration specifically, these may become more prominent in the future. As they relate mainly to better management practices or set-aside programmes, they would seem to fall naturally into the Green Box. Current subsidy reform, with

²⁷ “Agriculture’s Role in Climate Change.” Pew Center on Global Climate Change. Brief, Number 2: October 2001.

²⁸ Working Group on Sinks of the European Climate Change Programme.

the emphasis shifting towards decoupled payments and extensification, may also naturally lead developed countries towards practices that support carbon sequestration.

Biofuels

The production of feedstock for biofuels represents an emerging opportunity within agriculture to contribute to climate mitigation and the transition to a sustainable energy future. Biofuel production has a number of additional benefits: it displaces the need for fuel imports and thus increases energy security, and promotes job creation, diversification and rural development. In addition to directly displacing petrol, ethanol can be used to replace the toxic petrol additive MTBE (serving to improve oxygenation), which is increasingly being banned around the world.

Currently, Brazilian ethanol processed from sugar cane is the only biofuel produced at a competitive price. Through government legislation and initial price supports, Brazil has been able to transform from sugar cane production into an efficient producer of ethanol – around 50 percent of Brazilian cane is not crushed into sugar, and 50 percent used for ethanol production, with the same plants capable of producing both. Not only has the industry created thousands of jobs, but the use of ethanol has led to a 10 percent reduction in Brazil's total carbon emissions. Its market penetration and competitiveness has allowed the government to phase out subsidies. High oil prices as well as a new generation of "flex-fuel cars" that run on either petrol or ethanol or any mix of the two have given the sector a recent boost. All regular petrol in Brazil contains a 25 percent ethanol mix.

The US is the second largest producer, mainly converting corn into ethanol. The production of biofuels in the EU is centred on biodiesel derived from oilseeds (such as rape seed). However, significant research is going into new options, particularly ethanol production based on dedicated energy crops, such as poplars or switch grass. This option promises extremely low "wells to wheels" carbon emissions, given that the woody leftovers can be used to fuel the conversion process.²⁹

Overall, the greatest potential for the production of biofuels can be found in the South where climatic conditions are favourable - whereas developed countries, under their Kyoto commitments, potentially provide the greatest markets. The EU, for example, has set a target of having a 2 percent biofuel blend by the end of 2005, and a 5.75 percent blend by 2010.³⁰ This brings up the issue of land-use and potential need for imports: around 9 percent of EU agricultural land would likely be used to reach this goal. As biofuel production increases, this will create complex interactions with the production of other commodities, and food prices, which currently are poorly understood.³¹

International trade in biofuels is currently limited due in part to tariff barriers. The Doha Round negotiations on the liberalisation of environmental goods and services at an accelerated pace, with a view to phasing out tariffs, could provide some opportunities for expanded international

²⁹ Biofuels for Transport – an International Perspective. IEA 2004.

³⁰ DIRECTIVE 2003/30/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 8 May 2003 on the promotion of the use of biofuels or other renewable fuels for transport.

³¹ See, for example, An Energy Strategy Based on Energy Dedicated Crops or Corn: Differential Economic and Regional Impacts. Daniel de la Torre Ugarte, University of Tennessee (2003).

markets, although there is no consensus on whether biofuels should be included as environmental goods. Ethanol is on two indicative lists of EGS that Members are considering, originally negotiated under the auspices of OECD and APEC. For developing countries in need of seed funding to convert to biofuels or enter the biofuels market, the potential of the Clean Development Mechanism (CDM), which allows developed countries to offset some of their own emission reduction commitments by funding reductions in developing countries, could be explored. In fact, Brazil is already benefiting from a German CDM project that is helping subsidise Brazilian taxi drivers making the switch to ethanol cars. Another example of benefits already flowing to developing countries in this area is US duty-free imports of ethanol from Caribbean countries under the Caribbean Basin Initiative (CBI).

There are, however, also dangers to an unchecked cultivation of biofuels. Current government-led initiatives need to be carefully monitored for their environmental impact. Safeguards may be needed to ensure sustainable farming methods, the preservation of culturally and ecologically sensitive land, and protection of biodiversity. The production of biofuels may also raise politically sensitive issues such as the potential use of genetically modified organisms (GMOs) as feedstock. The overall relationship between food production and biofuel production needs to be better understood. In terms of subsidies, support to biofuel production could become tricky: while subsidies focusing on better management practices regardless of which crop is being produced hardly can be seen as affecting trade, subsidies to certain crops, such as corn or sugar cane, used as feedstock for biofuels could cause problems. Production-related Amber Box support is going to be cut, and it would be difficult to differentiate subsidies for crops used as feedstock for biofuels from crops used for food or feed. Once dedicated energy crops are used more broadly as feedstock for biofuels, this problem will be overcome, however.

4. WTO and OPEC in a Changing Energy Environment³²

The entry of the oil-exporting countries into the WTO may prove to be a significant moment for the international trade and use of energy, one that could mark a reduction in OPEC's strategic control over the current pricing and production trends of the oil industry. It may even have implications for how the WTO treats the environment, and thus affect global action on climate change.

One of the greatest beneficiaries of the growing demand for oil has been OPEC. The high price of oil, along with the diminishing rates of extraction in non-OPEC countries, is gradually restoring to the cartel a power it has not had in decades. With its share of the world oil market expected to grow to almost half by 2020, it will have unprecedented strategic and market power. By entering into the WTO, however, OPEC countries may find themselves forced to accept liberalization commitments and other changes that will limit their power. These countries are being pressed by WTO members – the majority of them oil importers – to end dual energy pricing schemes that keep domestic prices low and export prices high, and liberalize their energy services under their schedule of commitments in the General Agreement on Trade in Services (GATS). The idea of some form of competition agreement has been floated as well, although it now has been officially dropped from the Doha agenda. These changes would in effect wrest a great deal of OPEC's control over oil resources away from them. Well aware of this, OPEC countries have resisted the pressure so far, but they will be seeing more faces at the negotiating table in the future: rapid

³² This section is based on input from Werner Corrales Leal, Senior Fellow at ICTSD.

growth in China and India has made energy security – and hence cheap oil – an utmost priority for them.

China's emergence as a major buyer in the oil market has added a new dynamic to the energy sector. Its oil companies' buying policy are driven less by oil profits than by China's strategic needs. Traditionally, multinational oil companies have negotiated with national governments for rights to explore and develop oil fields, which usually acquiesced to their demands. After the establishment of OPEC, oil-exporting countries gained significant leverage to impose conditions more favourable to them by imposing production quotas and prices. The multinational companies were not averse to OPEC members raising prices, since these prices brought the companies and their shareholders higher returns on their investments. Chinese companies, however, are more like extended investment arms of the government. They represent the interests not of shareholders but of the state. The conditions they will seek are low prices for their home country's huge energy demands. If they cannot do this in their own private negotiations, they may join developed countries in seeking to bring the oil industry under WTO disciplines.

The new dynamics of the energy sector, then, may lead to a fundamental change in how the WTO treats oil. Ideas floated as possible outcomes to the accession negotiations include a consumption tax on oil for a fund to assist oil-importing developing countries and an agreement on stricter control over competition. OPEC countries may try to demand something in return if they feel they will be losing some of their control over their oil. This may very well be an 'infant industry' provision to allow oil-producing developing countries to develop their economies. Since studies have demonstrated the unique difficulties oil-rich countries have in re-distributing revenues earned in periods of high prices, they may be able to find enough support for this trade-off. Venezuela has already proposed that a 'development exception' be made a non-actionable subsidy under the Agreement on Subsidies and Countervailing Measures, though it did not limit its applicability to just oil-producing countries.³³

If oil is brought under WTO discipline, this may be an opportunity to fundamentally reform not just the energy sector but also the WTO's current rules on the environment. Once the OPEC countries become members, they may lobby to have energy sources disciplined by WTO rules. Saudi Arabia has already claimed that renewable energy subsidies are discriminatory.³⁴ While the Saudi Arabian proposal does not raise any substantive legal issues in its defense, the proposal does reflect strategies OPEC countries may pursue. They are unlikely to sit by and watch Kyoto Parties implement policies that will reduce OPEC's geopolitical power and its revenues.

Yet raising this issue may provoke the opposite response from the one intended. If OPEC was to successfully argue that government subsidies or regulations in favour of renewable energies contradict WTO rules, OPEC, with the greatest share of cheap energy in the world, would regain some of the control over oil that they stand to lose in their accession commitments to the WTO. This is a scenario that both developed countries and oil-importing countries like China and India will want to avoid. A possible recourse available is for these countries to try and influence

³³ TN/RL/W/131. Second Contribution by Cuba and Venezuela to the Negotiating Group on Rules Expanding on the Proposal Concerning Non-Actionable Subsidies.

³⁴ TN/TE/W/9. Energy Taxation, Subsidies and Incentives in OECD Countries and their Economic and Trade Implications on Developing Countries, in particular Developing Oil Producing and Exporting Countries. Submission by Saudi Arabia (23 September 2002).

current WTO rules so that they distinguish between energy sources that emit high levels of greenhouse gases (fossil fuels) and those that do not (renewable energy). And for the first time, this stance may be supported by developing countries, which have until now fought against having processing and production methods (PPM) included as a criterion to distinguish one good from another. If indeed this did occur and PPM methods were recognized by the WTO, there would be much less confusion over the legality of the trade measures that are needed to reduce climate change, and would hasten the era of sustainable energy.

5. Final Remarks

This paper has tried to describe some of the political and economic trends that will affect the transition to a sustainable energy future. Parties to the UNFCCC have indicated an interest in taking an active approach in aligning multilateral trade rules with the aims of the convention, but still lack information on how best to go about this. By creating policy space for themselves they stand a better chance of realizing the more immediate targets of the Kyoto Protocol, and the greater goal of sustainable development. The Protocol's success will be important for more than just the emissions it reduces; how it fares between now and 2012 when it ends will greatly determine the form of the climate change agreement that will follow, or indeed the possibility of one.

Like any multilateral agreement, the Kyoto Protocol will have to deal with the free rider problem. With a global challenge such as climate change, global participation is crucial. However, some countries may choose not to join, as they see a greater incentive in not participating: they benefit from the reductions others make while avoiding any of the economic costs. Historically, once a country signs a multilateral treaty it will generally comply with its rules. Therefore, Parties need to show that there is greater benefit in being party to the Protocol than not. Trade measures have sometimes been used by other MEAs in persuading free riders to join by giving them an economic incentive.³⁵ With the US's withdrawal from the Protocol, some stakeholders, including the European Parliament, have suggested that trade measures may be needed as a last resort to persuade it to join. In a resolution on the post-Kyoto period, the European Parliament stressed the need to "take into account in any cost-benefit analyses of climate policies the possibility to adopt border adjustment measures on trade in order to offset any competitive advantage producers in industrialised countries without carbon constraints might have."³⁶ If this were to happen, the US might decide to challenge the measures under the WTO as discriminatory, as there is no agreement currently on the legality of border tax adjustments related to energy taxation. However, a trade measure aimed at non-Parties may not be required to precipitate a challenge. Even national policies to encourage sustainable energy have been raised as non-tariff barriers in the NAMA negotiations. While a measure potentially affecting trade such as a carbon tax is not intended to be an economic incentive for free riders – its purpose is to limit domestic use of fossil fuels – if it can withstand a WTO challenge it will definitely become one.

These may not be the most important economic incentives, however. The establishment of an emissions trading market appears to be developing into a strong economic incentive for non-

³⁵ Tarasofsky. *Ibid.*

³⁶ European Parliament Resolution on the Seminar of Governmental Experts on Climate Change, 12 May 2005, B6-0278/2005, provisional edition.

Parties to participate. When the EU's Emissions Trading Scheme opened in February, one of the first companies to buy carbon certificates was BHP Billiton, a major mining company in Australia.³⁷ Worried that its companies will be shut out of a profitable emissions market, one Australian state is already exploring setting up a national carbon emissions scheme. Similar processes are underway in the US. California has moved beyond even some Kyoto Parties in imposing emission caps; its past electricity reforms have shown how quickly and widely the actions of one state can spread across the continent. Already there has been discussion of linking California and the northeast US states to Canada for a North American emissions market. Helping these parallel systems to develop in tandem with the Kyoto Protocol's principles will increase the chances of getting these countries to join the post-Kyoto stage.

Beyond the economic incentives of emissions trading, there are also the economic opportunities to develop new technologies and new markets. Yet there is even a further incentive, one that comes from the environment itself. The US blamed the lack of binding commitments from developing countries as its reason for pulling out of the Protocol. While no one can predict if developing countries will commit to reductions post-2012 – this will depend on the progress developed countries make in fulfilling their own commitments, as well as on issues such as the success of the flexibility mechanisms – especially the major emerging economies may find it in their best interest to do so. The environmental consequences of not making reductions, and their economic impacts, may outweigh the advantages of not binding reductions. The World Bank estimates environmental and health costs of China's air pollution – mostly from coal burning – could total 13 percent of China's GDP by 2020. Getting help in making necessary reductions from current Annex II Parties will likely require them to commit to reducing a percentage of greenhouse gas emissions.

Helping developing countries to reduce their greenhouse gas emissions and adapt to climate change will require technology transfer on an unprecedented scale. Some observers suggest that to get developing countries to agree to bound reductions in the post-Kyoto stage, an agreement for technology development should be negotiated.³⁸ Development objectives and climate change mitigation and adaptation are indeed closely linked, and will only become more so as climate change increases. Renewable energy, for instance, was declared an essential means to achieving the Millennium Development Goals.³⁹ Nearly two billion people in the world are without any form of modern commercial energy,⁴⁰ a serious handicap to their development that only exacerbates the environmental damage they cause – deforesting woodlands for energy needs, for instance, and high carbon emissions from the biomass they use in lieu of energy-efficient stoves they cannot afford. Encouraging renewable energy in developing countries reduces climate change even as it supports sustainable development.

Addressing this reality in trade negotiations could be an option for developing countries. With the entry into the WTO of OPEC and the other major oil-exporting countries, and the possible opening of discussions related to sustainable energy in a number of areas across the trade

³⁷ “Greenhouse emissions not so bad? The Courier Mail, 11 April 2005.

³⁸ Sugiyama, Taishi et. Al. Where to Next? Future Steps of the Global Climate Regime. December 2004.

³⁹ Summary Report of the International Conference for Renewable Energies – Renewables 2004: 1-4 June 2004. Earth Negotiations Bulletin. Vol. 95, No. 5: 7 June 2004.

⁴⁰ Gibbs, Murray. “Energy services, energy policies and the Doha Agenda.” In, Energy and Environmental Services: Negotiating Objectives and Development Priorities. UNCTAD, New York: 2003.

spectrum, developing countries could use this opportunity to secure equitable access to energy and policy space, allowing them to use trade measures to develop their energy industries in ways that support poverty alleviation.

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7. Acronyms

APEC	Asia Pacific Economic Cooperation
ASCM	Agreement on Subsidies and Countervailing Measures
BTA	Border Tax Adjustment
CBI	Caribbean Basin Initiative
CDM	Clean Development Mechanism
COP	Conference of Parties (e.g. COP-10 – Tenth Session of the Conference of Parties to the UNFCCC)
DSU	Dispute Settlement Understanding (Understanding on Rules and Procedures Governing the Settlement of Disputes)
EGS	Environmental Goods and Services
EU	European Union
GATS	General Agreement on Trade in Services
GATT	General Agreement on Tariffs and Trade
GMO	Genetically Modified Organism
HS	Harmonized System
IEA	International Energy Agency
LDC	Least Developed Country
MEA	Multilateral Environmental Agreement
NAFTA	North American Free Trade Agreement
NAMA	Non-Agriculture Market Access
OECD	Organization for Economic Cooperation and Development
OPEC	Organization of the Petroleum Exporting Countries
PPM	Process and Production Method
STO	Specific Trade Obligation
TBT	Agreement on Technical Barriers to Trade
UNCTAD	United Nations Conference on Trade and Development
UNFCCC	United Nations Framework Convention on Climate Change
WTO	World Trade Organization