



Bridges Trade

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Trade Issues Come to the Fore in Time for Durban



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Editorial

As Durban arrives, many climate watchers find themselves filled with a sense of *deja-vu*. We've seen the well-timed release of emails hacked from climate scientists' computers before. We've seen remarkably low expectations before. But with Washington's reported blockage of the green climate fund - one of the key expected outcomes of the talks - only days before the start of COP 17, it is getting harder to believe that we may see Cancun's success repeated this year.

Despite this rather grim backdrop, those of us working at the intersection of trade and climate change are hopeful that key areas will get traction in Durban. Several of these topics are highlighted in this issue of BioRes Review. This special UNFCCC COP issue - our fourth since Poznań - sets the stage for Durban and then takes the opportunity to profile some of the major topics that ICTSD's Global Platform on Climate Change is following.

While response measures have generally made headlines in the context of compensating oil producing countries for a potential contraction of global demand for fossil fuels, there is more to the agenda - including some important international trade issues. On page 4, we look at how climate change policy measures can have an impact on trade flows and how trade measures can be used as a tool for climate change mitigation.

This is followed by a look at how a proposed Sustainable Energy Trade Agreement - which aims to enable a rapid uptake in innovation, diffusion, and use of goods, services, and technologies in the non-fossil fuel energy sector - might help to facilitate alternative or innovative approaches to deploying sustainable energy goods and services. Detailed analysis of the potential in this area is being undertaken by ICTSD.

We also offer an abridged version of a study by Jasper Faber and Linda Brinke on the economic and environmental consequences of the EU's controversial inclusion of aviation in their emissions trading scheme. The article looks at the possible impacts of the move on the passenger and goods aviation transport sectors.

Understanding the details of the Climate Technology Mechanism can be troublesome for those who are not well versed in intellectual property parlance. In our penultimate article, we feature a quick overview of the many issues at play in this important area of climate negotiations.

Finally, we feature a short piece on one of the most controversial issues sitting at the trade-climate nexus: responses to carbon leakage. This article looks specifically at the case of the EU, but many of the issues are relevant for all countries looking at implementing GHG reduction policies.

For those looking to engage further on issues related to trade and climate change, please join us at our activities we're planning in Durban see the events section on the back of this issue for more details. We will also be reporting from Durban, so for updates on the negotiations and trade-relevant aspects in particular, keep an eye out for the next issue of Bridges Trade BioRes and follow us on our website as well as on Facebook and Twitter.

We hope you enjoy the issue!

Trade issues in the spotlight on the eve of COP 17

One word can sum up the outlook for the Durban Conference of the Parties (COP) this year: uncertainty. But that may not be all bad. Last year's meeting in Cancun, Mexico showed us all that sometimes low expectations may be the best way to get results at climate negotiations. Jump back a year further to 2009, when many observers said that parties meeting in Copenhagen, Denmark, were poised to deliver a new binding treaty for climate change cooperation. Instead, great expectations resulted in a mighty flop.

Disappointment in Copenhagen cost many global leaders a good deal of political capital - leaving them unwilling to make such a gamble the following year. But whether pre-COP doldrums prove to be a magic formula for lifting the fog at UNFCCC COPs remains to be seen. The show bill for this year includes several overview agendas and an array of unfinished texts, making it impossible to tell how this year's climate spectacle will unfold.

Future of Kyoto up in the air

By all accounts, the headliner at this year's COP is the Kyoto Protocol. Signed in 1997, the Protocol's first and, to date, only period of implementation - "commitment period" in climate parlance - began in 2008 and will end in 2012. The Protocol envisages a second commitment period, and countries have spent over a decade negotiating the finer details of what the future of the Protocol would be. An array of influencing elements has derailed progress on the next term's negotiations, and only a handful of redeeming qualities may keep the agreement alive.

One glaring shortcoming of Kyoto is the failure of the United States to ratify, despite having negotiated and signed the agreement alongside all other signatories. The US is the largest historical emitter and held the record for highest annual emissions until 2009, when it was surpassed by China. Its absence from the game is a major imbalance in the equity of the multilateral climate system, to say the least. But more importantly, considering the US' contribution to the problem, their absence from full participation in Kyoto - or any other multilateral climate agreement, for that matter - will ensure that the problem remains inadequately addressed. Solving the global problem, according to scientists and economists, requires the participation of all major players. The US has adamantly and clearly refused to join the Kyoto Protocol, and therefore the new round of negotiations launched at Bali in 2007 were intended, in part, as an "on-ramp" for their participation.

In addition, the new round, known as the negotiation on Long-term Cooperative Action (LCA) was a way to a substantially increase the role of the other big players: the major economies among the developing countries - which have no commitments under the Protocol - are now at the top of the list of carbon emitters. However, the LCA process has sent Kyoto into a tail spin, because many developed countries would now like to shelve the old agreement and replace it with something based on new rules and principles. The developing countries, negotiating primarily as the G77 and China, hold tight to the overarching framework of the UNFCCC and insist on a new commitment period for Kyoto. One reason is because Kyoto is premised on principles and rules that developing countries consider to be fair and equitable, such as developed countries taking the lead in carbon emissions reductions and the respect for the former's overriding development concerns. The sum of these two components specifically translates in the Convention to financial and economic support for developing countries' climate change mitigation and adaptation activities. For developing countries the LCA would be a complementary agreement to the Kyoto Protocol, rather than a replacement.

That said, Japan and Russia indicated this past year that they do not intend to sign on to a second period for Kyoto. However, a special voting rule and a handful of tools created within the Protocol may still lead to the survival of the agreement. These tools include the "flexibility mechanisms" - such as the Clean Development Mechanism, Joint Implementation, and the Emissions Trading Schemes - that were created to help developed countries to meet their mitigation commitments; perhaps more importantly, these tools are the primary platform upon which the

current global carbon market is based. An end to the Protocol could, in theory, topple the multi-billion dollar market. But a little-talked-about voting rule - which provides that in the absence of full agreement a three quarter majority vote could suffice to trigger a second commitment period - may just prove to be enough to hold Kyoto together for now.

The fact of the matter is that, while the LCA has generated a number of key agreements on certain aspects of its mandate, it has not concluded talks on emissions reductions, which is at the heart of solving the climate problem. Until it does, the Kyoto Protocol is the only concrete agreement on emissions reductions.

Trade issues loom ever larger on the horizon

Recent years of negotiation have seen a steady rise in discussions on the potential role of trade measures on the impacts of and responses to climate change. In particular, Durban will host the second part of a special "forum" on the impacts of domestic measures taken to combat climate change upon other countries. "Response measures," as they are known in the negotiations, have been discussed in different ways for years, but have primarily been associated with the possible harm to oil-producing economies that may arise from a potential global decrease in oil consumption. A rise in domestic protectionist measures and debates on designing policies and measures with global trade implications, nonetheless, have pushed the issue closer to the top of the negotiating agenda for several countries.

The response measures forum began in Bonn at the mid-year negotiation sessions in June and is scheduled to conclude in Durban. Its mandate is to put together a work programme to address the issue and consider the possible establishment of a permanent forum. Considering the fact that no venue currently exists for countries to present information, exchange views, and consider solutions to potential challenges that result from the implementation of burgeoning climate measures, the proposition of a permanent forum is a particularly interesting prospect.

The WTO has its dispute settlement body to consider instances where such measures might violate trade rules. But affected countries can only exercise this option after the measure has been adopted, rather than provide a potential instance for conflict avoidance. In addition, the WTO only addresses the violation of international trade rules and would not consider the broad spectrum of potential consequences to economic development, impacts to the environment - including evaluation of the actual mitigation benefits - or impacts on society. These sustainable development dimensions are protected under the UNFCCC, and such a forum would provide a concrete process for reducing negative and maximising positive impacts. The response measure forum takes place under the auspices of the Subsidiary Body for Implementation, one of the two principle negotiating bodies of the Convention.

LCA track weighed down by trade concerns

Meanwhile, under the Ad-hoc Working Group on Long-term Cooperative Action, several trade-related discussions continue. The first is related to the question of competitiveness, where some countries fear that action to reduce climate emissions will negatively impact their companies' and industrial sectors' competitiveness in international markets. In essence, many developed countries say they will be at a disadvantage if some countries with competing industries are required to do less than others to mitigate emissions at a global level. For their part, developing countries have concerns about the potential use of trade measures by developed countries attempting to "level

the playing field." Poor countries argue that such measures could impact their economic and sustainable development. To pre-empt the use of such measures, they are insisting that language prohibiting the use of unilateral measures to address climate change be included in the new agreement. Similar language is included in a draft text on response measures under the LCA. These discussions are taking place under a sub-category known as the "shared vision," where parties also discuss the composite emission cuts for the world and how the total agreement balances out.

In a separate sub-group on "sectoral approaches" to mitigation, the topics of agriculture and bunker fuels - dirty fuel used in shipping and aviation - are back on the table in a similar form to what was considered and then dropped in Cancun. The trade implications remain an obvious concern under both of these topics and are reflected in references in the draft texts. The agriculture text proposes the creation of a work programme on both mitigation and adaptation in the agriculture sector. Meanwhile, the bunkers discussion is oriented more toward whether to advance discussions on climate change issues related to global transport under the UNFCCC, rather than under the International Maritime Organization (IMO) and International Civil Aviation Organization (ICAO), as is currently the case.

Finally, while the role of intellectual property rights in the deployment and transfer of technologies for climate change remains a concern for many countries, the issue is far from resolved. There is little indication from inter-sessional negotiations or meetings that Durban is poised to make any decisions on this topic, which is among the most contentious subjects under the technology negotiations. It may, nevertheless, get some traction.

Potential advances

While the Kyoto issue will be hogging the spotlight in Durban, there will still be many other decisions taken in an array of negotiating branches. For example, forward movement is expected as the Green Climate Fund is operationalised and as it gears up for disbursement. With this issue resolved, the new Technology Mechanism will then have access to financing for its work on assessments, capacity building, and other substantive topics. Progress is also expected on the adaptation front, with the new strategy agreed to in Cancun taking greater shape. This strategy is also poised to receive financing for initiatives such as National Adaptation Plans.

Discussions on mitigation in the search for a new agreement are unlikely to produce any major results. However, some progress could take place on the measuring, reporting, and verification of national actions, as well as on International Consultation and Analysis - the two developing issues that would constitute some form of compliance for a future regime. Currently, movement on both these topics is slow, almost to the point of being imperceptible - a fact that is frustrating to many countries and observers in light of the conspicuous gravity of the global climate situation.

Whether success in Cancun was reaped by the low expectations, the brilliant diplomacy by the COP president, or, simply, the tranquil atmosphere brought on by warm breezes and palm trees - then Durban is as prepared as any host could be. If one can take anything from the Cancun experience, it is not to be swayed by early reports of a deadlock. These two weeks set aside for tedious negotiations can easily change at any time, for either better or worse; the real answer will only be found after the dust settles on 10 December. **BR**

A response to Response Measures: Solving conflicts between trade and climate change policy

Response measures to climate change undertaken in one country can have an impact on the prospects for social and economic development of other countries. They are therefore addressed in the context of climate change negotiations, with a view to minimising the adverse effects.

Response measures relate to international trade in two ways. First, climate change policy measures can have an impact on trade flows. This is the case, for instance, when it comes to regulating emissions related to international transport. Second, trade measures can be used as a tool for climate change mitigation. An example of this could be border tax adjustments. The reason why it is important not to unnecessarily restrict trade is that it can be an important engine for growth and can play a crucial role in countries' social and economic development. Carefully designed trade strategies can moreover contribute significantly to both mitigation and adaptation to climate change. This can be done, for example, by encouraging the dissemination of climate friendly technologies through trade liberalisation or, conversely, by restricting the trade in emissions intensive goods.

Indeed, the principles and commitments of the UNFCCC, its Kyoto Protocol, and the Cancun AWG-LCA decision all maintain that "measures taken to combat climate change, including unilateral ones, should not constitute a means of arbitrary or unjustifiable discrimination or a disguised restriction on international trade." Consequently, it is imperative for Parties to carefully evaluate, understand and cooperatively work to avoid potential yet unintended consequences of response measures, including on international trade.

The reality of a broad array of existing domestic measures with the potential to impact third countries clearly demonstrates the need for a process for assessment, discussion, and analysis. Such a process could be valuable in helping countries establish a better overview and understanding of climate-related measures which have an impact on trade, as well as to share experiences and lessons that could inform the design of new measures so the adverse effects can be minimised.

In Cancun one year ago, Parties agreed to establish a two part forum on the impact of the implementation of response measures. This forum - which was launched in June 2011 at the UNFCCC's mid-year meeting in Bonn and will continue in Durban - is tasked with developing a work programme to address these impacts. The purpose of this article is to suggest that some of the interlinkages between climate change and trade, as referred to above, be discussed under the heading of response measures and, more specifically, in a possible permanent forum on response measures

Where to address trade and climate change issues?

Despite an array of important and influential trade issues that are closely linked to climate change, no unique, designated process currently exists within the multilateral systems for countries to access information, evaluate, or discuss the issues at stake. Avoiding the discussion will not, however, resolve the increasing challenges facing policymakers.

Instead, in the absence of such a process, there is a risk that trade-related concerns continue to prevent Parties from taking effective action to address climate change. Likewise, action taken without a clear understanding and scrutiny of trade concerns may lead to a sub-optimal balance between the efficiency of policies to address climate change and their potential to allowing for fair and open international trade to contribute to growth and development. It is therefore crucial that discussions advance on how to best address the trade and

climate nexus.

The two fora that are the most immediately concerned are the World Trade Organization (WTO) and the UNFCCC. Both should ideally house some level of discussion on trade and climate change, while carefully respecting each other's role and mandate.

A clearer determination of which is the most appropriate and effective forum for addressing varying issues is critical. Clarifying what may be addressed under the UNFCCC and what should be addressed elsewhere would help avoid conflicts, confusion, and establish more effective solutions.

Which issues to address?

The following measures to address climate change - by no means an exhaustive list of issues that can impact on trade or are actual trade-measures - would merit consideration by the response measures forum:

Emissions Trading Schemes and the practice of allocating emission allowances free of charge

The practice of allocating emission permits free of charge is a tool commonly used in existing and proposed emission trading schemes. It serves several purposes. Initially distributing allowances free of charge rather than making polluters pay for them is a way to smoothly phase in the carbon cost. In the long run, the main rationale is to decrease the risks for carbon leakage (i.e., that emission reductions achieved in the regulating country result in increased emissions elsewhere). Sharing the same rationale for implementation - at least in the long run, the allocation of permits free of charge and border carbon adjustments are considered as options dealing with the same concerns, separately or supplementing each other.

When inadequately designed, this allocation of allowances free of charge can negatively impact trade of third parties, including developing country parties, resulting in risks for economic and social development impairment.

Border carbon measures

Border carbon measures - or "adjustments" - refer to the levying of a carbon charge on imported products and/or services. These measures are aimed at charging for emissions related to imports in a similar fashion to what is imposed on domestic industry producing a like good. These would most commonly be imposed through either an emission trading scheme or a carbon tax. The rationale behind such adjustments is to address carbon leakage and related competitiveness concerns. Such adjustments can significantly affect exports of countries targeted by the measures, thereby altering important sources of income and employment. Developing countries that are not prepared to take on comparable emission reductions are particularly concerned that their exports will be targeted and that their economic development will be compromised. Although no such border measures are in place, the inclusion of international aviation into the EU Emissions Trading Scheme from 2012 could be seen a carbon border measure.

National promotion of low-carbon technologies and measures

The shift to a low-carbon economy will require massive investments from both the public and private sectors to make up for the high initial costs required to develop green energy

sources. As a consequence, government subsidies and other incentives are considered a necessary tool - and response measure - to motivate firms to invest in and produce clean energy products and services. Government response measures in the form of subsidies and other incentives to support clean energy, may however disadvantage foreign manufacturers and thereby distort competition. Indeed, "non-tariff" barriers - such as energy efficiency requirements, product labelling, feed-in tariffs, export credits, and manufacturing subsidies - are even more significant as an explanatory variable for impacting exports or imports of renewable energy equipment and components than import tariffs.

The forum could discuss and search for a balance between the need for countries to reap the benefits of support for their shift to a low-carbon economy and the longer-term ambition of a global level playing field that provides the incentives for innovation, cost reduction and quality assurance.

Carbon foot-printing and labelling schemes

The numbers of carbon standards and labelling initiatives is rapidly growing. Both government-mandated standards and voluntary private sector initiatives raise a number of challenges and opportunities with regard to trade, development and climate policy, which merit further elaboration and discussion.

Regulation of international transport

Aviation and maritime shipping are important and rapidly growing contributors to global greenhouse gas (GHG) emissions; this share is projected to increase rapidly. Due to the international nature of aviation and shipping, a global solution would be the most efficient and effective option for addressing the related GHG-emissions. However, negotiations thus far have been futile, due to political disagreements over how to address the UNFCCC principle of common but differentiated responsibility (CBDR).

Against this background, the EU has decided to include aviation in its Emissions Trading System (EU ETS) beginning in January 2012. The regulation of aviation in the EU ETS is non-discriminatory, meaning that all aircraft operators - regardless of their nationality - need to surrender emissions allowances for intra-EU flights, as well as flights to and from the EU. Regulating emissions from aviation is a response measure to climate change that may have an impact on trade and thus on prospects of development for third countries. Concerns for negative impacts are the greatest among remote countries relying heavily on tourism, or on trade in goods that are air freighted.

Recommendations

So what to do next? A forum within the UNFCCC could address a breadth of topics, of which trade could be one. It could include three pillars of action, or more: transparency, research and analysis, and dialogue. A work programme to set up such a forum could include exploring the following:

Transparency measures

Transparency on responses to climate change would benefit both countries undertaking the measures and those who may be impacted by them. Increased insights into positive impacts from response measures could contribute to a positive outcome for the future negotiations as it would build good-will, in addition to the actual benefits in terms of sustainable development. Drawing lessons on positive outcomes would also allow their optimisation in future policy measures. A good scrutiny of the possible impact on third countries may furthermore foster efforts by countries implementing the measures through a careful design attempt to minimise any adverse impacts. And lastly, countries who may be affected can formulate better informed policies to shield their economies from adverse effects.

Such transparency could be achieved either through a process of **notification and review**, where Parties undertaking mitigation efforts would be required to notify measures, which would then be subject to a review process where other Parties would be

provided an opportunity to ask for information and clarification as well as comment on the measures. Such a solution could build on existing channels of information, for instance the National Communications. Another option could be a regular review of response measures by a specifically assigned body, possibly supplemented by information and commentary by the implementing country. All Parties would then be invited to discuss and react to the review. Such an option could be inspired by the trade policy reviews (TPR) in the WTO.

Countries on the receiving end could also report on experiences of impacts to their social and economic development from response measures, as well as possibly on their own measures to address impacts.

Putting in place a mechanism for multilateral transparency and discussion would ensure that countries do not have to rely on their own resources to monitor the measures undertaken by every other Party. This would be particularly valuable to the most vulnerable economies.

Expertise, research and information.

Research and analysis exists for some response measures and their potential impact on social and economic development. The forum could include a process for compiling, structuring, and making this available in a database or clearinghouse. This would also allow the identification of research gaps. The database could be supplemented by the establishment of a small group of specialists from inter- governmental, non-governmental organisations and academia to help to provide advice, research, and analysis on topics raised at the forum.

Dialogue

The forum could include an ongoing, permanent forum for dialogue. In particular, this would allow for parties as well as relevant organisations to consider issues and particular circumstances that arise as countries and regions implement new measures for mitigation. Such a forum could serve as a space to air concerns, present up-to-date information, and develop solutions. Experiences could be shared and lead to the development of "best practices."

What to leave to the WTO

Part of the controversy surrounding the topic of trade within UNFCCC discussions is due to the uncertainty of where and how to address trade-related issues and also due to the fact that there are other multilateral processes and agreements with mandates over trade issues. It is therefore important to clarify what trade-related issues and processes the UNFCCC does not have a mandate to cover and that should consequently not be addressed by a forum. These include:

- Rule-making on trade
- Implementation of trade measures
- Addressing and resolving violations of trade rules
- Trade liberalisation and trade reform

Indeed, the WTO and other trade agreements have a crucial role to play in this respect. The trade institutions are increasingly facing issues related to climate change, particularly through trade disputes. Also through discussion on how trade can serve as a positive driver for mitigation and adaptation action, an area of constructive inter-linkaging that deserves attention to advance.

Ultimately, the systems, although different, are interrelated and need to be coordinated. It is, thus, crucial to clarify the distinct responsibilities and ensure that the necessary process and forum exist to avoid negative consequences and safeguard countries' sustainable development. **BR**

This article is based on an ICTSD submission to the UNFCCC. The full submission can be found on [ICTSD's website](#).

Harnessing trade and markets for sustainable energy:

The case for a Sustainable Energy Trade Agreement

A much faster and more effective scale-up of innovation, use and diffusion of non-fossil fuel energy technologies is an imperative of the international community. The challenge to de-carbonise production and economic activity comes at a time of rapid expansion in energy demand, and in a context in which half of the world's population currently has no access to modern forms of energy. Globally, as the Intergovernmental Panel on Climate Change (IPCC) has noted, fossil-fuel based energy supply is the largest single source of greenhouse gas emissions.

In 2004 conventional energy supply and its related use in the buildings, industry and transport sectors were responsible for about 70 percent of global GHG emissions. More recent estimates from the International Energy Agency (IEA) placed such emissions at a record high of 30.6 Gigatonnes (Gt.) in 2010 alone, making the targets set by the international community to limit climate temperature rise to a maximum of 2 degrees centigrade (36 degrees Fahrenheit) extremely difficult to meet.

Indeed, for the “pathway to be achieved, global energy-related emissions in 2020 must not be greater than 32 Gt. This means that over the next ten years, emissions must rise less in total than they did between 2009 and 2010,” the IEA notes. Non-clean energy sources - i.e. fossil fuels - currently account for about 80 percent of emissions worldwide, and existing infrastructure and projects in construction are estimated to already lock-in to 2020 approximately 20 percent of those emissions. The geographical distribution of GHG emissions is highly heterogeneous, as is energy consumption. While they only host a fifth of the world's population, 40 percent of emissions continue to be generated in OECD countries, and 40 percent of energy demand is located there.

However, as many parts of the world experience rapid economic growth and the energy needs of millions worldwide in the developing world still remain unmet, the use as well as reliance of many countries on imported fossil-fuels is set to grow further.

From an environmental, energy-security, and economic perspective, a shift to sustainable energy use - low-carbon sources of energy as well as greater energy-efficiency - is therefore desirable. Low carbon sources of energy include solar, wind, biomass, and small-hydro power (that avoids negative environmental impacts associated with large-hydro). They could also include relatively lower carbon biofuels used for transport if produced under the right conditions.

The challenge of deploying and scaling-up sustainable energy

While de-coupling economic growth from fossil-fuel use and a replacement with sustainable energy sources is desirable, it is far from easy. A deep de-carbonisation of the power sector required for halving energy-related emissions by 2050 and boosting the share of renewable energy from current levels of around 13 percent to 30-40 percent by 2050 would entail enormous effort according to the World Bank's 2010 World Development Report. It would imply, deploying every year for the next 40 years, an additional 17,000 wind-turbines (producing 4 megawatts [MW]each hence 68000 MW annually); 215 million square metres of solar photovoltaic panels, 80 concentrated solar power plants (producing 250 MW each); and 32 nuclear plants (producing 1000 MW each). Despite increasing levels of investments in recent years in sustainable energy the world it is still short of the levels of scale-up required. As an example of comparison for wind, the biggest capacity addition in wind energy since 1995

Table 1: Top Ten Countries in Sustainable Energy Capacity (in Gigawatts [GW]) (2009)	
United States	53.4
China	52.5
Germany	36.2
Spain	22.4
India	16.5
Japan	12.9
Rest of EU-27	12.3
Italy	9.8
France	9.4
Brazil	9.1

Source: Pew Charitable Trusts, 2010

Table 2: Top 10 Countries in five-year Growth in Installed Capacity (2004-2009)	
South Korea	249%
China	79%
Australia	40%
France	31%
India	31%
United Kingdom	30%
Turkey	30%
United States	24%
Canada	18%
Rest of EU-27	17%

Source: Pew Charitable Trusts, 2010

happened during 2008-2009 when close to 40000 MW was added, according to the World Wind Energy Association.

A major challenge associated with deploying sustainable energy is its high price relative to conventional fossil-fuels. This is partly due to the non-pricing of negative environmental externalities that are associated with fossil-fuel use. The playing field in favour of sustainable energy is further tilted by the subsidies that are often provided to fossil-fuels. While fuel-costs - except in the case of biomass - are low or zero for sustainable energy, they are characterised by high upfront costs owing mainly to high equipment and capital-related costs. While costs continue to decline over time for established technologies such as solar, universal “grid-parity” or equivalence of renewable electricity with that generated by fossil-fuels may require further significant cost-declines in sustainable energy deployment. An easier weapon in the armoury to fight climate change will be deploying energy-efficient measures that will lower energy intensity for economies, enable similar energy output to serve a larger number of people and uses and also help reduce expensive fossil-fuel imports for many countries. The UN has declared 2012 as the International Year of Sustainable Energy for All, and its Advisory Group on Energy and Climate Change - composed of major energy companies and UN agencies - has recommended universal access and a 40 percent increase in energy efficiency in the next 20 years. If these recommendations are implemented, this could reduce global energy intensity by 2.5 percent per year, approximately double the historical rate.

The role of domestic sustainable energy policies

The high upfront costs entailed in the deployment of sustainable energy means that domestic policy intervention is required to create a more level playing field between sustainable and conventional energy sources and foster an “enabling environment” for investments into sustainable power generation. In addition to domestic sustainable energy policies, trade policies also help in enabling sustainable power producers to access equipment and services of the desired quality at competitive world market prices. In a sector that is sensitive to high upfront equipment costs, enabling power producers to buy equipment at the most competitive prices will contribute to bringing down costs of sustainable energy generation. A wide variety of sustainable policy instruments can be deployed in this regard. They

usually focus on regulatory and fiscal measures such as renewable portfolio standards or on fiscal incentives such as tax-credits. Such measures reduce both investment and production-related costs for renewable energy producers. Domestic sustainable energy promotion policies also work to increase consumer demand, either through a system of incentives such as tax reduction on solar home equipment or regulations such as mandatory purchase requirements. A similar set of policies can also influence the supply of, and demand for, sustainable transport fuels and technologies.

However countries often introduce these policies not only with a view to deploying sustainable energy but also to create domestic jobs and foster the growth of new “green” sectors and technologies. While synergies between these various objectives are possible, these policies may also be designed or applied in a manner that restricts trade or discriminates against foreign sustainable energy goods and services (SEGS) suppliers in order to meet domestic employment and industrial policy objectives. Direct trade policies such as higher customs duties on imported equipment or restrictions on the entry of foreign services suppliers may also be deployed in this regard. This can prevent sustainable energy equipment manufacturers who operate through a complex network of supply chains from sourcing components and services from their most efficient production/supply location. Thus both trade-policies (directly) and domestic sustainable energy policies (through the way they are designed and implemented) can create barriers for supply chain optimisation in the sustainable energy sector.

Non-tariff trade-related barriers to SEGS are diverse and may range from domestic support measures for biofuels to export restrictions of critical raw materials and various modes of services supply. Local content requirements are one policy that many countries use to create domestic jobs in sustainable energy manufacturing, specifically by mandating the use of locally-made components or technologies in sustainable energy projects. Countries may also link incentives or subsidies to power producers to the use of local equipment. Such measures have already triggered trade disputes at the World Trade Organization (WTO) and, should their use spread, may generate further trade friction.

Other trade and market barriers could be sparked by

Table 3: Top 10 Countries in Sustainable Energy Investment (2009)

China	\$34.6 billion
United States	\$18.6 billion
United Kingdom	\$11.2 billion
Rest of EU-27	\$10.8 billion
Spain	\$10.4 billion
Brazil	\$7.4 billion
Germany	\$4.3 billion
Canada	\$3.3 billion
Italy	\$2.6 billion
India	\$2.3 billion

Source: Pew Charitable Trusts, 2010

Table 4: Top Ten Countries in Five-Year Growth in Clean Energy Investment (2009)

Turkey	178%
Brazil	148%
China	148%
United Kingdom	127%
Italy	111%
United States	103%
France	98%
Indonesia	95%
Mexico	92%
Rest of EU-27	87%

Source: Pew Charitable Trusts, 2010

domestic laws and measures linked to investment, government procurement, competition policy and trade facilitation, or possibly by their absence. A great diversity of product-related standards or, on the contrary, an absence of standards could also hamper trade and diffusion of renewable energy equipment, as well as energy efficient products.

Countries that are high greenhouse gas emitters and those relying on fossil-fuel imports could benefit from environmental and energy-security perspective in addressing these barriers and fostering greater trade in SEGs. From an economic perspective, many of these are countries that are also major producers as well as traders of SEGs along various points in the value-chain.

Addressing trade and market barriers: The Relevance of a Sustainable Energy Trade Agreement

It may be possible to address some of these barriers taking recourse to existing rules disciplines in the WTO. However WTO rules in many areas of the energy sector (including sustainable energy) are ambiguous and in certain areas - such as investment or competition policy - they are non-existent. The WTO's Doha round negotiations are presently stalled including negotiations on environmental goods and services that could otherwise have addressed some of these barriers. Other venues outside the WTO such as the UNFCCC may not have a proper mandate to address trade-related barriers. Some, such as the Energy Charter Treaty, do address issues of investment and transit but do not offer Members the scope of reflecting or binding trade-related concessions. And despite their importance from the perspective of SEGs trade, they do not include the US and major developing countries such as China, Brazil, South Africa, Mexico, and India as full-fledged members. The non-binding nature of other venues such as APEC enables ambitious initiatives but may give less than the desired amount of predictability. It is also, like other regional trade agreements, limited in terms of geographical scope.

All these factors suggest there is a need to consider a fresh approach that takes a holistic and integrated view of the sustainable energy sector, while simultaneously addressing a variety of market and trade-related barriers. A Sustainable Energy Trade Agreement (SETA) could be a way to bring together countries interested in addressing climate change and longer term energy security, while maintaining open markets. Numerous possible pathways could be conceived for such an agreement in terms of structure, as well as the scope of issues and market barriers to be addressed.

A SETA could be a stand-alone plurilateral agreement similar to the Government Procurement Agreement (GPA) at the WTO. Alternatively, it could extend concessions on a most favoured nation (MFN) basis to all WTO Members, similar to the Information Technology Agreement (ITA), with such an extension made conditional on the accession of a "critical mass" of Members based on various trade, climate, or energy-related criteria.

A SETA could also be conceived as a stand-alone plurilateral agreement outside of the WTO, the advantage in this case being that membership would also be open to other, non-WTO Members. There could also be a possibility of eventually incorporating such an agreement into the WTO framework at some point in the future. If concluded outside the WTO, members would need to clarify the agreement's relationship with existing WTO rules and agreements, including with regard to any dispute settlement mechanisms.

Numerous possibilities also exist with regard to the manner in which the scope of issues and market barriers could be addressed within a SETA. Issues could be addressed in two phases, with a first phase addressing clean energy supply goods and services, starting with solar, wind, small-hydro, and biomass and eventually extending to marine, geothermal, clean coal, and transport related biofuels.

A second phase could address the wider scope of energy-efficiency products and standards, particularly those related to the priority sectors identified by the IPCC for GHG mitigation: buildings and construction, transportation, and manufacturing. Negotiators could take up issues as a "cluster" or proceed incrementally on an issue by issue agenda.

"A SETA might facilitate alternative or innovative approaches to liberalising sustainable energy goods and services"

Each of these approaches has its own pros and cons. Whatever the approach adopted, negotiators should ensure that the "development dimension" is reflected in the modalities, including special and differential treatment for developing countries as well as meaningful provisions on facilitating access to climate-related technologies, technical assistance, and capacity building. For instance a special fund that could enable developing countries to purchase licenses for certain technology sectors could be created either within SETA or as part of the UNFCCC "Green Fund" and be linked to SETA obligations on trade and vice-versa. Alternatively here could be provisions on financing renewable energy infrastructure projects within SETA developing country

members at concessional rates by international financial institutions or development banks.

While not a "silver bullet" remedy for all the trade-related issues and challenges on sustainable energy, a SETA might facilitate alternative or innovative approaches to liberalising sustainable energy goods and services. It could provide an environment conducive to assessing the linkages between sustainable energy goods and energy services, and serve as an ideal "laboratory," where rules and disciplines pertaining to sustainable energy could be clarified and take shape.

In addition to its catalysing effect on world trade in a sector of huge importance to global climate mitigation efforts, such an agreement could constructively inform, and perhaps even shape the course of future negotiations and work at the WTO as well as the UNFCCC. [BR](#)

This article has been adapted from a longer ICTSD Issue Paper, which can be accessed on [ICTSD's website](#).

The Inclusion of Aviation in the EU ETS: Economic and Environmental Consequences

By Jasper Faber and Linda Brinke

The EU Emissions Trading System (ETS), which was launched in 2005, is one of Europe's main policy instruments for reducing its greenhouse gas emissions. The ETS currently covers all major land-based installations in the EU. From January 2012 onward, emissions from aircraft flying to and from EU airports will also be included in the scheme. One of the reasons for this addition is that the international community has not been able to agree on a global measure to reduce aviation emissions. The purpose of this article is to evaluate the economic and environmental consequences of the inclusion of aviation in the EU ETS.

Controversies

The unilateral decision by the EU to include aviation in the EU ETS has already proven to be controversial, with a group of US airlines pursuing a case on this issue at the European Court of Justice. These tensions have been escalating in recent months as 26 countries - including China, Russia, India, and the United States - publicly voiced their opposition to the initiative. The group adopted a declaration in New Delhi in September demanding that the EU cancel the inclusion of aviation in the ETS. India, which has taken a lead in the opposition, has said that if the EU does introduce the measure as planned in January 2012 it will retaliate. China, which also opposes the scheme, has already blocked the order of Airbus A380s from Hong Kong Airlines.

In the latest salvo in the tit-for-tat aviation emissions row between the EU and several other countries, the International Civil Aviation Organisation (ICAO) Council adopted a working paper submitted by the 26 states that calls on the EU and its member states to exclude non-EU carriers from the EU ETS was endorsed by the ICAO Council yesterday.

Adding to confusion on the issue, the US House of Representatives on 24 October passed a bill making it illegal for US airlines to comply with the controversial EU scheme. The recent developments out of Washington further complicate the dispute. If the bill is also approved

by US Senate, thus becoming law, US-based airlines will be put in a difficult legal position. Some experts say the row could lead to a trans-Atlantic trade war.

Economic and environmental impacts

The EU ETS has been divided into three phases: Phase I (2005-2007), Phase II (2008-2012), and Phase III (2013-2020). Phase II has seen allowance prices range dramatically from €7.96 to €28.73. Establishing trustworthy a projection for the price of allowances over Phase III is extremely difficult at this stage, primarily due to the fact that many emitters have reportedly been holding onto - or "banking" - allowances in order to use them during the tougher Third Phase, where the EU is aiming to achieve a 20 percent reduction in economy-wide emissions relative to 1990 levels.

The impact of pulling aviation into the current system on the aviation industry itself can be estimated through the use of different models, such as the AERO model, which was specifically designed to model the impact of policy measures on aviation emissions. Discussing the details of these models is outside of the scope of this article, as the factors considered in each case are extremely complex. Examples include, projections on the demand for aviation - depending on economic growth, etc., the cost of aviation, the share of allowances allocated for free, price elasticities, and the cost of "pass-through rates" - to what degree additional costs can be passed on to passengers.

Table 1: The effect of the EU ETS on ticket prices, output and operating results

Study	Ticket price (€ round trip 2020)	Output in RTK	Profit margin (2011-2022)
CE Delft (2007)	+2 to 4 (SH) +3 to 8 (MH) +10 to 30 (LH)	-0.3 to -1.5% (2012)	Uncertain
York Aviation (2007)	N.A.	N.A.	-0.3 to -1.6 % (FSA)* -0.9 to -1.9 % (LFA)*
Frontier Economics (2006)	N.A.	-7.5 to -12% (LFA) -2 to -3% (FSA)	N.A.

SH=short haul, MH=medium haul, LH=long haul

FSA= full service airlines, LFA = low fares airlines

* Reference scenario includes a profit margin of 3 percent

It is not clear how large the pass-through rate in the aviation sector will be in the case of the CO₂ price, because this depends on the extent to which airlines are exposed to competition. Although a large share of the allowances will be provided for free, this does not mean that cost pass-through is low, which is a common misconception. It has been shown that companies have been passing on not only the actual cost of allowances, but also the opportunity costs of the allowances they have received for free. The opportunity cost is the value of a free allowance when sold on the market instead of being used by an airline to cover emissions. Windfall profits can occur if businesses pass through the opportunity costs of free emission allowances to customers, which has been the case in some sectors, such as electricity generation, under the EU ETS.

Table 1 shows estimates of the impact of the EU ETS, with an allowance price of €15 to €45, on ticket prices in 2020 based on AERO model calculations, assuming a full pass through of EUA costs and opportunity costs. For a short haul flight of 480 km, the ticket price increase is between €2 and €4; for a medium haul flight of 1,400 km it is between €3 and €8, and for a long haul flight of 6,400 km it is between €10 and €30.

In addition to evaluating existing studies, a rough calculation was carried out with a more recent fuel price. This analysis does not take into account possible changes in fuel efficiency, but it does have the advantage of being more transparent in its methodology. The calculation is based on the following data: fuel represented 25 percent of total operating expenses of airlines in the third quarter of 2009 (Association of European Airlines); every litre of jet fuel contains 2.49 kg of carbon dioxide per litre (Intergovernmental Panel on Climate Change); and the average jet fuel price of the last year was approximately €0.47 per litre. Based on these data, ticket price increases will be in the range of 1.3 to 6.5 percent, depending upon allowance prices. These calculations assume that both the expenditures and opportunity costs of allowances are fully passed on to customers. See Table 2 for more information.

Effect on output

Taking this analysis one step further towards the relationship between demand and output, demonstrates that the impact of the EU ETS will have a relatively small effect on demand, both for passenger and goods transport. At the European Union level, price elasticity of demand - the percentage change in demanded triggered by a percent change in price - for passenger air travel, assuming an allowance price of €30, would result in a ticket price increase of some 4 percent, resulting in a 2.4 percent decline in demand.

For goods transport - which is typically expressed in

“revenue tonne kilometres,” or RTKs - the EU ETS would have an even smaller impact, decreasing demand by some 0.3-1.5 percent (see Table 1). Although the overall impact on the industry is likely to be small overall, it is important to note that impacts will differ depending on the country (i.e., some countries’ aviation industries are more sensitive to price increases than others).

Because airlines have an incentive to maximise both transport loads and fuel efficiency, the effect of the ETS on CO₂ emissions will generally be slightly larger than on RTK. This incentive has an impact on CO₂ emissions, but not on RTK.

Effect on operating result

The impact of the ETS on the operating result (e.g., profit) is uncertain, as it depends on the cost pass-through rate and the demand effect. Some studies indicate that the impact on operating revenues is small, assuming that cost pass-through does take place.

If, however, the value of freely obtained allowances is passed through, profits may go *up*. Under the assumption of full opportunity cost pass-through, the operating result of EU carriers could increase from 3.1 to 5.4 percent. Other estimates show that if free allowances account for more than 20-40 percent of emissions, which is likely in the coming years, profit margins are likely to *increase*. It is possible that profit margins will go down if windfall profits cannot occur.

Impact on emissions

Table 3 shows the impact of the EU ETS on total CO₂ emissions. The difference in the model results is mainly explained by the choice of the base year (2012 or 2020), as well as different assumptions on carbon prices. There are reductions in the aviation sector (13 megatonnes in 2020), but the reduction in emissions in other sectors is much larger (170 megatonnes in 2020), primarily because emissions abatement is cheaper in other sectors than in the aviation sector.

Also, aviation emissions are projected to grow strongly, which means that airlines will have to offset an increasing share of their emissions through buying allowances from other (stationary) sectors in the EU ETS. Therefore, the impact of the inclusion of aviation in the EU ETS on CO₂ emissions is substantial (-183 megatonnes in total in 2020).

From the above, it can be concluded that the EU ETS will have a small impact on ticket prices and aviation demand. Since emissions abatement in the aviation industry is generally expensive, the impact on aviation emissions will be small as airlines would rather buy allowances from other

Table 2: The impact of the carbon price on ticket prices and demand

Price of CO ₂ emission allowance	€10	€30	€50
Fuel price/l increase (€)	0.025	0.075	0.12
Fuel price % increase	5.3%	16%	26%
Ticket price increase	1.3%	4.0%	6.5%
% change in demand	-0.5%	-2.4%	-2.6%

industries than to implement expensive measures in their fleet. The impact on net emissions covered by the EU ETS, in contrast, could be large because aviation emissions are projected to grow strongly. The airlines, therefore, will have to offset an increasing share of their emissions by purchasing allowances from other sectors within the EU ETS or Kyoto Protocol Clean Development Mechanism (CDM) project credits.

The regulation on aviation in the EU ETS is meant to be non-discriminatory and treats all airlines (EU and non-EU) the same. This increases the system's environmental effectiveness by covering more flights. It also avoids a distortion of competition, since otherwise non-EU airline flights to and from EU Member States would become cheaper than those of EU airlines. The EU ETS does, however, allow exemptions for airlines that run few flights, including several airlines from small developing countries.

Some changes in competitiveness may nevertheless occur. The competitiveness of hub airports just outside the EU, along with the non-EU airlines that serve these airports (including airlines from developing countries), may increase on some routes, due to the hub effect. There might also be a switch to alternative transport modes and a diversion of tourism away from the EU. Therefore, some carbon leakage - the movement of industry away from one market to another to avoid emissions regulations - is likely to take place, meaning that the reduction of aviation emissions within the EU is partly compensated for by an increase of emissions outside of the EU ETS.

The impact on trade between Europe and developing countries is likely to be small because of the low increase in aviation costs, but impacts may vary between products and regions. For the same reason, the impact on tourism is likely to be limited on average because transport costs are a small share of total tourism expenditures; however, some destinations might experience a greater impact.

Along with these small negative impacts, there may also be some small positive impacts on developing countries. The impact of revenues from auctioning allowances depends on how member states decide to use these revenues. However, there is a large chance that at least part of these revenues will benefit developing countries (e.g., when they are spent on adaptation in developing countries). Demand for credits from CDM projects is likely to increase, which will have a positive impact on some developing countries because of the increased foreign direct investment.

A way forward

Aviation greenhouse gas emissions are growing rapidly and their rise is offsetting emission reductions in land-based sectors, thus undermining the effectiveness of climate policies. At the same time, the external costs of aviation greenhouse gas emissions are not reflected in the price of aviation, which makes the global economy unsustainably dependent on aviation.

The EU ETS has been designed as a way for the EU to comply with its obligation under the Kyoto Protocol to limit or reduce aviation emissions. Ideally, measures in a global sector like aviation should be global, but it has not been possible to reach a global agreement.

One of the main stumbling blocks has been the discussion on how to apply the principle of common but differentiated responsibilities (CBDR) to the aviation sector. In advancing that discussion lies one of the keys towards looking for effective and efficient action on climate change.

A global measure is unlikely to have more negative impacts on developing countries than inclusion in EU ETS. Since these impacts are small, it appears possible that developing countries can be compensated for the negative impacts that such a measure may have. Several proposals have been made on how this can be done using the revenues of a global tax or ETS, such as by providing developing countries with a lump sum refund linked to their international trade. In this way, a measure that would affect aviation could comply with the CBDR principle.

A global non-discriminatory scheme would suffer less from carbon leakage and market distortions. It could open the way for developing countries to reduce their dependence on aviation and improve the sustainability of their development trajectory. At the same time, aviation greenhouse gas emissions would be limited or reduced, thus reducing the impacts of global warming on all countries. It is to be hoped that the inclusion of aviation in the EU ETS is a first step towards such a global measure. [BR](#)

This article is adapted from a longer ICTSD Information Note by Jasper Faber and Linda Brinke, which can be found on [ICTSD's website](#). A second paper analysing the WTO law implications for the inclusion of aviation in the EU ETS is forthcoming.

Table 3: Overview of the impact of EU ETS on CO₂ emissions

Source	CO ₂ emissions aviation	CO ₂ emissions bought from other EU ETS sectors	Total CO ₂ reduction
CE Delft (2007)	-0.4 to -3.2% (2012)	N.A.	N.A.
CE Delft et al. (2005)	-2 to -9 Mton (2012) *	-17 to -23 Mton (2012)	-19 to -32 Mton (2012)
CE Delft et al. (2007)	-13 Mton (2020) **	-170 Mton (2020)	-183 Mton (2020)

* Reference scenario for aviation emissions is 155-180 Mton in 2012.

** Reference scenario for aviation emissions is 401 Mton in 2020.

The Climate Technology Mechanism: Issues and Challenges

The agreement to establish a new Technology Mechanism is one of the concrete outcomes of the Cancun climate change conference in December 2010 that requires a closer look. The main goal of the Mechanism is to enhance action for technology development and transfer, particularly to developing countries, in support of climate change mitigation and adaptation. It is premised on the recognition that the large-scale deployment and diffusion of these technologies is pivotal to worldwide efforts to reduce greenhouse gas emissions.

However, the Mechanism faces many challenges before it can become operational in 2012. Many of its functions need to be further ‘fleshed out’ and a number of institutional issues such as the relationship between its two main components - the Technology Executive Committee (TEC) and the Climate Technology Centre and Network (CTCN) - still need to be agreed. This paper seeks to shed some light on the main features and functions of the Technology Mechanism and on some of these challenges.

The technology mechanism: Background and general considerations

Technology transfer has been a key objective of the United Nations Framework Convention on Climate Change (UNFCCC) since its inception as reflected in its Article 4.5 of the Convention which requires developed countries to “take all practicable steps to promote, facilitate and finance, as appropriate, the transfer of, or access to environmentally sound technologies and know-how to other Parties, particularly developing country parties to enable them to implement the provisions of the Convention.”

For many years, developing countries have been demanding concrete steps and measures to operationalise these provisions in a meaningful way. The Copenhagen Accord (2009) signalled growing consensus on the creation of a Mechanism as signatories agreed to establish a “Technology Mechanism to accelerate technology development and transfer in support of action on adaptation and mitigation.”

Between Copenhagen and Cancun, parties further fleshed out the precise mandate, structures, and functions of the new entity. Thus, the decision to establish the Mechanism at the Cancun Conference represents a potentially positive development, particularly in view of the long-standing demands by developing countries for the institutional strengthening of the technology transfer ‘pillar’ under the UNFCCC.

More broadly, it has the potential to become an important meeting point for developed and developing countries to work together in a positive spirit to accelerate the deployment and transfer of technologies for climate change mitigation and adaptation.

Technology transfer or technology diffusion?

Industrialised countries and private sector organisations voiced their well-known misgivings about the concept of ‘technology transfer’, preferring the term ‘technology diffusion’. They consider the latter as reflecting real world dynamics more accurately.

Developing countries remained attached to the concept of ‘technology transfer’ and point out that a significant share of clean energy technologies are developed by public institutions which use public funding - thus dispelling the argument that technology is solely in the hands of the private sector. Against this background, it is interesting to note that the entity created

at Cancun is ultimately a ‘Technology Mechanism’ and not a ‘Technology Transfer Mechanism.’

In the course of climate negotiations, industrialised countries began to increasingly perceive emerging economies such as China, India and Brazil as competitors in the ‘clean energy race’. The success of developing countries in clean energy industries created concern within industrialised countries, particularly the US, of concessions in the technology discussions which could adversely impact their competitiveness. These preoccupations cast a shadow over the run up to Cancun.

Another challenge was the diversity of technological ‘needs’ within the large, heterogeneous grouping of ‘developing countries’. References to national needs, circumstances and country-driven approaches are recurrent throughout the mandate to ensure the primacy of national needs and country ownership in guiding the work of the Mechanism.

In addition, special consideration is given to LDCs for at one point there was a feeling that negotiations were paying more attention to the needs of middle income countries and mitigation technologies and not sufficiently to LDCs and adaptation technologies.

Deadlock on Intellectual Property

The issue of Intellectual Property Rights (IPRs) was one of, if not the most divisive in the technology negotiations. Leading up to Cancun, developing countries had pressed for the consideration of IPRs as one of the possible barriers to technology transfer. Meanwhile, developed countries opposed such a view because of the essential role they consider IPR protection plays in providing incentives for innovation in clean technologies.

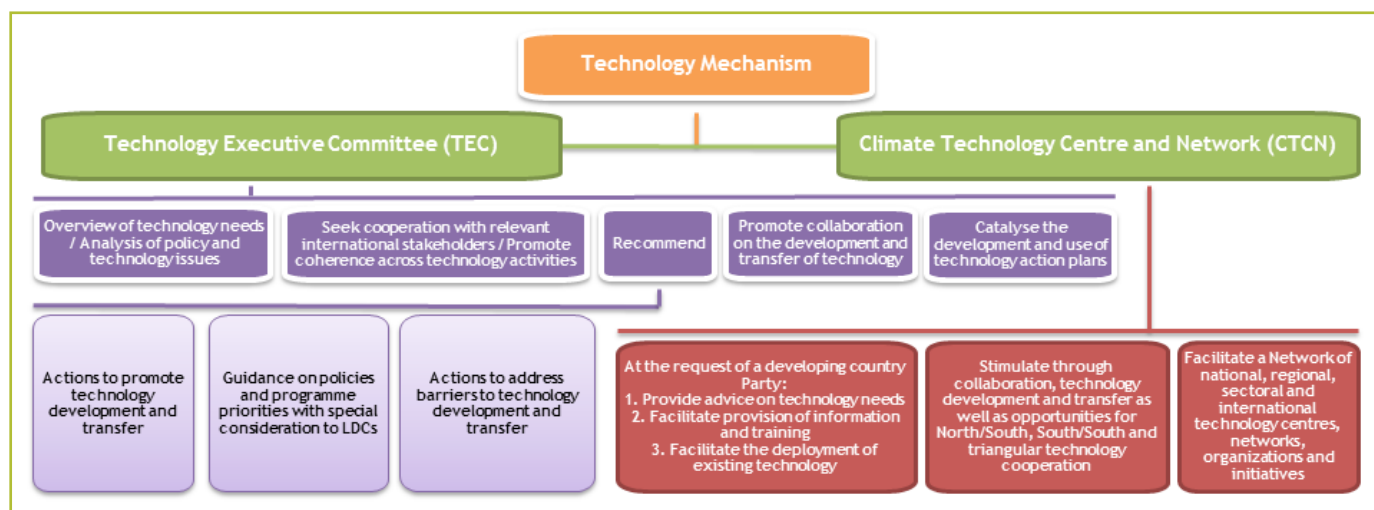
A ‘polarised’ debate followed, in which there was little chance for meaningful discussion based on evidence rather than rhetoric. As a result, all the language on IPRs remained bracketed during negotiations and, ultimately, IPRs were not referenced in the final text of the Cancun Agreements.

In an assessment of the outcome of Cancun, BASIC countries - Brazil, South Africa, India, and China - indicated that the important issues of equity, IPRs, and trade had been left out of the Cancun agreements. “We will make every effort to bring these issues back to the mainstream discussion,” the Indian Minister of Environment said.

Mandate, structure and functions of the technology mechanism

The COP established a Technology Mechanism to “facilitate the implementation of actions for achieving the objective of enhanced action on technology development and transfer, is to support action on mitigation and adaptation in order to achieve the full implementation of the Convention”.

The Technology Mechanism is ultimately placed “under the guidance of the COP” to facilitate the implementation of



actions and accelerate action at different stages of the technology cycle - such as research and diffusion and transfer of technology.

The Mandate appears rather intricate and convoluted compared to previous formulations in the negotiations. It stands in contrast to the more direct and assertive wording in previous drafts - as well as in the Copenhagen Accord.

The Technology Mechanism consists of two components: the TEC and CTCN. Both should “facilitate the effective implementation of the Technology Mechanism, under the guidance of the Conference of the Parties”.

Overall, the TEC’s primary focus appears to be to service the UNFCCC and its Parties. Its main functions, particularly in making recommendations and providing an overview of technological needs, are close to those of a policy ‘oversight’ body. The objective of the CTCN is to “facilitate a Network of national, regional, sectoral and international technology networks, organisations and initiatives with a view to engaging to participants of the Network in a number of functions.”

The negotiating text just prior to Cancun, stated that the Climate Technology Centre (CTC) would “establish and facilitate” a Climate Technology Network (emphasis added). The elimination of the term ‘establish’ from the final Cancun Agreements is significant. The creation or establishment of a network of regional innovation centres with the aim of accelerating the diffusion of climate-friendly technologies was considered during the pre-Cancun negotiations as one of the concrete new measures that the Mechanism would bring about. Thus, the fact that the CTC is now confined to only facilitate such a network marks a scaling down of ambition compared to the original intent. This change might stem from concerns about the cost implications associated with the creation of new entities. In any case, a number of questions remain as to how the facilitation of the Network would take place concretely.

The relationship between the TEC and the CTCN remains undefined due to apprehensions that the TEC could become a ‘politicised’ body that intervenes in technology matters were it given power to oversee the work of the CTCN. Without an oversight function, the two bodies would report separately to the Convention’s subsidiary bodies thus potentially resulting in some duplication.

Next steps and challenges ahead

According to the Cancun decision, the Technology Mechanism should be fully operational in 2012, although there are a

number of steps to be taken and challenges to address in order to ensure it is also effective.

The Cancun decision establishes a work programme on technology development and transfer for 2011 as preparation for COP 17 in Durban in December 2011. The work programme calls for continued dialogue among parties on the matters of the relationship between the TEC and the CTCN, the governance structure, the procedure for calling for and evaluating proposals, the links between the Technology Mechanism and the financial mechanism, and further functions for the TEC and CTCN.

The Mechanism needs to be endowed with sufficient resources if it is to play any meaningful role and make a ‘real’ difference.

Conclusion

Overall, the new Technology Mechanism potentially represents a step to move beyond the ‘conventional’ approach to technology transfer under the climate regime - based essentially on capacity building and technology needs assessments - to a more ‘dynamic’ one geared towards fostering public-private partnerships; promoting innovation; catalysing the use of technology road maps or action plans; mobilising national, regional and international technology centres; and facilitating joint R&D activities.

The task facing the Technology Mechanism is arduous. Governments and other stakeholders, especially the private sector, have an important role in ensuring its success.

In this context, discussions on the road to COP 17 in Durban will play a critical role in settling outstanding institutional matters relating to the design of the Technology Mechanism and in elaborating further the exact manner in which its main bodies will operate. Concomitant deliberations on finance will also be essential in ensuring the Mechanism’s future viability.

The success of these discussions will put the Mechanism on solid ground in order for it to be operational in 2012, and more importantly to become an integrated and coherent entity which is both flexible in its design and operations and effective in carrying out its tasks. **BR**

This article is drawn from a longer ICTSD Information Note, which can be found on [ICTSD’s website](#).

Understanding Carbon Leakage: Developing Country Trade Vulnerabilities to EU Climate Policies

As the international community struggles to agree on a comprehensive, global effort to curb greenhouse gas (GHG) emissions, countries are increasingly moving forward unilaterally and in smaller groups. This will result in an exacerbated asymmetry of climate change mitigation measures and larger differences in costs of carbon around the world.

Some observers say that by implementing an emissions trading scheme (ETS), a country will become less competitive and lose market share to those countries who do not implement an ETS. Additionally, there is the risk of carbon leakage - the movement of carbon dioxide emissions to a country from another with stricter climate policies - which would arguably undermine the effectiveness of mitigation policy.

One possible accompanying measure to address this is a border carbon adjustment (BCA), which would essentially place a tax imports from countries where the cost of carbon is lower. Such proposals raise concerns from trading partners that their exports will face BCAs and, thus, be less competitive. This concern is particularly strong for developing countries, as exports are seen to be an important tool in their developmental process. The question of what degree of comparable measures could be taken by developing countries would need to be looked at in the context of the principle of common but differentiated responsibility (CBDR), a cornerstone of the UN climate convention.

EU leakage concerns

Brussels is aiming to make the European Union a leader in combating climate change, which has led to heightened carbon leakage and competitiveness concerns in recent years. As the EU is an important export market for many developing countries, the implementation of BCAs could serious development implications.

Allocating emission allowances free of charge is common practice for mitigating leakage risks in Europe. While no plans to implement BCAs have been proposed, the European Commission issued a communication in May 2010 which reviewed the need for tools to address carbon leakage as well as other competitiveness concerns. This has subsequently been further emphasised, most notably, by the inclusion of the aviation sector in the ETS (see related article, this issue).

A full analysis of the economic and social effects of potential EU BCAs for developing countries would require, *inter alia*, estimates of the carbon cost on the affected trade flows and of the greenhouse gas (GHG) intensity of an export. But even without such estimates, it is possible to assess the proportion of developing country exports that could be affected by potential EU border carbon measures. In this context, this article outlines the potential impacts on developing country trade flows if the EU implemented BCAs.

Which products? Which countries?

Knowing which products would face BCAs, should they be implemented, is crucial to assessing the vulnerability of developing countries to such measures. The EU's list of carbon leakage-sensitive sectors does serve as a useful reference

point. Nevertheless, for a complete analysis this list of developing country exports requires further refinement. Sectors most likely to face BCAs include those classified as "carbon leakage-sensitive" (based on a combination of their high trade intensity and their likelihood of facing cost increases), as well as those that are simply likely to face cost increases only.

Sectors identified as carbon leakage-sensitive based merely on their trade intensity are, on the other hand, less likely to face border carbon measures for two interlinked reasons. First, imposing BCAs on these sectors makes little sense from an environmental point of view, as they are not major contributors to GHG emissions and hence not at great risk of being significantly affected by policies that involve a carbon price.

Second, it would be difficult to justify such a measure with respect to World Trade Organization law and in particular Article XX of the WTO's General Agreement on Tariffs and Trade (GATT), which under specific circumstances provides for exceptions based on environmental concerns.

If the EU were to introduce BCAs, it seems reasonable to assume that the border tax would be levied on carbon leakage-sensitive products from large-emitting countries that have lower or no carbon costs. While high GHG-emitting developing countries - such as China, India, and Brazil - are assumed to top the list of those likely to face BCAs, Brussels has suggested that Least Developed Countries (LDCs) would likely be excluded from any measures.

Introducing BCAs: Potential effects on developing country exports

If the EU opted to implement border measures on carbon leakage-sensitive imports, it clearly could affect developing countries' exports to that region. There are, however, several factors that could influence the extent of the impact of BCAs on developing country trade flows.

First, the share of carbon leakage-sensitive exports of a country's total exports to the EU would be one factor for consideration. These shares vary widely between developing countries. While they are large for countries like Venezuela (41.83%), South Africa (28.10%) and India (23.75%), they are small for Thailand (5.03%), Argentina (4.84%) and Nigeria (2.49%) - all data refers to the period 2007-2009. Given these differences, countries in the first group would be more heavily affected by BCAs imposed on carbon-leakage sensitive imports into the EU than countries in the second group.

Second, while the share of sensitive exports of a country's total exports to the EU will influence its vulnerability, this indicator must take into account the importance of the EU

as an export market. While a large share of a country's total exports to the EU could face BCAs, this might not significantly affect this country depending on the proportion of total exports exported to the EU. Again, there exist important differences between countries. For Venezuela and Mexico, for example, the EU is not a particularly important export market only accounting for 4.42 and 5.45 percent respectively. For Kazakhstan, South Africa, and Egypt, on the other hand, exports to the EU make up 43.83, 30.75, and 32.97 percent of their total exports respectively.

Additionally, the importance of the EU as an export market in the individual sensitive sectors needs to be taken into account. A sector could suffer disproportionately from decreased revenues if the EU was a very important export market for a given product. Such vulnerabilities exist for several countries. For example, 100 percent of Egypt's liquefied propane exports, 82.89 percent of Venezuela's aluminium wire exports, and 84.23 percent of India's exports of leather articles flow to the EU market. Thus, border carbon measures imposed on these products could seriously harm these sectors within these countries even if the EU, as a whole, was not a very important export market.

Third, understanding sectoral coverage is crucial for determining developing country trade vulnerabilities that could result from potential BCAs. Determining which products would face border measures would thus significantly shape the extent to which individual developing country trade flows would be affected by BCAs.

Countries with large shares of carbon leakage-sensitive exports to the EU generally show high export values in metals, chemicals, and minerals. These products are among the "common suspects" when it comes to carbon leakage and are therefore most likely to face border measures. Countries particularly vulnerable to border measures imposed on these products would include China, India, Brazil, Mexico, South Korea, Iran, South Africa, Saudi Arabia, Thailand, Taiwan, Venezuela, Malaysia, Egypt, and Kazakhstan.


Finding solutions to carbon leakage without compromising development prospects

A comprehensive climate change agreement involving increased mitigation commitments and action by all major emitters would undoubtedly be the environmentally and economically most efficient way to address carbon leakage concerns. The achievement of such an agreement, however, remains elusive. Even if a multilateral climate deal were reached, this would not entirely erase the risk of carbon leakage, as the UNFCCC's CBDR principle provides for asymmetric levels of climate change actions.

Given the possible trade vulnerabilities of developing countries as a result of potential BCAs, ongoing discussions surrounding this issue are of great importance to developing countries. Countries where large shares of exports could be affected by border carbon measures might want to consider addressing the carbon leakage problem from within through the introduction of a price on carbon emissions, or a comparable mitigation policy. In such a situation the EU might grant countries with mitigation activities exemptions from BCA measures. But such actions on the part of LDCs would fall under UNFCCC agreements to receive financing and technology support.

Another possible solution for developing countries to address the threat of BCAs would be to impose a carbon tax on their exports to countries with a BCA scheme in place. Developing countries could not only avoid the BCAs but also raise revenues, which could be used for domestic climate change mitigation purposes.

Alternatively, developing countries and their trade partners applying a carbon price, like the EU, could pursue bilateral agreements in which the former would implement mitigation activities in exchange for concessions such as additional trade openings. This would help address carbon leakage concerns while facilitating the implementation of unpopular climate policies in developing countries.

Measures to tackle climate change that threaten economic development or create other negative consequences are undesirable as they would ultimately hinder sustainable development. Therefore, solutions to address climate change and related carbon leakage concerns without compromising the prospects of a global sustainable development are urgently needed. 

This article is based on a longer ICTSD Issue Paper by Samantha Derksen, formerly of ICTSD. The full article can be found on [ICTSD's Website](http://www.ictsd.org).

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UNFCCC COP 17 events & resources

Select COP 17 Side Events

Date	Time	Event	Venue
Tuesday 29 th	13:15-14:45	UNFCCC side event on “UNFCCC finance portal: New modules and GEF managed funds.”	Room 2
	18:30-20:00	International Civil Aviation Organisation side event on “Emissions from international transport: global actions for global industries.”	Room 2
Wednesday 30 th	15:00-16:30	Practical Action and ACTS side event on “Balancing priorities, creating synergies? Pro-poor action for food security, adaptation and migration.”	Room 1
Thursday 1 st	11:30-13:00	World Resources Institute side event on “Launch of GHG Protocol Product & Corporate Value Chain Standards.”	Room 2
Friday 2 nd	11:30-13:00	International Chamber of Commerce side event on “Leveraging private sector financing and investment.”	Room 2
Saturday 5 th & Sunday 6 th	All Day	World Climate Summit 2011	Southern Sun Elangeni Hotel
Monday 5 th	11:30-13:00	Global Biodiversity Information Facility and the International Union of Forest Research Organisations side event on “Assessment of biodiversity, Forest management, REDD+ links; the need for common data standards.”	Room 2
	13:15-14:45	Global Green Growth Institute side event on “Green growth in action.”	Room 2
	18:30-20:00	WIPO side event on “Technology transfer in the context of shifting towards a green economy.”	Room 2
Monday 5 th & Tuesday 6 th	All day	ICTSD, WTO, and the Department of Trade and Industry of the Republic of South Africa “Durban Trade and Climate Change Symposium.”	Southern Sun North Beach Hotel
Wednesday 7 th	20:15-21:45	ICTSD and SS-GATE side event on “Emerging Economy Trade-Related Response Measures to Climate Change Emissions Trading Schemes.”	Room 5
Thursday 8 th	13:15-14:45	WTO side event on “Linkages between green economy measures, trade and climate change.”	Room 3

Trade and Climate Change-Related Resources

FOSTERING LOW CARBON GROWTH: THE CASE FOR A SUSTAINABLE ENERGY TRADE AGREEMENT. ICTSD Global Platform on Climate Change, Trade and Sustainable Energy, Issue Paper, November 2011.

FACILITATING TRADE IN SERVICES COMPLEMENTARY TO CLIMATE-FRIENDLY TECHNOLOGIES. By Joy Aeree Kim. ICTSD Programme on Trade and Environment, Environmental Goods and Services Series, Issue paper No.15, October 2011.

FEED-IN TARIFFS FOR RENEWABLE ENERGY AND WTO SUBSIDY RULES: AN INITIAL LEGAL REVIEW. By Marie Wilke, ICTSD Programme on Trade and Environment, Trade and Sustainable Energy Series, Issue Paper No. 4, August 2011.

DEVELOPING COUNTRIES’ TRADE VULNERABILITIES TO EU CLIMATE POLICIES: AN OVERVIEW OF CARBON LEAKAGE-SENSITIVE TRADE FLOWS. ICTSD Programme on Competitiveness and Sustainable Development, Transition to a Low Carbon Future Series, Issue Paper No. 19, August 2011.

THE CLIMATE TECHNOLOGY MECHANISM: ISSUES AND CHALLENGES. By Ahmed Abdel Latif. ICTSD Global Platform on Climate Change, Trade and Sustainable Energy, Information note No. 18, March 2011.

THE INCLUSION OF AVIATION IN THE EU EMISSIONS TRADING SCHEME: AN ECONOMIC AND ENVIRONMENTAL ASSESSMENT. By Jasper Faber & Linda Brinke. ICTSD Programme on Trade and Environment, Trade and Sustainable Energy Series, Issue paper No. 5, September 2011.

THE IMPACT OF US BIOFUEL POLICIES ON AGRICULTURAL PRICE LEVELS AND VOLATILITY. By Bruce Babcock. ICTSD Programme on Agricultural Trade and Sustainable Development, Issue paper No. 35, June 2011.

THE TRADE AND CLIMATE CHANGE LINKAGES. ICTSD Global Platform on Climate Change, Trade and Sustainable Energy, ICTSD Brief for UNFCCC Negotiators, April 2011.

ICTSD SUBMISSION INFORMATION AND VIEWS RELATING TO MODALITIES FOR THE OPERATIONALISATION OF A WORK PROGRAMME AND POSSIBLE FORUM ON RESPONSE MEASURES. ICTSD, Submission to UNFCCC, September 2011.