



Climate change mitigation policies: opportunities and challenges for exporters from low-income countries

Jodie Keane

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and critical comment

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Acronyms

AOSIS	Alliance of Small Island States
BCA	Border Carbon Adjustments
BTA	Border Tax Adjustments
CAR	Central African Republic
CCS	Carbon Capture and Storage
CDM	Clean Development Mechanism
CER	Certified Emissions Reduction
CTE	Committee on Trade and Environment
DDR	Doha Development Round
DSB	Dispute Settlement Body
EGS	Environmental Goods and Services
ERU	Emission Reduction Units
ETS	Emissions Trading Scheme
EU	European Union
GATT	General Agreement on Tariffs and Trade
GATS	General Agreement on Trade in Services
GHG	Greenhouse Gas
ICAO	International Civil Aviation Organization
IPCC	Intergovernmental Panel on Climate
LCA	Long-term Cooperative Action
LDC	Least Developed Country
LICs	Low Income Countries
MFN	Most Favoured Nation
MRV	Monitoring, Reporting and Verification
NDT	Non-Discriminatory Treatment
NT	National Treatment
ODI	Overseas Development Institute
OTDS	Overall Trade Distortive Subsidies
PVS	Private Voluntary Standards
REC	Regional Economic Communities
REDD	Reduced Emissions from Deforestation and Degradation
RSB	Roundtable on Sustainable Biofuels
SDT	Special and Differential Treatment
SSA	Sub-Saharan Africa
SVE	Small and Vulnerable Economies
TBT	Technical Barrier to Trade
TRIPs	Trade Related Aspects of Intellectual Property Rights
UMIC	Upper Middle Income Countries
UNCBD	United Nations Convention on Biological Diversity
UNFCCC	United Nations Framework Convention on Climate Change
US	United States
WTO	World Trade Organisation

Executive summary

This working paper explores the potential new trade opportunities and challenges that climate change mitigation policies adopted primarily in developed countries may create for exporters in Low Income Countries (LICs). It forms part of a larger program of work being undertaken at ODI to assess the effect of climate change and natural resource scarcity on the competitiveness of businesses in low income countries. It also builds on previous studies which include Ellis et al (2010) where various scenarios were identified regarding the potential future climate change regime; in addition to Keane et al (2010) where synergies and potential clashes between the trade and climate change regimes were outlined.

First, this paper takes stock of the trade related aspects of climate change negotiations to date. This covers the inception of the global climate change regime as represented by the Kyoto protocol, as well as the outcomes of the most recent rounds of negotiations for a new international climate change agreement that includes all countries. We draw attention to potential conflicts between recent climate change mitigation policies, and WTO rules. We also highlight where potential synergies may be developed. This includes such policy measures as: emissions trading schemes and the clean development mechanism; border carbon adjustments; standards and labels; and environmental goods and services.

It then discusses the extent to which such measures may present challenges to LIC exporters and reduce competitiveness, or whether such policy measures might be leveraged as opportunities and therefore increase export competitiveness. We explore these aspects in general before we begin to analyse the composition of exports from LICs in more detail. Here we focus on the main product exports and their destination markets and then link these to the policy measures discussed in the previous sections. We also identify LICs with the most concentrated export baskets and discuss the particular export competitiveness challenges that such exporters may face given mitigation policies to date, and how new opportunities might be best leveraged.

Based on the analysis undertaken, the European Union is identified as one of the major trading partners for LICs at the current time; it is also to some extent a leading player in terms of the formulation and implementation of climate change mitigation policies. Therefore the climate change mitigation policies that it implements could have the largest effects on LICs as a group, relative to other trading partners at the current time. Given this, in the final section of this working paper we discuss how LICs could seek to influence regulatory frameworks, at the multilateral, regional and national level so as to overcome the potential competitiveness challenges and leverage new opportunities that may arise as a result of the climate change mitigation policies implemented by developed countries. We identify three areas in which the trade and climate change regulatory frameworks may be influenced which include: dealing with differentiation; measuring and reporting on carbon; and developing equivalent measures.

Finally we conclude by highlighting the need for policy makers to develop synergies where they exist between the trade and climate change regimes, and adapt existing export diversification strategies. Such strategies could be used to overcome some of the potential competitive challenges that may result from climate change mitigation policy, but also be linked to mitigation mechanisms so as to obtain additional resources in order to increase the resilience of existing and future productive structures.

1 Trade and climate change: the impact of climate change and its mitigation on trade opportunities for low income countries

In the report, Growth in a Carbon Constrained World (Ellis et al. 2010), we identified and discussed three alternative scenarios regarding the climate change regime. Since the most recent rounds of negotiations for the United Nations Climate Change Conference, known as COP17 held in Durban in December 2011 and COP18 held in Doha in November 2012, it is fair to say that the world has moved towards the third scenario identified in that report - that of no global deal. The outcomes from both negotiations include agreement that all parties should negotiate a new international agreement in future (COP 17), but this is not a guaranteed outcome of further negotiations. Although COP18 managed to secure the future of the Kyoto Protocol and agreement for a second commitment period, the level of ambition and number of country signatories has declined compared to the first period.¹ This means there still remains no international agreement on how to both mitigate as well as adapt to climate change, the occurrence of which is recognised.

Given this uncertain and somewhat fragmented global context of negotiations, this working paper sets out first to take stock of the main challenges and potential opportunities that may arise in the trading system because of climate change mitigation policies adopted collectively as well as individually by developed countries; and second, to assess the vulnerability of low income countries (LICs) to these challenges, as well as their ability to tap into new potential trade opportunities.

Notwithstanding important structural changes on-going within the global economy, the EU is at the current time the major trading partner for LICs as a group. Nevertheless, emerging economies are becoming increasingly important players; for many LICs, exports to developing countries have increased from around one-half to over two-thirds during the previous decade (Stevens, 2012). This will reduce the impact of the EU's mitigation policies, and will make LICs trading opportunities more dependent on mitigation policies in emerging markets. However, given the difficulties in predicting future developments, and the diversity in policy across different emerging economies, this paper focuses particularly on the impact of EU policies on LICs' trading opportunities.

1.1 Trade related outcomes of climate change negotiations

This section first provides an overview of how trade and climate change regimes have developed and the potential clashes and synergies that exist between the two. It then provides a summary of the most recent trade related outcomes of climate change negotiations with reference to specific policy measures. We discuss in general terms the potential competitiveness challenges as well as opportunities that these measures may pose for LICs.

1.1.1 Development of the trade and climate change regimes, clashes and synergies²

This section outlines the potential for conflict between the international trade and climate change policy frameworks. The trade and climate change regimes have been developed in completely separate contexts although there is much potential overlap between the two. The trade regime was developed through the General Agreement on Trade and Tariffs (GATT) which began in 1947 after the Second World War alongside the creation of the multilateral institutions, including the Bretton

¹ For example, although the European Union, Norway and Australia have agreed to the second commitment period, the US, Japan, Canada, Russia and New Zealand have not. See IIED (2012).

² The following section is adapted from Thorstensen (2010) in Keane et al. (2010).

Woods institutions and the United Nations. The GATT effectively implemented a system of trade rules and a dispute settlement mechanism.

The climate change regime began to develop further to the United Nations conference on environment and development in 1992, also known as the Rio Conference 1992. Since then momentum has gathered to address harmful greenhouse gases, including carbon, but also others, for example those that damage the ozone layer. The key outcomes from the Rio conference included the Rio Declaration on Environment and Development, the Statement of Forest Principles, the United Nations Framework Convention on Climate Change and the United Nations Convention on Biological Diversity. The Kyoto protocol to reduce GHGs so as to mitigate climate change was developed under the United Nations Framework Convention on Climate Change (UNFCCC).

Table 1 summarises the international treaties that underpin the agreements, their objectives, principles, commitments, instruments and dispute settlement mechanisms. There are significant differences between principles, country classifications and commitments made by countries under the climate change and trade regimes, and this gives rise to some potential conflicts between the two.

Table 1: Differences between the climate change and trade regimes

	Climate Change	Trade Regimes
International treaties	The UNFCCC – United Nations Framework Convention on Climate Change (1992), the Kyoto Protocol (1997) and a possible new Protocol to be negotiated.	GATT – the General Agreement on Tariffs and Trade (1947), the Marrakesh Declaration Establishing the World Trade Organization (1994) and the possible outcome of a new round of trade negotiation, the Doha Round.
Objectives of the two regimes	The stabilisation of GHG concentrations at a specific level to prevent anthropogenic interference with climate system. Negotiations take place to specify the specific targets and obligations of different countries.	Secure terms of access to international markets, specified for each country. Negotiations take place to liberalise access and to govern the relationship between trade rules and national laws.
Principles	(i) Protection of the climate system on the basis of equity (ii) But in accordance with common but differentiated responsibilities and respective capabilities. (iii) Measures to combat climate change, including unilateral ones, should not constitute means of arbitrary or unjustifiable discrimination or a disguised restriction on international trade.	(i) MFN – Most Favoured Nation meaning non-discrimination among nations. (ii) NT and NDT – National treatment with non-discriminatory treatment between imported goods and domestic goods. (iii) Transparency - all trade legislation must be notified to the WTO.
Country classification	<ul style="list-style-type: none"> Developed Parties: Annex I Parties (broader category) – Shall adopt national policies on mitigation of climate change by limiting emissions of GHG, and Annex II Parties (richest) – Shall provide new and additional financial resources to meet full costs incurred by developing parties in complying with obligations to inform national inventories of emissions and steps taken. Developing Parties: no mandatory commitments. 	<ul style="list-style-type: none"> Special and Differential Treatment to developing counties – all main agreements contain clauses with special treatment for developing countries. It is important to note that for trade developing countries are self-defined.
Commitments	(i) To develop, update and publish national inventories of emissions of GHG	i) To use only tariffs as trade instrument, binding them in schedules as upper limits for

	<p>by sources and of removals of GHG by sinks.</p> <p>(ii) To formulate, implement, publish and update national or regional programmes with measures to mitigate climate change by emission and by sources and sinks.</p> <p>(iii) To cooperate in the adaptation of climate change impacts (for example on coastal zones, water resources, agriculture).</p> <p>(iv) To promote and cooperate in the development, diffusion and transfer of technology of practices and processes that control, reduce, or prevent emissions of GHG.</p>	<p>agricultural and non-agricultural goods.</p> <p>ii) Not to use volume quotas for non-agricultural goods.</p> <p>iii) In agriculture, to limit export subsidies and domestic support and to increase market access.</p> <p>iv) To accept rules on the valuation of goods, import licensing, origin of goods, sanitary and phytosanitary measures, and technical barriers to trade.</p> <p>v) To accept rules on types and applicability of remedies against unfair trade: antidumping; against subsidies: countervailing duties; and against surges of imports: safeguards.</p> <p>vi) To accept rules against offering investment incentives conditioned to the use of export performance or the use of domestic products.</p> <p>vii) To accept rules governing national laws for the protection of Intellectual Property rights.</p> <p>viii) To accept rules for what can be included in bilateral or regional agreements, which would otherwise conflict with the principle of MFN.</p>
Instruments	<p>(i) Targets for reduction of emissions for Annex I Parties (developed countries) with reduction of 5% of emissions based on 1990, and in the period 2008 to 2012.</p> <p>(ii) Flexibilities:</p> <ul style="list-style-type: none"> • Emission Trading Mechanism – among Annex I Parties – that allows the financial trading of emission reduction units (ERUs). • Joint Implementation Mechanism – among Annex I Parties – that allows investments on reduction projects among developed countries. • Clean Development Mechanism – from Annex II to Non-Annex I Parties – that allows investments in reduction projects from developed countries to developing ones. 	<ul style="list-style-type: none"> • Tariffs, and under some conditions, tariff-quotas, valuation, import license, rules of origin and trade defence measures such as antidumping, countervailing measures, and safeguards. • Sanitary and Phytosanitary measures to protect human, animal or plant life or health (SPS) based on scientific principles, subject to rules to ensure that SPS measures do not arbitrarily or unjustifiably discriminate between members. • Technical regulations and standards (TBT) including packing, marking and labelling requirements and procedures for assessment of conformity provided they are not more trade restrictive than necessary to fulfil legitimate objectives. When relevant international standards exist members shall use them.
Dispute settlement	<p>Parties agree to seek a settlement through negotiations or other peaceful means, and when non-possible, a submission to the International Court of Justice. Other mechanisms are included: arbitration and conciliation commissions, with recommendation awards, and compliance mechanism.</p>	<p>Parties agreed to submit disputes to the DSB – Dispute Settlement Body with strict rules for the formation of panels and review of the legal basis by the Appellate Body. The DSB makes mandatory rulings to bring inconsistent measures into compliance with the WTO agreements. Non-compliances are penalised with retaliation (increase of tariffs or removal of benefits in other trade areas e.g. services, IP).</p>

Source: Adapted from Thorstensen (2010).

There some general exceptions to the WTO principles and commitments which could apply to climate change commitments. This is because all WTO agreements have a clause permitting measures necessary to protect human, animal or plant life or health or relating to the conservation of exhaustible natural resources, subject to the requirements that such measures: are not applied

in an arbitrary or unjustifiable way, that they do not discriminate between countries, and that they are not a disguised restriction on international trade. For goods this is in Art XX of GATT; for services in Art. XIV of GATS. For intellectual property, Art. 8 of the agreement on intellectual property allows members to adopt measures necessary to protect public health and nutrition and promote the public interest in sectors of vital importance to their socio-economic and technological development, provided that such measures are consistent with the provisions of TRIPs.

However, there are several possible conflicts between climate and trade regimes. These are related to the instruments associated with each regime, which have been summarised in Table 1. They are summarised below:

- **The emission trading scheme among developed countries, notably the EU.** This climate instrument has created a financial market of certified emissions reductions (CERs) that is regulated by national authorities. This financial market is possibly included in the schedules of financial services commitments of WTO members and, if so, subject to the rules on MFN and NDT of GATS. However, carbon reduction is a service, a financial transaction; as such it should be regulated in accordance with the services rules, and would be subject to the WTO dispute mechanism. The services rules, however, are less precise on what subsidies are permitted, so that there are fewer disputes. But if carbon trading or some of the activities under REDD seem more like trade in goods, it could come under those rules.³
- **The joint implementation mechanism among developing countries which was established under the UNFCCC.** This instrument includes investment measures in the areas of agriculture and forests and also non-agricultural goods. It can involve subsidies and therefore can conflict with the WTO rules on subsidies and on investment incentives.
- **The clean development mechanism between developed and developing countries under the UNFCCC.** This climate instrument also includes investment and subsidies measures that can conflict with WTO rules on subsidies and investment incentives.
- **Agriculture mitigation measures.** These can include subsidies and the instruments can conflict with WTO rules limiting domestic support (the 'amber box' in the Agreement on Agriculture) and with rules on which subsidies are permitted without limit (the 'green box'). Under the agreements proposed in the Doha trade Round, they could also conflict with the commitments of Overall Trade Distortive Subsidies (OTDS) and the new 'green box' rules. New rules on labelling related to climate could conflict with TBT labelling rules.

There are also some possible conflicts between national policy instruments on climate and WTO rules. In particular, there are some national policies on climate change being proposed by the EU, and to a lesser extent the US, which have a high potential of conflict with WTO rules. These are summarised below.

- **Price and market mechanisms:** Measures to set a price on the carbon content of energy or CO₂ emission include domestic taxes on carbon, or a cap and trade mechanism. These mechanisms affect the competitiveness of domestic enterprises and could result in carbon leakage; that is, the migration of enterprises toward countries with weaker mitigation policies. This effect creates political pressure for the imposition of border adjustment measures on imported goods or services to maintain domestic competitiveness, which discriminate against imports and therefore risks being in conflict with WTO rules on NDT.
- **Carbon tax or a cap and trade mechanism:** The imposition of a carbon tax or a cap and trade mechanism on imported goods or services directly affects trade and could conflict with

³ See Page and Keane (2010) in Keane et al. (2010).

two WTO principles: MFN (non-discrimination among nations) and NDT (non-discrimination between imported and domestic goods).

These above mentioned measures raise practical as well as legal questions. This is because any tax applied to domestic and imported goods cannot discriminate between them if they are 'like' goods. Therefore it must be based on determining which products are 'like' and which are 'unlike'.

This raises a number of questions, such as:

- how to apply likeness to inputs (energy) rather than final products;
- how to apply the non-discrimination concept to methods of production, not simply products;
- how to calculate product specific emissions;
- how to allow for the fluctuation of carbon prices;
- how to create a criterion to differentiate 'clean' and 'dirty' products, possibly requiring the use of rules of origin or a specific certification system; and
- how to develop a comparison method based on the best available technology.

Other financial mechanisms or funding programs to mitigate GHG emissions include fiscal measures, price support measures or investment support measures, which will affect costs and prices of goods and services. Because of this, these measures can conflict with WTO rules on subsidies or investment incentives. Technical requirements which are intended to promote the use of green goods or technologies including measuring the level of emissions and energy consumption in products or production methods, and can involve regulations, public and private standards, labelling, conformity assessments, or prohibition of imports. These instruments may conflict with WTO rules on technical barriers to trade and sanitary and phytosanitary measures. Resolving the potential conflicts based on the WTO exceptions (GATT Art. XX and GATS Art XIV) requires that if any climate measure conflicts with trade rules, a minimum requirement is that it not be applied in an arbitrary manner, that there not be unjustifiable discrimination between countries, and that it be applied for environmental purposes, not on competitiveness grounds.

As the previous discussion has made clear the trade and climate change regimes speak different languages, and are based on different types of objectives, principles and commitments. The WTO is about rules and regulations, with the principles - MFN and national treatment - intended to ensure equitable procedures, not to specify outcomes. The UNFCCC is about targets, with an eclectic approach to the mechanisms to reach these. Until and unless a new international climate change agreement is reached which recognises the potential for conflict, as well as synergies, with the trade regime, the only possible solution to conflicts is dialogue between regimes until a settlement can be chosen.

1.1.2 Outcomes from negotiations for a new global agreement on climate change

In this section we focus on the main outcomes from COP17; this is because the subsequent discussions at COP18 build on these outcomes. These include the Durban Platform for Enhanced Action agreed at COP17 which consist of a number of decision texts that include the continuation of the Kyoto Protocol, the setting up of the new Green Climate Fund, as well as other areas such as adaption, Monitoring, Reporting and Verification (MRV), as well as technology and forestry. The Durban Platform, which we discuss below, intends to eventually reach agreement on a new international agreement that includes all countries by 2020. We discuss the policy outcomes of these negotiations that will affect trade in the sub-sections below.

Continuation of the Kyoto Protocol

The second commitment period agreed for the Kyoto protocol began on 1 January 2013 and will now end either on 31 December 2017 or 31 December 2020, depending on whether a new international agreement is reached under the Durban Platform. Given its continued support for the

Kyoto protocol – a binding agreement - the EU achieved agreement on a 'roadmap' whereby major emerging economies agree to work towards adopting targets in the future under the Durban Platform. Adherence to the Kyoto protocol will continue post 2012 for the signatories to its second commitment period which includes the EU, Norway and Australia but not other developed countries such as the US, Japan, Canada, Russia and New Zealand.⁴

This means much work remains to be done on negotiating the successor to Kyoto, which will end by either 2017 or 2020, as all parties have agreed that a new international agreement must be global. This outcome means that the clean development mechanism (CDM) agreed under the first Kyoto protocol will continue post-2012 and until at least 2017. This commitment means legal certainty and provides a transition period for the EU regarding the continuing operation of its emissions trading scheme (ETS), and the purchasing of certified emissions reductions (CERs) from the CDM. Parties who sign up to the second Kyoto commitment period agree to reduce their emissions by at least 25%-40% below 1990 levels by 2020. The EU is seen by some to have won a major diplomatic victory in getting agreement on a second commitment period of the Kyoto protocol; this outcome is also viewed positively by developing countries, as it means that the rules-based principles of the Kyoto Protocol have been preserved, at least until 2017 or at most 2020.

The Durban Platform

The key features of the Durban platform include an agreement to launch a process towards a new legal framework with legal force under the UNFCCC framework. This agreement will involve all countries, and not just Annex I countries (i.e. developed countries) which is currently the case under the Kyoto protocol. This negotiation process began in 2012 and agreement is to be reached by 2015, and implemented by 2020. The outcome of the Durban platform also includes a commitment to scale up the ambition of emissions reductions in the light of the next report of the Intergovernmental Panel on Climate Change (IPCC), due in 2014, so as to reach a target of an increase in global temperatures of not more than 2°C, as well as options for strengthening this goal to 1.5°C.

Some believe the package agreed as part of the Durban platform, namely to agree to negotiate a future long-term regime, and an array of decisions designed to implement the Cancun agreements (agreed as part of the Long-term Cooperative Action (LCA) group of negotiations at COP16) represents a significant step forward. However, others are far more cautious, viewing these outputs as insufficient in ambition, content and timing, to be really able to tackle climate change. This is particularly the case for decisions on the LCA track of negotiations.⁵

For example, the Durban conference was supposed to deliver detailed rules to account for, report on and review countries' greenhouse gas emissions (GHG), actions and finance. Although at COP17, parties made the MRV system operational there are mixed views regarding its environmental integrity. This is in part due to inconsistencies in the methodologies and assumptions that underlie the emissions reduction pledges and accounting systems. It has been argued that the final text of COP17 leaves the way open for weaker accounting rules which, in turn, reduces the ambition of current pledges.⁶ For example, on Annex I accounting, negotiators neither agreed to common accounting rules nor the establishment of a process to develop such rules, therefore limiting comparability and the quality of emissions reductions.⁷ Despite this, others have viewed the outcomes of COP17 more positively, arguing that at least it sets a commitment to develop a common system for MRV emissions reductions across countries.

⁴ See PWC (2011).

⁵ See Maxwell (2011) for a summary.

⁶ See PWC (2011).

⁷ *Ibid.*

The disjuncture that became apparent between supporters of the Kyoto protocol and the LCA at COP16 is intended to be rectified by 2020. But some of the continued obstacles under LCA negotiations include a failure to provide clarity and positive incentives on Reduced Emissions from Deforestation and Degradation (REDD+) policy approaches. Essentially the outcomes from this round of negotiations left the door open for further discussions on financing results-based actions and other actions linked to implementing safeguards, addressing the drivers of deforestation, land tenure and forest governance issues, and ensuring the effective participation of relevant stakeholders.⁸ The text provides for the development of “appropriate market-based approaches” for the development of REDD+, providing that environmental integrity is preserved. However, without clarification regarding MRV, there are doubts as to how this may be achieved in practice.

1.2 Other trade related outcomes

This section provides further information on the trade related policy outcomes of climate change mitigation strategies and negotiations. This includes: the ETS and the links to the CDM established under the Kyoto protocol; the potential use of border carbon adjustments (BCAs) by countries that have mitigation policies in place against those that don't; carbon standards and labels; and finally, the liberalisation of trade in environmental goods and services. The objective in this section is to provide an indication of the extent to which policies being implemented have the potential to either adversely or positively affect the trading patterns of LICs, which we go on to analyse in more detail in Section Two.

1.2.1 Emissions trading schemes and CDM

The EU's ETS has been the purchaser of CERs from the CDM established under the Kyoto protocol to date. Further to the outcomes of COP17, the EU's ETS still permits the use of CERs purchased from the CDM from 2013 onwards. However, a number of changes have been made, including sectoral coverage. For example, the scheme will be expanded to include the petrochemicals, ammonia and aluminium industries and additional gases in 2013, when the third trading period begins; the aviation industry has been included from 2012.

There are also some limitations to the EU's ETS which have arisen. The major one is that the market for CERs purchased through the CDM will be limited to those CERs obtained from LDCs, therefore excluding other developing countries from 2013. This market restriction has been put in place because the EU does not consider the outcomes from COP17 to consist of a new international agreement under which developed countries and economically more advanced developing countries commit themselves to GHG reductions according to their responsibilities and capabilities.⁹

As a result the limitation to the use of CERs obtained from new projects from the LDCs will begin in 2013. This policy change has the potential to significantly increase investment in CDM projects located in LDCs as compared with outcomes to date. A limitation however, is that the scope of the EU's ETS still excludes land use change and forestry – the major source of emissions from LICs and LDCs.¹⁰

Where some new sectors have been included in the EU's ETS, the result has been some increase in tensions with trading partners. For example, the inclusion of the aviation industry in the EU's ETS has increased trade frictions with large emerging economies such as China, which has barred

⁸ See KPMG (2011).

⁹ As referred to in Article 11a (7) of the EU ETS Directive and Article 5(3) of the Effort Sharing Decision. See: http://ec.europa.eu/clima/news/docs/additional_qa_06_01_2011_en.pdf

¹⁰ See Keane and Potts (2008) for further discussion of sectoral coverage. See Stevens (2012) for information on the overlap between the current lists of LICs and LDCs and their overlap.

the country's airlines from participating in Brussels' controversial plan to place a levy on foreign airlines for the emissions they use on incoming and outgoing flights.¹¹ Other countries have also raised concerns and are preparing to take action. As reported by Bridges (2011) countries that oppose the EU rule requiring airlines to surrender carbon permits for the emissions they produce during all flights taking off or landing in the 27-country bloc now have an agreed set of options for retaliation; these include: barring airlines from participating in the Brussels plan; filing a formal complaint at the UN's civil aviation body - the International Civil Aviation Organization (ICAO); imposing levies or charges on EU airlines as a countermeasure; and stopping talks on new routes with EU carriers. The basket of options also includes the option for countries to assess whether the EU ETS "is consistent with the WTO Agreements and [take] appropriate action".

In some ways, the EU's policy on climate change seems to contradict its own trade policy, as the aviation industry has been included within the EU's ETS for the first time this year, irrespective of the country of origin.¹² The aviation industry is the first imported service to be included in the EU ETS – a key measure to address the impact of greenhouse gas (GHG) emissions. It is therefore the EU's first BCA. As a result, airline companies must purchase CERs that factor in the EU's emissions reductions targets, with the costs likely to be passed on to their consumers.

In order to counteract these kinds of developments, LICs that are not LDCs, such as Kenya, could consider using alternative measures. These could include, for example, the use of a carbon optimisation tax, or the development of national or regional ETS (see Keane, 2011). The use of such measures would mean that revenue is retained in the region to mitigate and adapt to climate change, rather than being transferred. This is because an equivalent measure to the EU's ETS would be in operation. However, the establishment of such a scheme may also be costly for LICs, as it would require the development of an MRV framework for certifying emissions reductions.¹³

Box 1: Developing emissions trading schemes

Currently, domestic cap-and-trade systems are being implemented or discussed in the US, Japan, Australia, South Korea, New Zealand and Switzerland and China, among others. Under the Clean Energy Act announced in July 2011 the Australian government launched a plan to tax Australia's worst carbon polluters, in a move aimed at reducing carbon pollution by 5% below 2000 levels by 2020 and by 80% below 2000 levels by 2050. Once implemented, the Clean Energy Agreement could be the largest emissions trading scheme in the world, outside of the European Union's.

Emerging economies such as China have begun to designate cities and provinces in which to launch carbon-trading systems. At the current time a number of pilot studies are being done to allocate emissions quotas to districts, companies and industries. This is with a view to establishing a nationwide carbon trading programme in 2015.¹

Given the uncertainty that persists regarding the prospects for a new international agreement, generally these discussions remain on-going; it may not be until negotiations under the Durban Platform are concluded that plans to establish an ETS become concrete.

Regarding the establishment of ETS in developing countries, the EU has stated that it supports the design of a new sectoral crediting mechanism for actions in developing countries, preferably within the UNFCCC framework.

¹¹ The China Air Transport Association - which includes the country's biggest state-owned airlines Air China Ltd, China Southern Airlines, China Eastern Airlines, and Hainan Airlines - has long been pressuring Beijing to oppose the levy. The association - which had already threatened in January not to pay ETS-related charges — says the scheme could cost Chinese airlines as much as US\$127 million in 2012. See Financial Times (2012).

¹² See Keane (2012) for further information.

¹³ *Ibid.*

Other changes which have been agreed as part of negotiations to continue the CDM include the inclusion of Carbon Capture and Storage (CCS) projects. However, because of the considerable uncertainty about their efficacy, developers will have to put 5% of the credits earned in reserve so they will be awarded only after 20 years, as long as no carbon dioxide has leaked from the underground store. While this is a positive development for CCS, the technology remains in its infancy, expensive and unproven, and will need significant extra funding on top of any carbon credits before it becomes economically viable.

As already mentioned, no firm conclusions have yet been reached regarding the inclusion of the agricultural sector in the CDM. Debate over the REDD+ initiative is also ongoing. This is important, because for most LICs, the forestry and agricultural sectors account for most GHG emissions (Keane et al., 2009). However, given the increasing fragmentation of carbon markets – due to the lack of a new international agreement and framework to underpin global trade in carbon - other national schemes may be more likely to include CERs from REDD+ type initiatives in the future. For example, the agriculture and forestry sector will be included in New Zealand's ETS in the future; this is because the sector accounts for around 70% of total GHG emissions from New Zealand.

1.2.2 Border carbon adjustments

BCAs are being considered useful policy tools to level the playing field between domestic producers in developed countries that adhere to climate change mitigation policy, and participate in ETS and therefore to some extent pay for the carbon used in production, compared to importers from countries that do not adhere to any climate change mitigation policy. BCAs could require importers to pay an amount equivalent to the cost that domestic producers would have to pay to participate in the ETS.¹⁴

The EU to some extent considers the use of BCAs to be legitimate, with respect to a limited number of products likely to be affected by carbon leakage due to the implementation of emissions reductions targets, and their inclusion in its ETS. In a recent communication¹⁵ it was concluded that such measures “could at best only be envisaged for a limited number of standardized commodities”. Moreover, this communication states that “as an alternative to current measures, the Commission continues to study the inclusion of imports to the EU-ETS”. The inclusion of the aviation industry from 2012 in the EU's ETS is an example of this with respect to services imports.

In relation to trade in goods, as discussed by Derksen (2011) the assumption that LDCs will be exempt from BCAs seems reasonable, and it would also be line with the current direction of EU trade policy which is attempting to expand the trading opportunities of LDCs (Basnett and Keane, 2012). This would mean that the current growth trajectory of LDCs is unlikely to be directly affected by the EU's new proposals on BCAs regarding trade in goods, but may be in relation to trade in services, including tourism – since the use of BCAs does not appear to distinguish between levels of development across countries. However, these policy developments may also provide new incentives for increased investment by non-LDCs in the targeted sectors in LDCs, also known as carbon leakage, as discussed in detail by Ellis et al. (2010). Much more detailed cost / benefit analysis is required to determine the extent to which these shifts may actually come to fruition, which we discuss in some more detail in Section Three.

The US has not ratified the Kyoto Protocol and currently has no federal climate change policy in place, but several proposals have been made on various policies including energy security. There currently remains deadlock over legislation which, if introduced, could result in the imposition of BCAs on imported products that do not participate in the USA's ETS – if one is established. However, as discussed by Brewer (2008) there appears to be more flexibility within the legislation

¹⁴ See Grubb (2012).

¹⁵ See EC (2010a).

proposed in the US. For example, there would be dialogue between trading partners before any BCAs are considered.

No provision for BCAs is included in New Zealand's ETS, although there are concerns about carbon leakage and distortions in competitiveness. As discussed by Derken (2011) New Zealand is one of the most vocal among developed countries to reject the use of BCAs.¹⁶ Recent amendments made to its ETS so as to reduce potential trade frictions include delaying the agricultural sector's entry into the ETS and providing substantially greater protection to emissions-intensive, trade-exposed activities over a much longer period.¹⁷

1.2.3 Standards and labels

The number of carbon standards and labelling initiatives is growing rapidly. Both government-mandated standards and voluntary private sector initiatives raise a number of challenges and opportunities with regards to trade, development and climate change mitigation policies. As discussed in detail by McGregor (2010), early private voluntary standards (PVSs), or 'experiments' have now largely been discredited - such as those which singled out air-freighted fresh fruits and flowers with the application of an aeroplane logo. Newer initiatives involve a more sophisticated life cycle analysis to determine a product's carbon footprint. This type of analysis however, arguably presents a different type of dilemma, as it is difficult to define the boundaries of where life cycle analysis should begin and end. To render any scheme workable, and costs bearable – especially for smaller producers – there needs to be some kind of simplification of these initiatives.

In this section we focus on the carbon labelling and sustainability standards being developed in the EU and US in relation to biofuels, as these schemes are the first mandatory carbon labelling schemes, as opposed to being PVSs. They use life cycle analysis to calculate the carbon footprint of biofuels. Thus, it illustrates the kind of issues that may arise in relation to carbon labelling schemes and sustainability standards that may be imposed on other sectors, such as agriculture and forestry. The risk is that such standards exclude the poorest producers because of technical and institutional requirements, as analysed in detail in Ellis & Keane (2008).

The EU's sustainability criteria and associated verification systems were finalised at the end of 2010 to meet the deadlines set out in the Renewable Energy Directive (EC 2009) which establishes ambitious targets for all Member States in relation to the use of renewable energy and biofuels¹⁸. There are a number of contentious areas in relation to the EU's proposed sustainability criteria. These are additional concerns over and above those already raised regarding the EU's recently revised quality standards for biofuels which are considered to represent formidable technical barriers to trade.

The sustainability criteria introduced in the Renewable Energy Directive (EC 2009) which came into force in 2010, mean that in order for biofuels to be counted towards the 10% renewable energy

¹⁶ This can be illustrated by the following quote from the Report of the Emissions Trading Scheme Review Committee: "if New Zealand were to impose a unilateral border tax adjustment, it would be likely to draw adverse international attention and meet challenge in the WTO. A border tax could address competitiveness concerns, but the case for free allocation to the industrial and agricultural sectors under an ETS would need to be reviewed, along with the process for developing allocation plans in general. A border tax regime would need to cover both our imports and exports, and new legislation would be required. A border tax would also be counter-productive to any economy, especially a trade-exposed one like New Zealand that was seeking to introduce a Kyoto-style price on carbon. Border tax adjustments do not provide strong domestic incentives to reduce emissions [...]"

¹⁷ Jegou and Rubini (2011).

¹⁸ The EU will reach a 20% share of energy from renewable sources by 2020; 10% share of renewable energy specifically in the transport sector. It also establishes sustainability criteria for biofuels. See http://ec.europa.eu/energy/renewables/index_en.htm for introduction and overview.

target, and therefore be eligible for related tax incentives,¹⁹ they must offer at least a 35% carbon emission saving, compared to fossil fuels. This figure rises to 50% as of 2017 and 60% as of 2018. This Directive makes both the biofuels targets and related sustainability standards, mandatory. It introduces a mechanism for reporting reductions of life-cycle greenhouse gas emissions from fuel. Biofuels producers and importers are responsible for showing that environmental and social criteria have been fulfilled; verification is left to member states.²⁰

According to the Directive, 'biofuels' means liquid or gaseous fuel for transport produced from biomass; 'bioliquids' includes viscous liquids such as waste cooking oil, animal fats, palm oil, crude tall oil and tall oil pitch..²¹ For the calculation of emissions from 'cultivation', the method allows for the use of averages (for a particular geographical area) as an alternative to actual values (noted as particularly useful for feedstocks, where no default value exists).²² The Directive also identifies categories of land with high carbon stocks. If land fell into one of these categories in January 2008, raw material for biofuels/bioliquids should not be taken from the land. For example, raw material should not be obtained from:

- primary forest and other (primary) wooded land;
- designated nature protection areas;²³
- highly biodiverse grassland;
- wetland; continuously forested areas;
- areas with 10-30% canopy cover; and
- peatland.

Evidence of compliance with the land-related criteria may take different forms, such as aerial photographs, satellite images, maps, land register entries/databases and site surveys. Sustainability criteria relating to greenhouse gas savings, land with high biodiversity value and land with high carbon stock may be proved in the following ways:

- By providing the relevant national authority with data, in compliance with requirements that the Member State has laid down (a 'national system');
- By using a 'voluntary scheme' that the Commission has recognised for the purpose; or
- In accordance with the terms of a bilateral or multilateral agreement concluded by the Union with third countries and which the Commission has recognised for the purpose.

For a voluntary scheme to be recognised by the Commission it must address all of the sustainability criteria set out in the Directive. Voluntary schemes had to make a submission to the commission in June 2010 in order to be recognised. It is known that the Roundtable on Sustainable Biofuels (RSB) submitted an application, in addition to a number of other private voluntary providers, as well as national standards established by Argentina and Brazil. The RSB is also in the process of developing a standard to cover producers in sub-Saharan Africa; pilot tests are still on-going and it is not yet known if all of the EC's sustainability criteria can be met by producers within these countries, due to data and technical limitations.²⁴

A recent synthesis of biofuels studies undertaken in East Africa by Wiggins et al. (2011) suggests that current schemes for sustainability standards try to address a wide range of risks, with little or

¹⁹ Biofuels not meeting these criteria can still be imported and used, but are unlikely to be marketable given that biofuel prices are well above fossil fuel prices and therefore not competitive without incentives (See Lendle and Scaus, 2010).

²⁰ The rules for certification schemes and what they must do in order to be recognised by the Commission were outlined in EC (2010b; 2010c).

²¹ The fossil fuel comparator to be used at present for biofuels is 83,8 g CO₂-eq/MJ (see EC, 2010c)

²² Member States can draw up lists of such average values, which may be incorporated into voluntary certification schemes.

²³ The Commission intends to establish in 2010 the criteria and geographic ranges to determine which grassland can be considered to be highly biodiverse grassland.

²⁴ See Wiggins et al. (2011).

no distinction between those that are more or less likely, and between those that are more or less serious. This probably creates unnecessary work and contributes to a complicated and confused debate. Although some elements could be borrowed from these schemes, so too could elements from schemes designed to develop biofuels as part of a rural development strategy as has been the case in Brazil. If adopted, these measures would help some Eastern African countries (e.g. Ethiopia, Kenya, Mozambique and Tanzania) seize new opportunities to develop biofuels production, create jobs, improve the trade balance, and reduce dependence on imported energy (*Ibid*).

1.2.4 Liberalisation of environmental goods and services

Given the current deadlock over the Doha Development Round (DDR) of multilateral trade negotiations, no further progress has been made regarding the liberalisation of environmental goods and services (EGS). The definition and scope of goods included under the list of EGS still remains controversial as discussed in Ellis et al. (2010). Because of the current hiatus at the multilateral level within the WTO, some countries are pushing for EGS to be liberalised and agreed amongst like-minded members with the possibility of other countries free to participate at a later date should they so wish. Other countries such as Singapore continue to call for progress in the multilateral trading system, demanding that it gives due attention to environmental protection to promote sustainable development.

In a recent submission titled “Promoting Mutual Supportiveness between Trade and Climate Change Mitigation Actions: Carbon-related Border Tax Adjustments”, Singapore argues that trade liberalisation is crucial for environmental protection. Moreover, that “one concrete way in which Trade Policy and the WTO can and should play a role in supporting environmental protection is through the liberalisation of Environmental Goods and Services (EGS)”. The submission reads: “Aside from environmental benefits, EGS liberalisation will also have trade-led development benefits.”²⁵ This document refers to a list of 35 environmental goods that have been submitted to the WTO’s Committee on Trade and Environment (CTE) for consideration by members. It makes clear that trade policy, particularly the liberalisation of climate friendly goods, services and technologies, will complement the UNFCCC’s efforts to combat climate change.²⁶

Other countries, such as Brazil, are calling for biofuels to be recognised as relevant goods for liberalisation under the EGS negotiations. No consensus has been reached at the WTO regarding the relative merits of biofuels compared to fossil fuels in terms of reduced carbon emissions, and there is as yet no agreement to include them. However, should countries proceed to liberalise EGS unilaterally this may provide exporters of biofuels, including some LICs, with new trade opportunities. Developments at the CTE therefore need to be monitored carefully.

²⁵ See ICTSD (2011a).

²⁶ *Ibid*.

2 Trade patterns of LICs and links to climate change mitigation policy

In this section we analyse the trade structure of low income countries (LICs) with respect to trade in goods and categorise different countries according to their current trade patterns. We do this on both the import and export side. The objective here is to assess the vulnerability of LICs to the potential new challenges which may result from the policy measures identified in Section One, as well as their ability to tap into new potential trade opportunities. We do this in broad terms across all LICs to begin with before we focus our analysis on those LICs with the most concentrated product and export markets.

2.1 Methodology – categorising countries

We analyse the last three years' worth of trade data at the HS2-digit level for LICs; this includes shares of total trade and destination markets. Based on this analysis we begin to categorise countries according to the main type of products traded (exports and imports) and their major trading partners. Because the physical and regulatory effects of climate change on trade will be product- and value chain-specific we first categorise countries according to whether they are major exporters of the following types of products:

- **Soft commodities:** such as coffee, cotton, tobacco and other agricultural goods (excluding high value).
- **Hard commodities:** such as copper, mineral fuels and oil, other precious stones and metals.
- **High value agriculture and fisheries:** horticultural goods, shrimps etc.
- **Light manufactures:** textiles and clothing, electronic goods etc.
- **Other industrial goods/ heavy manufactures:** vehicles, machinery, iron and steel, etc.

We do the same on the import side identifying the following product categories:

- **Hard commodities:** as above.
- **Food stuffs:** including cereals, but other soft commodities.
- **Light manufactures:** as above.
- **Other industrial goods/heavy manufactures:** as above.

Table 2 identifies LICs based on their major exports and trading partners and the extent to which their top three exports at the HS2-digit level fall within the above product categories and destination markets. Thus we take the top three product imports reported by LICs at the HS2-digit level and then categorise these products according to their destination markets. This means, for example, if a country's top 3 exports are all soft commodities destined for the EU it will only appear once in Table 2. Table 3 does the same on the import side. Based on the major categories of products that are exported and imported, we discuss the potential competitiveness effects of climate change mitigation policy for these, given their destination markets. We then identify and discuss the particular challenges, as well as opportunities, for LICs whose exports / imports are highly concentrated.

Table 2: Major LIC exports and markets

	EU	Other high income	China	India	Brazil	Other middle income	Intra-regional (SSA)	Inter-regional (SSA)	Not specified
Soft commodities	Burundi CAR Comoros Ethiopia Kenya Malawi Uganda Burkina Malawi		Ethiopia				Rwanda Benin Zimbabwe		
Hard commodities, inc. other res.	Guinea Niger Rwanda Tanzania CAR Guinea Niger Kyrgyz Rep. Mozambique	Burkina Faso Burundi Kyrgyz Rep. Tanzania					Kyrgyz Rep. Mozambique Uganda	Mali	Comoros
High value agriculture and fisheries, inc. live animals	Bangladesh Eritrea Gambia Madagascar Tanzania Uganda Benin Kenya			Guinea-Bissau			Mali Niger Ethiopia Nepal Afghanistan		
Light manufactures	Cambodia CAR Nepal Bangladesh Cambodia Madagascar Bangladesh Madagascar	Burkina	Benin Mali Togo				Zimbabwe Afghanistan		
Other industrial goods/ heavy manufactures				Nepal			Togo Ethiopia		

Source: Based on data obtained from UNComtrade

Note: We take the top three product exports reported by LICs at the HS2-digit level and then categorise according to their destination markets. This means, for example, if a country's top 3 exports are all soft commodities destined for the EU it will only appear once in Table 1.

Table 3: Major LIC imports and markets

	EU	Other high income	China	India	Russia	Other developing	Intra-regional (SSA)	Not specified
Hard commodities	Burkina Faso Gambia Guinea Guinea-Bissau Togo Mozambique	Bangladesh Burundi Ethiopia Kenya Madagascar Nepal Niger	Afghanistan	Tanzania Uganda	Kyrgyz Rep.	Cambodia	Afghanistan Benin Malawi Mali Mozambique Nepal Zimbabwe	Comoros
Food stuffs, inc. processed	Benin CAR Comoros Eritrea Gambia Guinea-Bissau						Guinea-Bissau	
Light manufactures inc. cotton	Burundi CAR Guinea Kenya Rwanda Togo Uganda		Cambodia Bangladesh Cambodia Ethiopia					
Other industrial goods/ heavy manufactures	Madagascar Burkina Faso Burundi CAR Comoros Eritrea Gambia Guinea Kenya Madagascar Mali Rwanda Tanzania Togo Uganda	Afghanistan	Niger Bangladesh Ethiopia Niger Kyrgyz Rep Rwanda		Kyrgyz Rep.		Nepal Zimbabwe Malawi Mozambique	

Source: Based on data obtained from UNComtrade

Note: We take the top three product imports reported by LICs at the HS2-digit level and then categorise according to their destination markets. This means, for example, if a country's top 3 exports are all soft commodities destined for the EU it will only appear once in Table 1.

2.1.1 Potential mitigation induced challenges and opportunities for exporters

The regulatory challenges and opportunities posed by efforts to mitigate climate change will be specific to each product and market. However, because the Kyoto protocol has been extended for a second commitment period - of which the EU is the main supporter - it is fair to say that regulatory challenges, as well as opportunities, will be driven mainly by the mitigation measures implemented in the EU at the current time.

The agricultural commodity and high value agricultural goods exporters listed in Table 2 are perhaps the most vulnerable to the physical effects of climate change. These effects and potential mitigating measures, including making use of Aid for Trade have been discussed in detail in Keane et al. (2009).²⁷ It is important to note here however, that although the EU features as the end market for most of these products, many of these agricultural goods exporters (soft commodities and high value agriculture) are also heavily dependent on regional markets.

This means that the competitive challenges which may arise both from the physical and regulatory effects of climate change could be amplified for such countries. This is unless potential spillover effects of trade with the EU by individual members of regional economic communities (RECs) that have adapted to climate change mitigation measures can be generated so as to benefit other REC members that depend more on intra-regional markets for trade. One possible option would be to link certified low carbon agricultural production by LICs to carbon offset markets in the EU or UK. Such a strategy could incentivise increased investment in these export-orientated sectors, raising productivity and potentially generating positive spillover effects for other agricultural producers and exporters that may depend more on intra-regional markets (which do not have a climate change mitigation policy).²⁸ Adherence to certified low carbon standards linked to good agricultural practice may help producers upgrade agricultural production and marketing systems in general.

New export product and market opportunities may arise for some LICs should the EU ETS include emissions reductions from land-use practices and the conservation of forestry reserves. For example, the trade data analysis shows that the Central African Republic (CAR) is a major exporter of wood products to the EU, which suggests that further links could be made to trade in CERs for these exports if they are sustainably sourced – and if land use change and the forestry sector is included in the EU's ETS in future. Other LIC exporters of hard commodities, such as oil, may be able to benefit from the potential future inclusion of carbon capture and storage in the CDM.

There appear to be rather more limited challenges for LIC exporters of light manufactures and other industrial goods/heavy manufactures related to climate change mitigation policies at the current time as discussed in section one, since it is unlikely that LDCs will be the target of BCAs used by the EU.²⁹ Uncertainties do remain however regarding trade in services, given the inclusion of the aviation industry in the EU's ETS as has already been discussed. Unfortunately it is beyond the scope of this Working Paper to explore climate change mitigation policies and trade in services, such as tourism, in more detail.

The mitigation related threats faced by LIC exporters of soft commodity and high value agricultural goods exporters include carbon standards and labels, should these become more prominent. The challenge, to ensure the competitiveness of these products and reduce the likelihood that the imposition of carbon standards and labels raises production costs and acts as a non-tariff barrier,

²⁷ These effects and potential mitigating measures have been discussed in detail in Keane et al. (2009).

²⁸ See Keane (2011) which discusses how new types of services will be demanded in the transition towards the low carbon economy. These include services related to the marketing of certified carbon emissions reductions (CERs). Once farms, producers and firms are certified, they typically need annual audits and the process of certification has its own lifecycle.

²⁹ It is also pointed out that carbon-related border adjustment measures (BAMs) on imports are likely to violate the WTO non-discrimination rules because they would discriminate between products based on where and how they are produced (Keane, 2011).

is to turn these competitive threats into opportunities. As discussed in Keane (2011), one way to increase the available market opportunities, as well as value of current export baskets could be to promote trade in certified low carbon products through appropriate policies and incentive mechanisms.

Adhering to new carbon standards results in costs of compliance and/or changes in how production is done, as does harmonising them across different products and markets. If all inputs are priced to reflect both their scarcity and associated externalities, then shifting production to the most efficient producers will help mitigate climate change and improve development prospects, but this will not happen if developing countries cannot demonstrate their lower carbon costs. There could be a role for trade facilitation measures such as Aid for Trade in assisting SSA countries in designing carbon standards, meeting them and demonstrating compliance. That the UNFCCC has already developed guidelines on how to measure the carbon content of land (and so too has the EU and US as part of their biofuels standards) suggests further links should be made between the trade and climate change regimes.

Some LIC producers have a strong comparative advantage in their use of carbon compared to counterparts in more temperate regions, and these aspects are beginning to be marketed (e.g. Kenya's marketing of its products 'grown under the sun'). However, questions remain as to how to overcome technical barriers, such as how to measure the carbon content of products and carry out lifecycle analysis. Financial barriers for some types of producers include how to spread the fixed costs of certification over a given export basket. This suggests that strengthening marketing structures is a prerequisite to effectively overcoming financial and technical barriers related to the imposition of new types of carbon standards and labels.

New, and possibly higher, value markets for existing products related to climate change mitigation efforts could include biofuels. The price advantages of biofuels production relative to importing fossil fuels are increasing rapidly (Wiggins et al., 2011). New markets for existing products, such as sugar cane, could include developed countries with mandatory renewable energy targets, as long as sustainability criteria can be met and verified, but could also include other regional and domestic markets. This could provide some LIC soft commodity exporters such as Malawi with new opportunities for their sugar exports.

2.1.2 Potential mitigation induced challenges and opportunities for importers

As seen in Table 3, most major imports into LICs fall within the category of other industrial goods/heavy manufactures; these are predominantly imported from the EU, other regional markets and China. The potential threats to importers of such products are related to their inclusion in ETS's which could increase prices and be passed onto consumers. Because the inclusion of these sectors within the EU's ETS may increase prices, one option could be for LICs to establish their own ETS schemes, and include these sectors. This could result in government revenue being retained by LICs: should a product be targeted by both the EU (source market) and national (destination market) ETS, a rebate for the carbon tax paid could be given, to avoid double taxation.³⁰ This is precisely the approach being considered by some countries in response to the inclusion of the aviation industry in the EU's ETS, as discussed in Section One. While prices may still be increased through such measures for consumers, it does mean that some government revenue may nevertheless be generated which could help to reduce welfare costs overall.

Light manufactured goods will face similar threats and opportunities to other industrial goods/heavy manufactures which also include carbon standards and labels. The imposition of these measures could increase costs of production and therefore the prices of imports for producers (as intermediate goods), and consumers (as final goods). Should products within this category be

³⁰ See Secretariat of UNDESA (2010), available at: http://www.un.org/esa/ffd/tax/sixthsession/CRP12_Draft.pdf

included within trading partners ETS's, there may be similar threats and opportunities as those listed for other industrial goods/heavy manufactures.

Potential threats and opportunities that importers of food stuffs, including processed products, face, include the imposition of carbon standards and labels. These could increase costs of production and therefore prices of imports. Hard commodity importers may face particular challenges. The major imports of LICs fall within the category of mineral fuels, oil and distillation products etc. In the transition to a low carbon economy, and as international agreement is reached, prices may increase in the short-term, but decrease in the long-term as renewable energy sources become on-stream. These price increases and decreases will have knock-on effects on the production costs of processed and manufactured goods.

2.1.3 LICs with highly concentrated export and import baskets

There are a number of LICs with export and import structures that are heavily concentrated on a limited number of products and markets. This is a reflection of their stage of development, as the diversification of exports and productive structures typically increases with levels of income.³¹ Climate change will impose additional physical and regulatory constraints on the ability to diversify export and productive structures in the future, but as discussed in this section, there are also some new market opportunities for existing export baskets which may be less sensitive to overall levels of income.

For most of the LICs analysed, their top three exports at the HS2-digit level account for more than 70% of their total exports (in value terms). This high degree of export product concentration is also reflected in terms of the low number of destination markets, although to a lesser extent. Table 4 summarises those countries where three products at the HS2-digit level account for more than 70% of the total value of exports. Almost all LICs identified are located in SSA, and many are landlocked which means they face additional structural constraints.

Table 4 presents some of the LICs with high export concentrations, and their respective major product exports and markets. Regarding the types of products exported, as expected, these fall mainly within the categories of soft and hard commodities. For some countries such as the CAR, the EU27 features as the top market across all products. In other cases, trade is undertaken on more of a south-south basis, within RECs, for example machinery exports from / to Guinea-Bissau, or mineral fuel exports from / to Angola. Other south-south patterns of trade feature between LDCs with other emerging economics, for example, edible fruit and nut exports from Guinea-Bissau to India, or mineral fuel exports from / to China.

The challenge for such countries is to maximise the potential opportunities that climate change mitigation policies may offer, linked to current export baskets, and to minimise potential risks. For example, for coffee exporters one strategy could be to adhere to certification schemes which entail good agricultural practices and help carbon sequestration processes; such a strategy could also be used to tap into carbon markets and obtain additional revenue, whilst helping to upgrade existing production and marketing structures. This strategy could be replicated across soft commodity exporters where the EU is the major buyer and end market.

³¹ See Keane (2011)

Table 4: LICs with highly concentrated exports

Country	Top 3 products share	Years of data available
Comoros*	99.10%	2002-4
Guinea-Bissau	98.70%	2003-5
Central Af. Rep.	94.60%	2008-10
Mali	92.20%	2007-8 & 10
Cambodia	88.50%	2008-10
Burkina	87.80%	2008-10
Burundi	81.30%	2008-10
Guinea	80.40%	2006-8
Rwanda	79.90%	2008-10
Niger	77.40%	2008-10
Bangladesh	76.30%	2005-7
Afghanistan	75.30%	2008-10
Malawi	74.70%	2008-10
Benin	74.00%	2004-6

Source: UNComtrade

LICs with particularly concentrated imports

Overall, there is a much lower degree of concentration on the import side for LICs as compared with exports, both in terms of product and market concentration. However, some of the same LICs with heavily concentrated exports also exhibit the same tendency on the import side. Such countries include Guinea-Bissau and the Comoros. Only in four countries do three products at the HS2-digit level account for more than 50% of imports (Table 5); the products and end markets for which are summarised in Table 6.

Table 5: LDCs with highly concentrated imports

Non-LIC LDC	Top 3 share	Years
Guinea-Bissau	53.3%	2003-5
Comoros	52.5%	2002-4
Guinea	50.9%	2006-8
Tanzania	49.7%	2008-10

Source: UNComtrade

In most cases, the major imports for LICs are heavy industrial goods, such as vehicles and machinery, for which partners include Japan and the EU. Mineral fuel imports also feature for countries such as Tanzania, Guinea and Guinea-Bissau. Only in the case of Guinea-Bissau and Comoros do food imports feature. The EU is the major trade partner for the Comoros and Guinea-Bissau. As discussed earlier in this section, in addition the physical effects of climate change on productive structures, there are other regulatory measures which could be a cause for concern for net food importers.

Table 6: Top 3 products imported by highly concentrated LDC importers

Non-LIC LDC	Product label	Years used for average	Average	Share of total trade	Top 3 suppliers	Total M from supplier	Chapter M from supplier
Guinea-Bissau	Cereals	2003-5	17,822	23.0%	Senegal	23,700	5,105
					Thailand	4,315	4,315
					China	6,925	3,752
Guinea-Bissau	Beverages, spirits and vinegar	2003-5	14,840	19.1%	EU27	37,361	14,585
					Senegal	23,700	160
					Morocco	660	54
Guinea-Bissau	Mineral fuels, oils, distillation products, etc	2003-5	8,718	11.2%	Senegal	23,700	7,131
					EU27	37,361	1,214
					Gambia	1,046	174
Comoros	Commodities not elsewhere specified	2002-4	23,680	33.9%	Area Nes	23,691	23,672
Comoros	Vehicles other than railway, tramway	2002-4	7,246	10.4%	EU27	23,329	5,531
					United Arab Emirates	6,544	1,050
					Mayotte	603	406
Comoros	Meat and edible meat offal	2002-4	5,743	8.2%	EU27	23,329	4,779
					Brazil	664	664
					Argentina	176	176
Guinea	Mineral fuels, oils, distillation products, etc	2006-8	400,292	28.7%	EU27	668,891	291,592
					Côte d'Ivoire	85,207	74,864
					Gabon	15,937	15,886
Guinea	Machinery, nuclear reactors, boilers, etc	2006-8	191,550	13.7%	EU27	668,891	104,370
					Australia	34,352	17,490
					Japan	46,757	14,181
Guinea	Electrical, electronic equipment	2006-8	116,913	8.4%	EU27	668,891	72,312
					China	92,732	13,149
					Israel	7,531	6,080
Tanzania	Mineral fuels, oils, distillation products, etc	2008-10	2,025,443	26.8%	United Arab Emirates	760,893	420,303
					India	844,530	418,115
					Singapore	359,440	331,769
Tanzania	Machinery, nuclear reactors, boilers, etc	2008-10	911,827	12.1%	EU27	1,243,280	333,620
					China	763,310	129,696
					South Africa	762,576	85,548
Tanzania	Vehicles other than railway, tramway	2008-10	815,263	10.8%	Japan	452,350	296,608
					EU27	1,243,280	128,832
					China	763,310	117,936

Source: UNComtrade

3 Influencing trade and climate change regulatory frameworks for development

The following sub-sections identify how LICs could seek to influence regulatory frameworks, at the multilateral, regional and national level so as to overcome potential competitiveness challenges and leverage new opportunities that may arise as a result of the climate change mitigation policies implemented by developed countries. Such strategies could also help to induce shifts in the operation of global production networks to the potential advantage of some LICs. These strategies include: dealing with differentiation; measuring and reporting on carbon; and developing equivalent measures.

3.1 Dealing with differentiation³²

There are a number of areas where EU policy on climate change and trade seeks to limit preferential market access to LDCs only, and thus exclude other LICs as well as upper middle income countries (UMICs).³³ As previously discussed, this includes the supply of CERs to the EU's ETS. Given the current absence of an ambitious international climate agreement, access to the EU's ETS will be limited to CERs obtained from LDCs only, from 2013.³⁴ This raises questions as to how principles of special and differential treatment (SDT) can be maintained between the trade and climate change regimes regarding trade in carbon. There are continued uncertainties as to how these principles will be upheld in practice.³⁵

This policy development raises issues related to country differentiation which have broader implications, including at the multilateral level. Why should EU policy focus specifically on LDCs? What about non-LDC LICs as well as Small and Vulnerable Economies (SVEs)?

With regards to the legal aspects of country differentiation, there appears to be a consensus that, the Enabling Clause, which underpins the WTO's principle of SDT, allows discrimination in the case of:

1. developing countries *vis à vis* other WTO members; and also
2. some developing countries *vis à vis* others.

At the current time, the only country group recognised under the Enabling Clause are the LDCs. The bar for WTO legitimacy set for alternative proposals which recognise other groups of countries is that they must be strong and plausible. Two key criteria established by the appellate body at the WTO include:

- that the favoured countries are recognised internationally to share a common need, and
- that the preferences offered are appropriate to satisfying this need.

Although the WTO's actionable rules recognise only three main groups – developed, developing and LDC – there are provisions in specific areas that apply to different country groupings. There is a list in the Agreement on Agriculture, for example, of countries able to use some subsidies and there is also differentiation *inter alia* in aspects of TRIPs and GATS. In addition, there are a number of other groups that are recognised either in the texts (such as Net Food Importing Developing Countries) and/or its deliberations (such as – SVEs); they do not benefit from actionable variations in the rules at present.

³² Some sections have been adapted from Stevens (2011).

³³ See Stevens et al. (2011) for analysis of changes in the EU's Generalised System of Preferences.

³⁴ See EC (2011); Keane and Potts (2008).

³⁵ See Keane et al. (2010).

This does not rule it out in the future however. At the most recent climate change meetings held in Bonn, in preparation for COP18, a new phase of alliances within UNFCCC negotiations became apparent. The Alliance of Small Island States (AOSIS) broke with their traditional alliance with non-Annex 1 countries (all developing countries defined under the Kyoto protocol). The disjuncture which became apparent is precisely because of the differences in priorities between LDCs and island states compared to other developing countries, notably China and India. Although the effect of using categories beyond developed, developing and LDC would be to potentially increase even further the formal fragmentation of the WTO negotiations process, given new indicators of vulnerability related to the physical as well as regulatory effects of climate change on different types of developing countries, the use of appropriate categories that are suited to climate change related policies must be integrated within trade policy for the coming decades.

3.2 Measuring and reporting on carbon

The introduction of new regulatory measures such as more stringent standards which require carbon emissions reductions by developed countries may require the use of more sophisticated production methods. There are technical and financial barriers to monitoring, reporting, verifying and certifying emissions reductions, with the potential to exclude already low carbon producers unable to overcome these.

The UNFCCC has already developed guidelines on how to measure the carbon content of land which suggests that further links could be made between the trade and climate change regimes. As has been highlighted in this working paper, biofuels certification schemes are evolving rapidly in the major markets of the EU and US which distinguish between products based on whether the biofuel has been produced using feedstock grown on land classified as having a high carbon stock. Even though the EU has since moved towards the mutual recognition of private voluntary standards, as well as national schemes, including those of Argentina and Brazil, these schemes typically introduce additional social and environmental criteria over and above already stringent mandatory market access requirements. There also remain areas of legal uncertainty, as well as concerns over how far these schemes may serve as formidable non-tariff barriers.

This matters because the development of carbon standards could be the competitive advantage of some LIC producers that supply high value markets such as the EU. It also matters, because as discussed in section one, the development of an appropriate MRV framework could incentivise emissions reductions which may result in the supply of CERs to carbon markets – nationally, regionally or at the multilateral level through the CDM.

3.3 Developing equivalent measures

The development of equivalent measures so as to counteract some of the competitiveness threats that may arise as developed countries implement their GHG reduction plans also requires the development of an appropriate framework of MRV of emissions reductions. As discussed in this working paper, BCAs imposed by some developed country trading partners could be counteracted through the imposition of equivalent measures in affected countries. These strategies could include the use of a carbon optimisation tax, or the development of a national or regional carbon market. Both of these measures could be developed in a less trade restrictive way than has currently been proposed by the EU with regards to the inclusion of the aviation industry within its ETS. The adoption of equivalent measures would also result in revenue being retained by LICs to invest in climate change mitigation and adaptation programs, rather than being transferred.

3.4 Concluding remarks

This paper has explored the conflicts and potential synergies between the international trade and climate change policy regimes, and discussed opportunities and threats for LICs. At the current time, there is generally a high level of uncertainty surrounding environmental policy and its interface with trade policy, at the national, regional and multilateral level, despite the urgency of climate change and the need to mitigate it.

Since the EU is still currently the major import and export partner for LICs, the mitigation policies it implements could have the largest effects on LICs relative to those adopted by other trading partners at the current time. In light of that, policy makers need to identify synergies between the trade and climate change regimes where they exist, and adapt existing export diversification strategies so as to increase their economic resilience. Such strategies could be used to overcome some of the potential competitive challenges that may result from climate change mitigation policy. They could also be designed so as to capitalise on mitigation mechanisms such as CDM, so as to obtain additional resources in order to increase the resilience of existing and future productive structures. Thus LICs face not only various threats from climate change mitigation, but also new opportunities that should be seized.

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