



## Carbon labelling and poor country exports

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*Carbon labelling is being adopted by private firms as a mechanism for mitigating climate change. Such schemes are likely to have a significant impact on low-income country exports due to the need for transportation and the small size of their exporters. However, transport emissions may be offset by favorable production conditions and size bias may be reduced. The design and implementation of carbon labelling will need to take into account a number of complex, technical challenges. As innovative solutions emerge, it is important that low income countries are involved in discussions on the design and implementation of carbon labelling.*

In response to growing anxiety over climate change, policy-makers, firms, and consumers are considering ways to reduce greenhouse gas emissions. A possible mitigation mechanism undergoing rapid development is carbon labelling.\*

Carbon labelling involves measuring carbon emissions from the production of products or services and conveying that information to consumers and those making sourcing decisions within companies. Well-designed schemes will create incentives for production in different parts of the supply chain to move to lower emission locations. Thus, carbon labelling is an instrument that enables consumers to exercise their desire to join the battle against climate change by using their shopping trolley.

Firms are eager to cater to consumers' demands and to reduce their own carbon footprints. Global retail giants, such as, UK Tesco or US Wal-Mart are developing carbon labelling schemes and major manufactures are following suite. Popular outdoor garments manufacturers Patagonia and Timberland, for instance, are seeking to satisfy their nature friendly consumers by allowing them to see exactly how much emission is

caused by their purchase of a product. But the strong desire to act on carbon labelling has been running ahead of the challenges of measurement and the problems of effective communication through labelling that must be addressed for schemes to be successful. Yet a growing number of standards are being developed with little effort to coordinate and generally little or no voice given to small players, such as, low-income countries.

Fears have been raised that low-income countries will face greater difficulties exporting in a climate-constrained world where carbon emissions need to be measured and certification obtained to enable participation in carbon labeled trade. This discussion centers on transportation, and the common presumption is that products produced locally in the country of consumption will have an advantage in terms of carbon emissions and on size. Exports from low-income countries typically depend on long distance transportation and are produced by relatively small firms and tiny farms that will find it difficult to participate in complex carbon labelling schemes. However, the scientific evidence shows that carbon efficiencies elsewhere in the supply chain of a product may more than

\* In this note we use the term 'carbon' in its popular form to indicate all greenhouse gases.

offset the emissions associated with transportation. The disadvantages of small size can be reduced by carbon labelling schemes that use innovative solutions to lower costs involved in data collection and certification.

The impact of carbon labelling schemes on low-income countries hinges on the issues of design and implementation. Low-income countries generally use technologies and sources of energy that entail relatively low carbon emissions. For example, in agriculture modern inputs, such as, fertilizers, pesticides and fuel are not used intensively. A well-designed carbon scheme would value this production structure since modern inputs are an important source of carbon emissions in agriculture. Mechanisms for implementing carbon labelling schemes must make sure that such advantages are not lost to burdensome data collection and verification requirements.

### **What science has to say**

There is a significant knowledge gap to be filled regarding scientific studies of the structure of carbon emissions throughout international supply chains that include low-income countries. The small number of existing studies suggests the following main conclusions:

Emission patterns are highly complex. The literature illustrates a number of ways in which different carbon emitting activities interact to provide an overall carbon footprint. An important implication of these findings is that geographic location alone is a poor proxy for emissions; favorable production conditions may more than offset a disadvantage in transport. For example, Kenyan produced roses sold in Europe are associated with considerably lower emissions than roses produced in the Netherlands, despite being air freighted to market. Airfreight is one carbon 'hot spot' in the supply chain, but it is dwarfed by the use of heated greenhouses in the Netherlands. The complexity of carbon emissions discredits simplistic but intuitively appealing concepts such as food miles and buy-local campaigns. There is no scientific support for the notion that these concepts can offer much in terms of climate change mitigation.

Thus, transportation is just one source of emissions among several. The popular belief is that trade by definition is problematic since it necessitates transportation, which is a major source of emissions. This is generally not true. There is broad agreement that air transport causes high emissions. However, the relative importance of emissions from air freight is unusually large in the case of field grown fruit and vegetables, which have been the focus of attention in the carbon accounting studies that have been undertaken to date. This is because their production requires relatively few other inputs and little processing.

The vast majority of international trade makes use of ships for longer distances and roads for shorter distances. Notably, ship transport has become highly energy efficient and, for most products, it is highly unlikely that transportation will be a disproportional source of emissions. This is particularly relevant for processed food and industrial products for which energy consuming processing activities weigh more heavily than for the relatively simple vegetable and fruit products that have been analyzed so far.

### **Critical issues for carbon labelling schemes**

The main challenge that carbon labelling schemes face is that, on the one hand, they must be simple for reasons of cost effectiveness and ease of communication, yet, on the other hand, they must be comprehensive in order to capture the many opportunities for emission savings throughout a supply chain. While this is very demanding, there are examples of how some of the underlying issues can be addressed from emerging schemes that deal with other, often specific environmental and sustainability problems.

Carbon labelling of supply chains needs to include activities all the way back to those undertaken in low-income countries, if necessary, so as to offer them a chance to prove carbon effectiveness where it exists. However, the devil is in the technical details of the scheme. One technical issue is the use of primary versus secondary data. Primary data (i.e., process-specific data) are precise, but secondary data (i.e., data obtained from

### Examples of carbon labelling initiatives

- UK Tesco has announced they will carbon label all 70,000 items on their shelves.
- The UK government-sponsored Carbon Trust has developed a carbon label methodology currently being tested on 75 products produced by 20 companies including many large multinationals.
- British Standards Institute is developing a methodology for the measurement of carbon footprints.
- US Wal-Mart is working with their suppliers to develop 'carbon scorecards' that will throw light on differences in carbon efficiency.
- Outdoor equipment brand Patagonia has initiated a scheme entitled the 'Footprint Chronicles TM'.
- Shoe producer Timberland has pioneered a carbon labelling scheme including a small tag on its shoes indicating energy use and other information.
- General Motors began a pilot program in 2005 where it asked its Chinese suppliers to reduce carbon emissions while sharing their own technical expertise.
- The household goods producer, Reckitt Benckiser, has a program called 'Carbon 20' which includes a scheme to measure the carbon emissions of its products including those resulting from consumer use.
- The Carbon Disclosure Project is a non-profit company that in October 2006 established the 'Supply Chain Leadership Collaboration' which aims to collect and present supply chain information on carbon emissions. It works with companies like Hewlett Packard, L'Oreal, PepsiCo, Reckitt Benckiser, Wal-Mart, Cadbury Schweppes, Nestlé, Procter & Gamble, Tesco, Imperial Tobacco, Unilever and Dell.
- UK organic standard setter, the Soil Association, has proposed to prohibit use of its organic labels on air freighted products due to their assumed negative influence on climate change.

sources other than direct measurement) are cheaper and more readily available. Methods to combine the two are being investigated, for example in the form of environmental input-output analysis. However, using secondary data from producers in rich countries to estimate the carbon emissions of producers in low-income countries will not capture the fact that the technologies being applied in rich and low-income countries are substantially different.

A second technical issue relates to the use of emission factors, the amount of carbon emitted during particular parts of the manufacture and/or use of products, and how they should be calculated. These may be location specific and are largely missing for low income countries

A third issue is the choice of system boundaries, which defines the extent of processes that are included in the assessment of greenhouse gas emissions. Estimates of the carbon footprint of a system will depend on where the system boundary is drawn. System boundaries may be defined so that they include only certain elements of the supply

chain. For example, the methodology being proposed by the Carbon Trust in the UK excludes emissions from the production of capital equipment, which will tend to favor capital-intensive production techniques over labor-intensive processes and hence will be to the disadvantage of low-income countries. A related issue is that of the emissions that occur from the changes in land use that are stimulated by the carbon-labelling scheme. Clearing natural forests to build new factories or provide new land for agriculture will offset some or perhaps (more than) all of the emission benefits from the changes induced by carbon labelling. Soils are major stocks of carbon and other greenhouse gases, which can be released through cultivation. These factors need to be captured if the carbon labelling scheme is to lead to sustainable changes in activity that have long-term positive impacts on carbon emissions.

Consequently, carbon footprinting is a complex technical issue. But, while there are many challenges to the introduction of broadly applicable carbon labelling schemes that do not exclude small actors, such as

low-income countries, there are emerging schemes that contain potential solutions. A proposed EU regulation on biofuels, for instance, contains a mechanism for certifying carbon emission savings whereby a producer may choose between a fast track (and cheap) option of using default values (that vary by region and type of product and are specified by an independent scientific body) or may choose to produce its own emission data, according to a methodology defined in the regulation to show emissions lower than the default value. A similar mechanism for other products could offer low-income countries such a fast track choice if implemented as part of a carbon scheme. What is lacking is the scientific base of information that is needed to develop such default values for a broader range of products that would spare small producers the burden of data collection and certification.

### Looking forward

Carbon labelling is still in its infancy, as is our understanding in general about the relationship between climate change and trade. We need to know more. The stock of scientific studies remains extremely small and low-income countries' carbon competitiveness needs to be explored. The agricultural capacities and technologies of low income countries are likely to give rise to new opportunities for export to rich countries if carbon emission considerations and effective labelling schemes render the use of carbon intensive inputs produced in rich countries a constraint upon competitiveness. For example, the scientific work that has supported the EU directive on the use of biofuels shows

that sugar cane ethanol performs best in terms of carbon savings. The development community should contribute positively to discussions concerning the design and implementation of schemes to ensure the inclusion of low-income countries' capacities in mitigating climate change.

*This brief draws from P. Brenton, G. Edwards-Jones, and M. Friis Jensen (2008), "Carbon Labelling and Low Income Country Exports: An Issues Paper," PREM Economics of Climate Change Discussion Papers.*

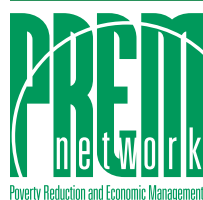
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