

## Consumption based carbon accounting:

Will countries include carbon from imports into their national carbon accounting?

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### **Introduction**

Under the United Nations Kyoto protocol adopted in 2005, countries account for their greenhouse gas emissions on a production basis (territorial based accounting), measuring and thus accounting for the GHG emitted only within each country. However, the exclusion of GHG emissions embodied within imports in many cases understates the level of GHG associated with national consumption, and hence to a degree the national responsibility within the global context. The consequence however is that major consumer countries could be shown to need a much greater commitment to GHG reduction, though having little direct influence over the means of production in exporting countries.

The conflict between these fundamental methodologies has stimulated considerable debate over the last decade (Lutz and Wiebe, 2012; Peters et al, 2011), and it is yet unclear how nations and the international community will resolve the critical issues underlying these differences. This note considers the extent to which consumption based measurement has gained support or is likely to do so as a primary approach for use within national GHG accounts. Based in part on a case example from the UK highlighting recent debates on the issue, key barriers and potential areas for further development adoption are discussed, with reference to the Durban Accord (Durban Platform, 2011), Implications for the fisheries sector are briefly outlined and key literature and reports are referenced.

### **Key issues**

The primary logic of GHG accounting suggests that GHG emissions require to be measured at the point of output – relatively simple for manufactured goods (UNEP-DTIE, 2003), though sometimes less so for transport and distribution functions. This normally invests accounting responsibility in the producer countries, commonly together with national sector bodies and individual enterprises. It also defines responsibility within national governance systems for regulating emissions or incentivizing their reductions. However, particularly where outputs are substantially traded, it can be argued that purchasers of products have a key responsibility for the GHGs associated with their use or consumption, and that these should at least be partially included in importers' national GHG accounts. Similarly, systems of incentivizing GHG reductions might derive more widely from the main consumer markets, allowing for shared benefits of producing and consuming traded products. In sectors such as fisheries, which are substantially traded, this could have significant implications.

Peters et al 2011, identified the significant quantitative differences between consumption and production based emissions accounting, through analysis of global GHG levels between 1990 -2008

(disaggregated into 113 regions and containing 95 countries), arguing that statistics of production based emission for developed countries misrepresent the true global distribution of GHGs, often seriously understating their role in GHG output. Lutz and Wiebe (2012) used a multi regional input-output model (MRIO) to highlight the same trend between OECD countries being net importers of embodied carbon emissions and non-OECD countries being net-exporters of embodied carbon emissions. In the example of China, it could be seen that in 2005 the carbon they exported to Annex 1 countries<sup>1</sup> accounted for up to one third of their total carbon emissions (Weber et al. 2008; Guan et al. 2009). This highlights the political complexities embedded within carbon accounting and subsequently within the development of global agreements for climate change management and mitigation policies.

One of the main debates surrounding consumption based accounting is the potential negative impact on international trade. Boitier (2012) highlight the benefits, with an example from Norway, who are dependent for much of their GDP from national exports of fossil fuels. If such a carbon tax were to be adopted Norway could continue their economic activity by exporting fossil fuels, which would otherwise be restricted under a production based accounting system that requires a reduction of GHG emissions.

However, with suitable procedures and accountability mechanisms it may be possible to combine both the fundamental logic of measuring and managing at source, with the means of measuring consumption responsibility, creating the means by which trade can be modified to favour lower-GHG options, and providing if necessary, the means of financing change and ensuring interests of potentially more vulnerable producer groups are adequately protected. One method to incorporate and measure consumption emissions into national carbon accounting could be to adopt a tax system much like VAT, termed 'border tariff adjustments' (DECC, 2012), whereby products entering the country are taxed according to their carbon emissions and thus the embedded cost is adjusted.

### **UK case study – implications of using consumption-based accounting**

In line with the European Union's approach to carbon accounting (based on the Kyoto protocol) the UK measures their emissions through a production based accounting system. The UK's Department for Energy and Climate Change (DECC) estimate that between 1990-2008 UK-derived GHG emissions reduced by 28% (DECC, 2012). However, these figures do not take into account emissions from goods imported into the UK. Research by the UK Energy Research Centre (UKERC) (Barrett, et al. 2012) shows that when consumption based accounting is incorporated into the national carbon emissions from 1990-2008, there had been an increase of 20% in GHG outputs (Fig 1), with a much more significant discrepancy between the two measures. This suggested in effect that the UK was 'exporting' its GHG emissions by increasing the GHGs associated with imports, while reducing domestic GHG output.

A recent advisory report to the UK Government DEC (2012) highlighted the main issues and made specific recommendations for consumption based accounting. In its response the UK Government noted that it would not adopt this into its carbon accounting system, due to the legal requirements to follow

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<sup>1</sup> The parties under the UNFCCC are classified as; Annex one who are industrialized countries or those in economic transition, annex two countries are a sub group of annex one and are developed nations who pay costs to developing countries and Non-annex one who are developing countries.

the production based accounting method set under the Kyoto protocol. It also noted that it ‘*could be highly damaging to the international trade system and wider trade relations and could have large unintended costs*’ (UK Government 2012).

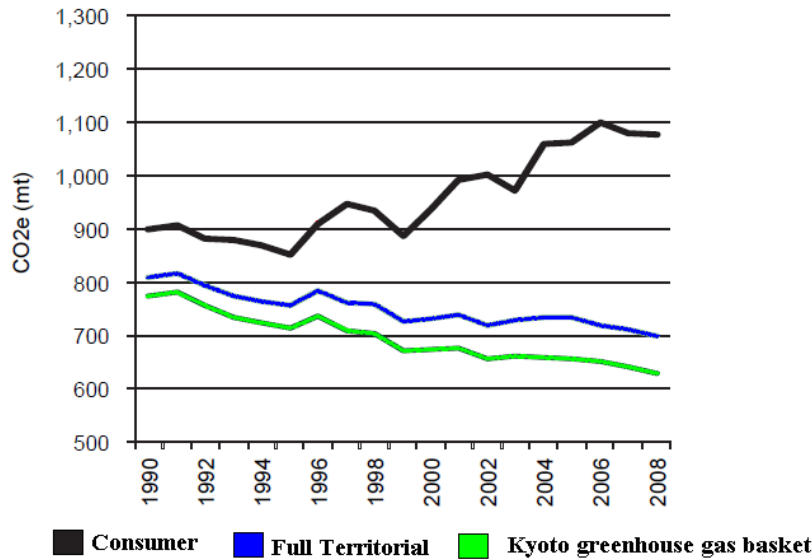


Figure 1. A comparison of consumption based and territorial based GHG emissions within the UK. Adapted from UK Energy Research Center (UKERC, 2012)

National sovereignty is thus likely to result in conflict over trade relations for the foreseeable future, as countries would not be willing to damage their national economies especially with the current instability of the global economy. However if an established and credible accounting system were to be adopted into the global market and a sufficient number of countries were to incorporate the procedure, there may be greater acceptance between countries and thus in their trade relations. A further option would be the development of parallel accounting systems, using both consumption and territorial models, applying each in selected contexts, within an overall aim of reducing all GHG emission levels and incrementally developing mechanisms for more equitable sharing of responsibility.

**Future developments**

Under the Durban Accord all nations are set to sign a legally binding agreement in 2015 committing to reducing GHG emissions, which would come into force in 2020 (Jacobs, 2012). This agreement, if adhered to, is estimated to cause a large shift within climate change policies and would potentially also influence decisions on national accounting systems (Lutz and Wiebe 2012). If countries such as China are incorporated into climate reduction targets, consumption based accounting could become important in mediating international policy agreements, due to the high levels of export emissions. Pan et al (2008) identify the position of China regarding the global distribution of the carbon burden, which highlights the context in which a shift in climate policy could occur under new legally binding agreements.

If applied to the fisheries sector, and therefore to internationally traded fish, consumption based accounting could have significant impacts, due to the size and importance of the international fisheries market. GHG accounting systems such as the LCA are already developed and functioning to identify carbon emissions throughout the fisheries supply chain, and thus could enable easier integration and measurement of consumption based emissions accounting. However, similar to the argument presented in the UK case study, the potentially negative impact upon trade may hinder its ready adoption, and would require some form of preparatory or transitional arrangements, or be operated on a pilot scale under a dual-accounting system, either specifically within the fisheries sector, or more widely within the food sector, or in respect of total manufactured/economic output..

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