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Policy Update: Managing carbon leakage

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When go…ions (carbon pricing),…n will increase…ction will shift to a…This suggests…petitiveness and gl…s are true, then…es and apply bo…

These cl…m (ETS). Industry…d generous subsidie…but few would cl…global emissior…age in a world of unequal carbon prices?

Global emissions have grown substantially in the last decade, primarily due to the emergence of China as a global power [1]. Detailed studies show that approximately a third of Chinese emissions are due to the production of exported products representing up to a half of the growth in Chinese emissions [2]. In terms of carbon leakage, the key issue is whether this growth is partially due to carbon pricing. The growth of Chinese exports destined for the EU, the USA and developing countries has been similar [2], which indicates that climate policy is not the cause of Chinese growth, otherwise the differential climate policies would presumably cause differential growth patterns. Studies on carbon leakage due to the EU ETS show that leakage is small overall, despite being important in some industries in some locations [101]. Confirming this are studies that show that environmental regulations do not drive investment decisions [3].

The available evidence suggests, therefore, that current carbon leakage is negligible. Yet, the rapid changes in international trade show that a significant share of the growth in emissions in countries without carbon pricing occurs in order to meet consumption in countries with carbon pricing. This apparent contradiction can be resolved by taking a more holistic view of carbon leakage [4].

Carbon leakage, by its nature, is a component of international trade and great care is needed to separate the share of international trade that is due to carbon leakage [5]. From a b
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while studies of weak carbon leakage use attribution models [10,11]. For comparisons, it is also useful to refer to different emission inventories [12]:

- Territorial-based emissions are the emissions occurring in the administered territory of R.
- Consumption-based emissions (or footprint) are the global emissions that occur to meet consumption in R and are equal to the territorial-based emissions in R minus emissions in R to produce exported products plus the emissions outside of R to produce imports. Comparisons of consumption-based and territorial-based emissions are analogous to the study of weak carbon leakage.

There is a broad literature covering weak carbon leakage [10,11], with a strong methodological foundation [13]. Independent studies at the global level come to the same conclusions [7,14–15,102]. As a general rule, consumption-based emissions in developed countries are greater than territorial emissions, implying that developed countries are net importers of greenhouse gas emissions and that developing countries are net exporters. In the USA and UK, consumption-based emissions are growing faster than territorial-emissions implying that weak carbon leakage is growing [16,17]. Comparisons of independent global studies show that this trend is consistent across a wider number of countries [7,14,15,102]. Consequently, there is a high degree of confiden

The disa ng about what cau eak carbon leakage. one is far more ch mpirical studies [ficant and may be

The ons are needed een countrie panies or if the diffe on strong carbon l are focusing fore, policy makers and responsi between

policy makers in different government ministries and potential policy instruments in order to reduce weak carbon leakage.

Many factors in a competitive global market may combine to increase weak carbon leakage and a single mechanism is unlikely to intervene in all factors. A portfolio of policy responses is needed, but perhaps the single most important requirement is regular monitoring, verification and reporting of consumption-based emissions.

While climate policy may still be broadly based on territorial-based emissions, without knowledge of the corresponding change in consumption-based emissions, policy makers will never know if their policy portfolio is truly effective in reducing emissions in a globalized world. Monitoring, verification and reporting of consumption-based emissions is a simple and low-cost measure, yet it may hold the key to understanding and, hence, managing carbon leakage.

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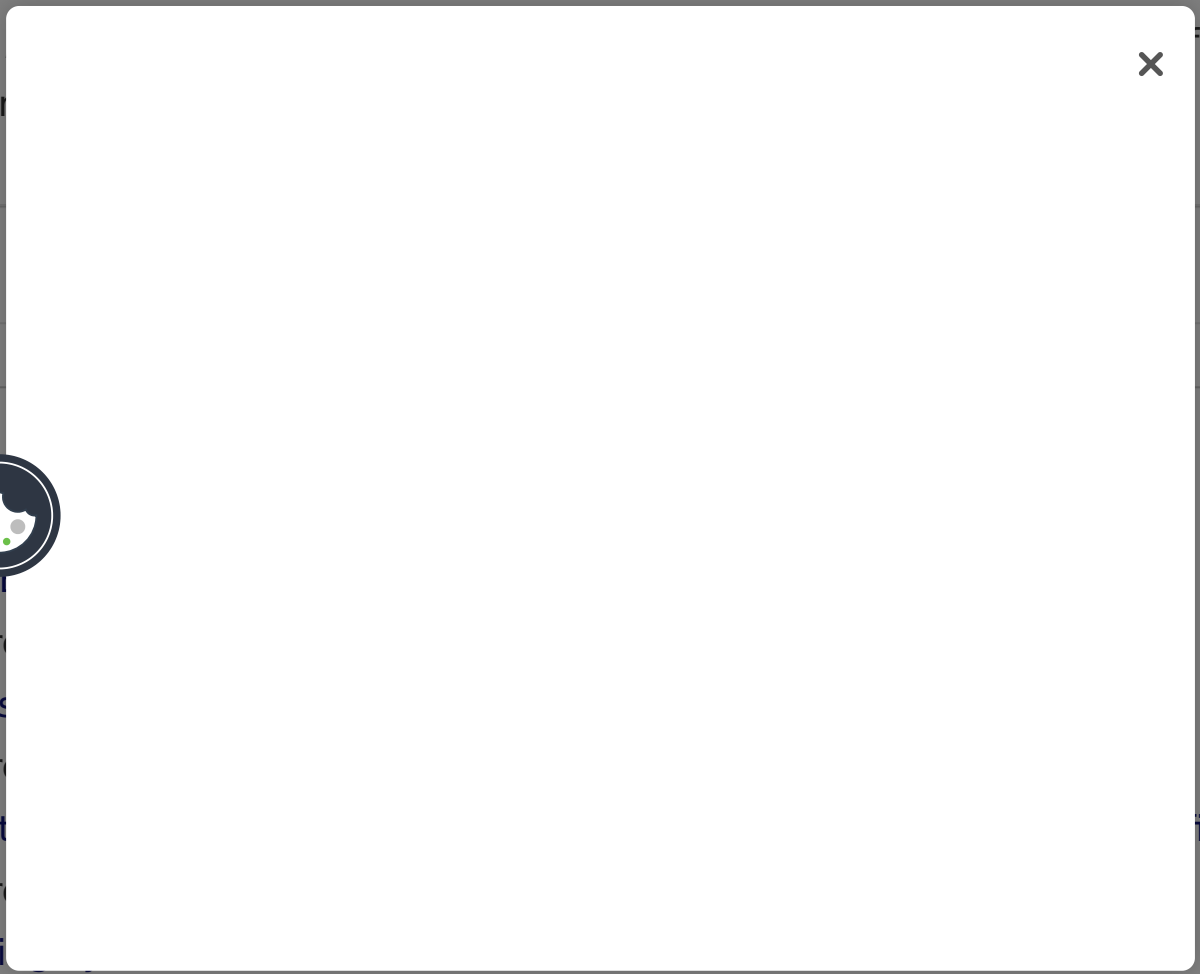
The author has no relevant affiliations or financial involvement with any organization or entity with a financial interest in or financial conflict with the subject matter or materials discussed in the manuscript. This includes employment, consultancies, honoraria, stock ownership or options, expert testimony, grants or patents received or pending



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CO_2Embodied in International Trade with Implications for Global Climate Policy

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