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Critical review

Achieving the Paris goals: Consumption-based carbon accounting

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ABSTRACT

To achieve the Paris Agreement abatement goals, the use of consumption-based carbon accounting (CBA) as a target base, i.e., as a reference scale for emissions reductions, has potential advantages of fairness, effectiveness, and cost. At the same time, CBA also has rather high political feasibility. However, CBA has not yet been adopted, not even experimentally. Nevertheless, major concurrent reasons suggest that the time is ripe for employing this accounting system as a target base. Accordingly, this review article indicates a strategy that leverages the potential of CBA to take advantage of the ripeness of the time through the activation of governance measures that increase the likelihood of its adoption as a target base. This strategy can shape converging preferences in support of CBA among stakeholders belonging to different political traditions and subject to different political constraints, and increase the chances of this accounting system being adopted as a target base.

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1. Introduction

Although the Nationally Determined Contributions (NDCs) part of the 2015 Paris Agreement testify to an unprecedented global breadth of climate initiatives, they do not set emissions cuts sufficient to achieve the goal of safely limiting the global temperatures increase (Rogelj et al., 2016; Young, 2016). In fact, to attain the targets set by article 2(1),[1] major emitters must commit in the near future to cutbacks larger than the pledges they have made to meet the Paris goals. This implies a further proportional distribution of the abatements burden; a challenge that, despite the many difficulties that climate change poses, continue to be the toughest and most crucial problem of international climate policy (Keohane and Victor, 2011).

Fortunately, the Paris Agreement envisions a periodic review, known as the 'global stocktake', of progress towards achievement of its goals. The first global stocktake should be undertaken in 2023, and thereafter every five years unless differently decided. This is an unparalleled occasion to change some 'rules of the game' that have so far hampered adequate emissions cuts: first and foremost those related to carbon accounting, whose role 'is crucial for informed decision-making on how to curb the rise [of emissions]' (Nature Climate Change, 2016, p. 975), and for the eventual achievement of the Paris goals (Tollefson, 2016). In particular, with respect to addressing the additional carbon abatements required to strengthen the otherwise inadequate Paris Agreement, this review article investigates the advantages of using consumption-base carbon accounting (CBA) as a target base, i.e., as a reference scale for internationally agreed emissions reductions (Steininger et al., 2016), and puts forward a possible strategy for adopting it.

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[1] Article 2(1) of the Paris Agreement requires at paragraph (a) that the increase in the global average temperature will be kept 'to well below 2 °C above pre-industrial levels' and that efforts 'to limit the temperature increase to 1.5 °C above pre-industrial levels' will be pursued.

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2. The potential of consumption-based carbon accounting

CBA measures emissions associated with the final consumption of goods and services and is calculated by adding to production-based accounting (PBA), which is currently the only accounting system used under the UNFCCC, emissions generated to produce imported goods and services and subtracting those associated with exported goods and services. CBA is not an overall panacea (see Liu, 2015), but, in a context of increasing sensitivity to governing global consumption patterns (Dauvergne, 2010), it makes it possible to focus on high-consumption lifestyles everywhere (Harris and Symons, 2013). Methodologies for its calculations and estimates have existed for decades, and independent studies on its application report consistent results (Peters et al., 2012). PBA should continue to provide the monitoring and instrument bases for framing and evaluating climate policy and for targeting emissions (Steininger et al., 2016). CBA matters only for determining the distribution of the remaining amount of emissions that can be safely released to achieve the 2 °C target, i.e., the so called 'carbon budget'. In other words, CBA's role is limited to determination of the slices of the 'carbon cake', whereas in no case should it be employed on its own to identify the actions needed for countries to abide by the amount of emissions dictated by such slices. CBA should be therefore only a satellite account to be used jointly with the other accounting systems (Steininger et al., 2016).

The adoption of CBA as a target base has potential major advantages of fairness, cost and effectiveness (Grasso and Roberts, 2014; Steininger et al., 2014). In particular, it is able to reconcile one of the most entrenched contradictions raised by market-based systems of environmental governance, especially by carbon markets: namely, the trade-off between fairness and (cost) efficiency (Osborne, 2015). CBA can, in fact, transform the burden-sharing problem of distributing emissions cuts into a self-enforcing situation of fair and cost-efficient international coordination among major emitters for effective abatements. This coordination challenge would be far less complex to address than the malign cooperation problems that usually characterize climate change (Keohane and Victor, 2016), and it would eventually increase the overall effectiveness in terms of emissions cuts.

To justify such claims, it should first be stressed that a central tenet of climate policy is that justice plays a crucial role in building effective internationally collective actions to abate global emissions (Jamieson, 2013). Accordingly, the governance systems for dealing with climate change should be consistent with core moral requirements for more just social arrangements. With regard to the use of CBA as a target base, a crucial moral principle, based on a weak value judgment, holds that a carbon accounting system is more just when it attributes the bulk of the onus of emissions to those agents who bear a burden lower than justice demands (Steininger et al., 2014). CBA shifts, in fact, the emissions burden from those who, under a PBA system, shoulder more than justice demands – typically the less developed countries – to those whose obligation is less than justice demands – the richer countries – whose responsibility for past emissions is higher and whose capacity to solve the problem is greater, however both are measured.

With regard to effectiveness, it should first be pointed out that countries' motivations to participate in collaborative abatement actions are mostly driven by its place in the international system. More specifically by its relative material power capabilities, shaped by indirect and complex domestic-level systemic pressures, often morally relevant (Rose, 1998; Purdon, 2014; Oberthür, 2016b; Vogler, 2016).

Countries' motivations in international climate politics can in fact be usefully framed in terms of, and grounded in, agreed normative beliefs on responsibility for past emissions and the role of relative gains; issues whose sensitivity has greatly increased in the recent past (Grasso and Roberts, 2014). International emissions abatements, in fact, redefine moral concerns and relative gains dynamics for the largest emitters, and especially so for the most powerful ones, China and the U.S. (Grundig, 2006; Oberthür, 2016b). Grasso and Roberts (2014), for instance, shows that the relative gains dynamics of a CBA-based distribution of abatements confirm that costs should be acceptable to China, which would have substantial headroom and ultimately less stringent abatement targets. At the same time, CBA would not excessively penalize the U.S., since its relative gains would diminish to an extent negligible compared with overall spending to address the climate crisis. Such outcomes seem ultimately to prove that China and the U.S. – countries with traditionally conflicting objectives in relation to international emissions reductions – might forgo part of their narrow short-term interests in order to stabilize the climate system. The involvement of additional countries in mitigation action would be fostered also by the minor variations of relative gains among the other major emitters – apart from the EU, whose reasons for further engagement in international emissions reductions are mainly grounded in its intent to regain primacy in climate policy within a coalition-building strategy (Bäckstrand and Elgström, 2013; Oberthür, 2016a).

Accordingly, the rationale for the greater effectiveness in terms of agreed international abatements resulting from the use of CBA as a target base lies in the fact that the different spaces of emissions accounting modify the theoretical conceptualization and empirical configuration of a critical, morally connoted domestic systemic pressure: responsibility for past emissions. When this novel conceptualization of responsibility determined by CBA is applied to distributing the emissions cuts among countries, it produces a shift in the allocation of the related burdens that indicates a more feasible allocation of abatements costs. In fact, the resulting dynamics of material power capabilities as measured by relative gains are more acceptable to, and therefore facilitate further collaboration among (Keohane and Nye, 1989), the major emitters (Purdon, 2014). Furthermore, the structural power exercised by these more powerful countries, especially if China and the U.S. took the lead, can induce other countries to participate in wider and more compelling action on emissions reductions.

CBA sheds also light on the appropriateness of carbon markets and of their accounting practices in relation to the spaces where processes, activities and mechanisms that remove greenhouse gases from the atmosphere take place. In particular, the adoption of CBA as a target base can disprove the inability, feared by part of the relevant literature (e.g., Knox-Hayes, 2013), of carbon accounting practices to adapt to the complexity of carbon emissions. Rather, the re-distribution of countries' burdens produced by CBA, as opposed to the one determined by the current PBA, confirms the view that carbon markets are necessarily the result of shifting and negotiable boundaries, given that they are the techno-political product of expert knowledge and political practices (Kama, 2014).

The strengths of CBA are complemented by its rather high political feasibility. In normative terms, given its capacity to shift the emissions burden to those who shoulder it less than justice demands, it would satisfy the core moral principle for a more just social arrangement in this context (Grasso, 2016). This feature, combined with the stability of CBA (i.e., its maintainability once it has been implemented) and accessibility (i.e., the existence of a practical route for its implementation), fulfil the requirements for determining its normative political feasibility (Gilabert and Lawford-Smith, 2012; Grasso, 2016). CBA thus would not only advance international action to abate emissions effectively, it would also favour carbon-exporting countries, so that its political