

# Consumption-based Accounting and Policies: Challenges and Opportunities ahead

## Summary

This policy brief is based on the output of the project [Carbon-CAP: Consumption-based Accounting and Policies](#). This project aims to stimulate an effective climate policy mix – in the EU and internationally – that can address increasing consumption-related emissions in addition to the current focus on production emissions. It combines work on accounting models with cutting-edge policy research. Tackling climate change requires complementing production-focused policies with consumption-based approaches. Doing so can also help to more directly address consumption as a driver of increasing emissions by realising a wider range of mitigation options along the value chain and at the point of final consumption.

## I. Consumption accounting and the EU

Under the UN Climate Convention (UNFCCC) the EU reports, and has targets to reduce, the greenhouse gas emissions (GHG) produced within its territory. However, production emissions do not tell the whole story of the EU's role in global carbon emissions. Through globalisation, the EU's emission impact goes beyond country borders of its Member States. Through trade, materials act as a carrier of industrial energy resulting in the transfer of embodied emissions between countries. With a growing share of emissions embodied in imports and exports from one country to another, the emissions linked to consumption by a country can differ substantially from the emissions linked to production within its borders [1, 2]. Whilst emissions produced within the EU's territory declined 13% from 1990 to 2010, its actual footprint, including emissions embodied in imports, increased 8%. This is because the growing demand for consumer goods and services in the EU is being met increasingly by imports from countries without binding GHG emissions reduction targets, driven by globalisation of production processes as markets chase the lowest labour, energy and materials costs. The current production emissions accounting approach provides a mechanism in which countries can import carbon intensive products, yet they do not assume responsibility for the carbon emitted in producing those products. It makes it possible for the EU to outsource manufacturing – whether intentionally or through globalising market forces – and claim emissions reductions even though domestic consumption drives additional emissions elsewhere. The amount of net imported emissions to the EU so far has exceeded the size of its Kyoto-specified emissions reduction target and there are no binding agreements to regulate the growth of this imported carbon [3].



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The aim of the Carbon-CAP (C-CAP) project is to quantify the mitigation potential of underexploited strategies that target the consumption of products, and hence influence emissions embodied in trade. These strategies are in the form of policy instruments applied to specific sectors of goods and services in the global economy. Demand-side strategies can intervene at the level of final producers (e.g. industry), intermediate producers (e.g. firms in the supply chain of final producers), intermediaries (e.g. transport sector) or final consumers (e.g. shoppers). Consumption policies are

seen as complementary to existing domestic mitigation efforts that have focused largely on production-based instruments. The project is considering a range of strategies across the different stakeholders and prioritising those that have both the highest mitigation potential with respect to reducing emissions associated with consumption, but are also politically, legally and institutionally feasible and have the ability to significantly influence consumer behaviours.

#### Emissions accounting definitions [4]:

Production emissions = emissions released directly from industry sectors registered to a country

Consumption emissions = production emissions – emissions embodied in exports + emissions embodied in imports

Embodied emissions = the sum of emissions associated with the delivery of a product

### Consumer policy opportunities

From a purely production perspective, the power sector and heavy industries (e.g. material processing) generate the majority of EU emissions. As such, EU climate mitigation policy caps emissions of these energy-intensive industries under the Emissions Trading Scheme (EU ETS), and commercial and residential emissions are largely assigned energy efficiency standards (e.g. the EcoDesign and Building Performance Directives). However, when taking a consumption (or lifecycle) perspective, services and manufactured goods dominate EU emissions. Whilst services produce fewer emissions on-site, they are a huge procurer of goods which have a high embodied impact [5]. Reducing the input of materials and products through changing supply chains driven by consumer behaviour provides additional and complementary policy options across these sectors.

The EU has a resource efficiency roadmap which aims to reduce material throughput in industrial, government, business and consumer practices. Whilst the previous

focus has been on waste management, a new circular economy package is to be released at the end of 2015 which explores synergies with other areas including product policies and secondary raw material markets. This will establish policies which target resource consumption, in which emissions are embodied, yet

today remains largely detached from climate policies. The demand for materials and products clearly provides a means to help meet ambitious EU climate mitigation objectives.

C-CAP project has identified promising demand-side strategies and their associated policy

instruments, providing an additional suite of instruments to complement production based policies. Each of these is assessed against criteria of Effectiveness (how much carbon reduction is achieved in a given product or service if applied successfully), Scope (how much of the global flow of carbon is then affected), Economic Equity (how are the costs distributed within society), and Political, Legal and Institutional Acceptance (see the Text Box 1).

*(...) The C-CAP project has identified promising demand-side strategies and their associated policy instruments, providing an additional suite of instruments to complement production based policies (...)*

**Text Box 1: Consumption-based policy instruments considered in Carbon-CAP[6]**

More than 30 policy instruments are being assessed in C-CAP, covering products and services in Transport, Manufacturing, Food, Buildings, Paper/Plastics and Textiles. These instruments are clustered into four broad categories based on the ways in which they influence consumer choice: (1) Instruments that provide consumers with information on carbon content; (2) Instruments that involve regulation and administration of carbon content; (3) Instruments that rely on economic and financial incentives; and (4) Instruments that enable creation of infrastructure and institutions.

These instruments are judged against a number of criteria that are typically used in policy decisions. As defined in the text of this Policy Brief, these are Effectiveness, Scope, Equity (primarily economic), and Acceptance (political, legal and institutional)

The assessments use a 'traffic light' system of judgments, where Green means the instrument strongly satisfies the evaluation criteria and therefore has a high chance of success, Yellow means the instrument moderately satisfies those criteria and Red means the instrument does not satisfy those criteria and is therefore unlikely to be a candidate for consumption based policies.

Using a review of the literature, lessons from past applications of policy instruments and interviews of policy experts, the 'traffic light' judgments were made for each potential instrument. An example of these judgements is shown below using only the first three instruments. The results on the individual criteria will be combined later in C-CAP to provide an overall measure of the expected carbon reduction from each instrument.

Instrument	Scoring criteria	Transport		Food	Buildings			Paper & plastics	Textiles	Consumer goods & machinery
		Vehicles	Fuels		Fabric	Heat	Elec			
Regulatory standards	Scope	2	2	2	2	2	2	2	2	2
	Effectiveness	3	3	2	3	3	3	2	2	3
	Distribution & Flexibility	2	2	1	3	1	1	3	2	3
	Legal	2	2	2	2	2	2	2	2	2
	International Political	2	2	2	2	2	2	2	2	2
	EU Admin	3	3	3	3	3	3	2	2	3
Sector trade body standards	Scope	2	2	2	2	2	2	2	2	2
	Effectiveness	2	2	2	2	2	2	2	2	2
	Distribution & Flexibility	2	2	1	3	1	1	3	2	3
	Legal	3	3	3	3	3	3	3	3	3
	International Political	2	2	2	2	2	2	2	2	2
	EU Admin	3	3	3	2	2	3	3	2	2
Product labels	Scope	2	2	2	2	2	2	2	2	2
	Effectiveness	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
	Distribution & Flexibility	3	3	3	3	3	3	3	3	3
	Legal	2	2	2	2	2	2	2	2	2
	International Political	2	2	2	2	2	2	2	2	2
	EU Admin	3	3	2	2	3	3	3	2	2

**Implementation of consumer policies**

Policies and instruments need to be considered that have both the technical 'scope' to reduce emissions (i.e. they cover most of the products and services that embody emissions), but also the political and societal 'scope' and traction to be implemented by policy

makers and enable a shift in consumer behaviours. C-CAP has identified a set of criteria by which to assess the feasibility of the demand-strategies considered (see the Text box 1).

Often, several instruments can be applied to each point at which consumers take decisions, with different success rates. Taking the example of road transport, consumers can be incentivised to drive less, car share,

or buy an energy efficient car. The first two reduce the volume of travel and vehicles manufactured (reducing the quantity of ownership and travel), whereas the latter reduces the carbon associated with the use of those vehicles (reducing the carbon intensity of travel). An intensity measure is subject to rebound effects where an improvement in energy efficiency reduces the cost to run a car and therefore one can afford to travel more or consume more of something else. This applies to any measure which realises a cost saving, unless the pricing system is reformed. In the EU, improvements in carbon intensities have not been enough to offset rising demand, resulting in rising emissions from EU consumption. Therefore, it is important to realise an effective mix of policy instruments for achieving EU climate objectives, and implement measures that avoid rebound effects.

## The road ahead

An important outcome of C-CAP project is to deliver a robust methodology resulting in greater reliability and acceptance of consumption-based emissions

accounting, to identify effective points of intervention by policy instruments and to assess the effectiveness of these instruments when implemented by formal players in the climate community. A key contribution of the project is to extend the analysis of effectiveness to include macroeconomic effects, allowing policy makers to identify where an instrument might reduce emissions in one sector but result in unanticipated changes in emissions from other sectors. This innovative 'whole economy' approach has the potential to avoid the rebound effect or simply shifting emissions around within the global economy.

Through workshops and discussions, a key point raised, for example by world trade experts, is the need for a reliable dataset that is fit for purpose to assess the potential effectiveness of specific policy instruments in driving consumer behaviour towards lower carbon goods and services. C-CAP is supporting that aim by establishing a methodological base to allow such an assessment, and then applying that methodology to rank potential policy instruments to help the EU design and implement consumption-based policies.

## References

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