Meeting user needs with national statistics on the emissions effects of exports

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Abstract

In 2023 – 2024 Statistics Sweden in collaboration with the Swedish Environmental Protection Agency is carrying out a project on behalf of the Swedish Ministry of Climate and Enterprise with the goal of producing statistics to measure the effect of Sweden's exports on global greenhouse gas emissions.

The aim of the paper is to report and analyse the outcomes of a stakeholder workshop held in June 2023 as a part of this development project. The specific aims of the workshop were:

- to discuss with relevant stakeholders and statistics users' potential methods for producing statistics to measure the effect of Sweden's exports on global greenhouse gas emissions.
- To establish a forum for stakeholder comment and suggestions for statistics development in the area

The workshop aimed to gather input from a broad range of Swedish stakeholders including:

- Companies in major exporting industries – Steel, transport fuels, road transport vehicles, energy
- Swedish industry and business associations
- Environmental NGOs
- Labour representatives in exporting industries
- Sustainability science researchers and consultants
- Government agencies – Climate policy, Innovation, trade and economic development and analysis

The analysis highlights participants' intended uses of the statistics in light of their broader interests as stakeholders. Participant's perceptions of the added value contributed by the statistics in question in light of existing policy, strategy and indicator backgrounds in the climate change field will also be addressed.

Introduction

The Swedish government has a goal for net-zero territorial greenhouse gas emissions by 2045. Meanwhile, in 2022 the Swedish cross-parliamentary committee for the environmental quality objectives proposed a goal of net-zero greenhouse gas emissions from Swedish consumption to be achieved by 2045[1]. The formulation of this suggested goal for consumption-based greenhouse gas emissions allowed for comparative emissions reductions from Sweden's export products (compared to otherwise identical products produced outside of Sweden) to contribute to closing the gap between Sweden's actual consumption-based emissions and actual zero-emissions, at the latest by the goal year of 2045. The goals proposed are the outcome of a cross-party consensus (amongst all parties represented in the Swedish parliament). In order to become part of Swedish law they would still need to be approved by the Swedish parliament in its entirety. No vote on the matter has yet been taken.

Statistics Sweden's official statistics on consumption-based greenhouse gas emissions have been used by the government in the process of formulating the goals suggested above. The work presented here is based on a government-funded project with the aim of suggesting a method to produce statistics to follow up exported products' effect on global emissions. The aim of the paper is to report and analyse the outcomes of a stakeholder workshop planned for June 2023 as a part of this development project. The specific aims of the workshop are:

- to discuss with relevant stakeholders and statistics users' potential methods for producing statistics to measure the effect of Sweden's exports on global greenhouse gas emissions.

- to establish a forum for stakeholder comment and suggestions for statistics development in the area

Background

There is increasing interest amongst companies to measure and set targets for greenhouse gas emissions arising from their own activities and their supply chains, for example the greenhouse gas protocol (GHG protocol[2]), and the Science-based targets initiative[3]. In general, such initiatives aim to measure and set targets for greenhouse gas emissions according to the following scopes:

Scope 1 – direct greenhouse gas emissions from sources owned or controlled by the company in question, for example fossil oil-based fuels combusted in vehicles owned or operated by a company

Scope 2 – greenhouse gas emissions from the generation of electricity purchased by a company.

Scope 3 – all other indirect emissions. Such emissions arise as a consequence of the activities of a company, though not from sources that are owned or directly controlled by the company. This may include on the one hand emissions arising from products a company purchases for use in its own production processes as well as emissions arising from the use of company's products by a purchaser.

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[1] https://www.regeringen.se/rattsliga-dokument/statens-offentliga-utredningar/2022/04/sou-202215/

[2] https://ghgprotocol.org/

[3] https://sciencebasedtargets.org/

Alongside this there is furthermore a growing interest in measuring the difference in the emissions arising from a certain product produced by company A and an otherwise identical product produced by company B. Standards are currently under development in this area. Accordingly, terminology used when talking about such measures also varies, with expressions such as “handprint”, “avoided emissions”, “comparative emissions” and “scope 4” all arising, all with somewhat differing meanings.

Method

A list of invitees to the workshop was compiled in coordination with the project client (Swedish department of climate and enterprise) and the Swedish EPA including:

- Companies in major exporting industries – Steel, transport fuels, road transport vehicles, energy
- Swedish industry and business associations
- Environmental NGOs
- Labour representatives in exporting industries
- Sustainability science researchers and consultants
- Government agencies – Climate policy, Innovation, trade and economic development and analysis

The list included 32 total invitees from the above-mentioned stakeholder groups. In total, the workshop had 13 external participants, representing all the groups mentioned above with the exception of companies and labour representatives. One more participant declined the invitation but met with us separately after the workshop. Five people from the project team (from Statistics Sweden and the Swedish Environmental Protection Agency) also attended.

As part of the invitation, attendees were given the option of preparing slides for a five minute presentation on their perspective on statistics on climate effects of exports. Four external participants expressed an interest in doing so (see below).

The format for the workshop was as follows:

- The Swedish department of climate and enterprise presented the background of the project.

- Statistics Sweden presented:
    - Quality criteria and other standards for official statistics
    - Methods for calculating climate impacts from a country’s exports, including preliminary results from our own calculations

- Presentation from the Swedish Environmental Protection Agency on the context for statistics for a country’s exports

- Presentations from external participants:
    - a researcher,
    - industry representative
    - government agency
    - an environmental NGO

- Free discussion

The workshop was held on Thursday 15th June from 9 am till 12 noon at Statistics Sweden's office in Stockholm. All participants except for two were on location. The other two attended online.

Notes were taken by two workshop attendees from Statistics Sweden (also authors of this paper). Minutes from the workshop were synthesised from both these sets of notes and shared with participants for comment online. The minutes were not anonymised, though in this paper we have anonymised the discussion.

Results

The Swedish department of climate and enterprise summarized the goals for the project as follows:

- Investigate the possibility of producing statistics to measure the climate effect of exports, stressing the fact that it is part of the Tidö agreement (reached between the political parties supporting the current government). They stressed the significance of investigating the notion of displaced production, that is to say the extent to which Swedish export products displace production elsewhere or contribute to increased global production.

Statistics Sweden's presentation focussed on the general principles to be considered in the production of official statistics, in particular, the European Code of Practice for Official Statistics and the quality criteria therein, which are also referred to in the Swedish Law on Official Statistics. Statistics Sweden also referred to area-relevant standards and accompanying documents, such as the UN System of National Accounts and the UN System of Environmental and Economic Accounting. In particular Statistics Sweden noted that the displaced production phenomenon referred to in research looking at comparative emissions on a national level is not an issue that is taken up in any statistical standard and not an issue that Statistics Sweden has expertise in.

Statistics Sweden also presented data from the official statistics on consumption-based greenhouse gas emissions for Sweden's export products (see Figure 1).

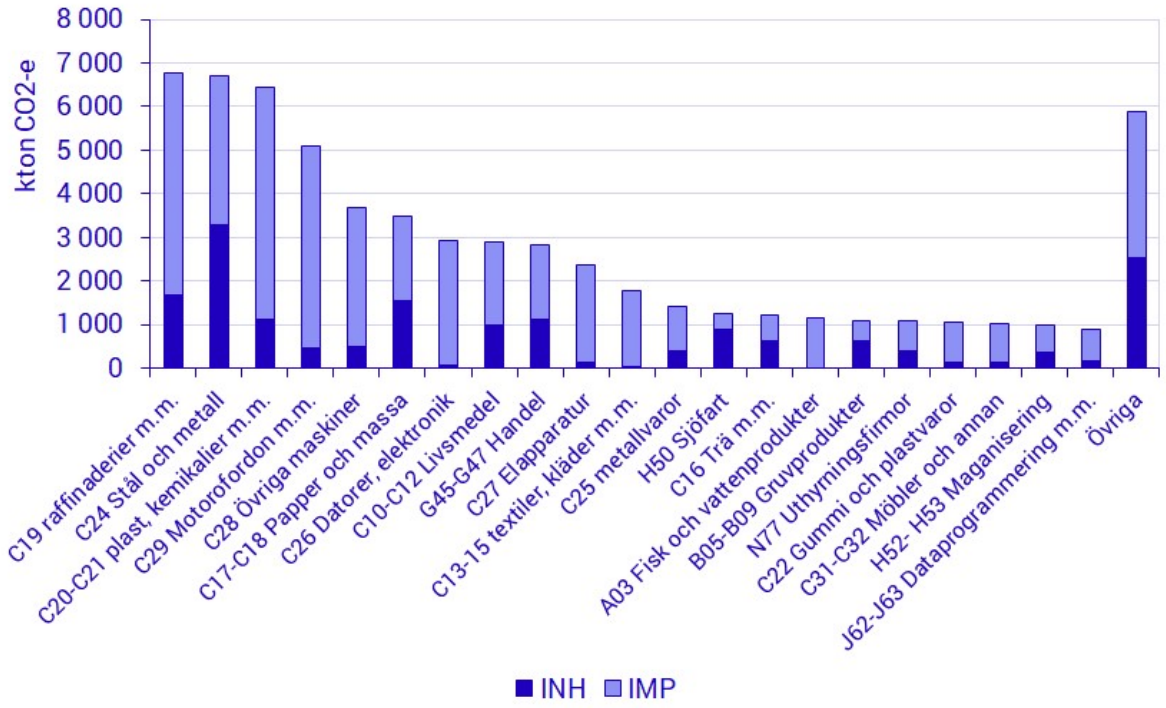

Figure 1: Greenhouse gas emissions from products exported by Sweden in 2020, based on the official statistics on consumption-based greenhouse gas emissions. The codes are Swedish product classifications that map exactly to international classifications – the CPA in Europe and the international CPC.

Statistics Sweden also showed that greenhouse gas emissions for Sweden's exports calculated as if they had been produced according to global average intensities for each product group yielded total emissions at least 50 percent higher than actual emissions from Sweden's export products (see also the second paper at the 29th London Group meeting).

The following scientific considerations for the measurement of the emissions effects of a country's exports were raised (by researchers at the workshop):

- A life-cycle perspective is important. Focussing on just direct emissions at production facilties would miss e.g. emissions arising from electricity production. A related life-cycle question is if the use phase should also be included (authors note – it is not currently in measures produced by previous researchers)
- There are notable differences in the data that are used in input-output analyses compared with process-based life cycle assessments (that could also be considered for measuring emissions from a country's exports and comparative emissions), namely:
    - Input-output data are updated yearly, and data exists for the whole world, though with relatively few product groups
    - Process-based LCA data are updated on an irregular basis, can be produced for very specific products, but are not necessarily available for the whole production chain or the whole world
- Swedish export products are traded in a global market, though certain products do go to certain specific countries
- Assumptions about marginal production versus average production need to be made that will affect the outcome of a comparative emissions assessment. Further assumptions may need to be made about long-term versus short term marginal production.
- Comparative emissions analyses can show that Swedish export products are more greenhouse gas intensive than otherwise equivalent domestically-produced products, which should be analysed

- Export can affect trading partners by demonstrating good examples of technological development
- On the other hand, Swedish export does not necessarily only replace production elsewhere, but contributes to increased global production

The Swedish Environmental Protection Agency presented a broad context in which existing indicators and targets can be applied to affect the greenhouse gas emissions from exports. This comprised existing measures of greenhouse gas emissions and uptake (territorial indicators), domestic goals for greenhouse gas emissions, EU climate targets and strategies (including the Carbon Border Adjustment Mechanism) and so-called "transition indicators"[4]. Such transition indicators are mainly related to the degree to which industries (that also stand for a large exports in monetary terms) in Sweden with high direct emissions can provide evidence (in terms of permit applications for new production e.g.) of future plans to transition to low-carbon production methods.

Meanwhile an environmental NGO was positive about:

- the development of a benchmark to compare the greenhouse gas intensity of Swedish production with production overseas.
- Climate policy should in general support efficient production, which is a weakness of a territorial approach

The same environmental NGO made the following warnings:

- Measuring the climate impact of exports comparatively, as the difference between the actual IO-based emissions for exported products with emissions arising in a hypothetical scenario with more greenhouse gas intensive production methods is very different to the concept of consumption-based emissions. This since the latter implies a reallocation of actual emissions rather than the consideration of hypothetical scenarios. It is further difficult to verify that a displacement of domestic production occurs when a country imports a product

- Comparative emissions measures start to depend on other countries' emissions intensities, therefore they can increase when greenhouse gas emissions in other countries increase, even when emissions in ones own country also increase

- It is important to support and strengthen Sweden's credibility in international response to the climate crisis.

A representative from a government agency noted that the proposed goal for Sweden's consumption-based goal for greenhouse gas emissions included the possibility of using comparative emissions from exports to achieve the net-zero criterion, and that this was a part of a political compromise to achieve agreement between the parliamentary parties.

Representatives for business and industry observed that Sweden's territorial emissions goal has the effect of supressing production in exporting industries, only to lead to production elsewhere without any global decrease in emissions.

In open discussion, an industry representative noted that it was important to apply a life-cycle perspective (in order to measure emissions in the supply chain). The same representative noted that the monetary approach implicit in input-output-based analyses was also useful for accounting for quality and technical differences between products (e.g. hardened steel attracting a higher price than a non-hardened counterpart). The same industry representative noted that life-cycle assessment-based data was not necessarily so useful to monitor climate effects of a country's exports. This

[4] https://www.naturvardsverket.se/4974df/contentassets/4c414b0778e9409fb2836fc4d3dc6259/underlag-till-regeringens-kommande-klimathandlingsplan-och-klimatredovisning-2023-04-13.pdf

industry representative also noted that they were not concerned with verification of the issue of displaced production, rather it was useful and satisfactory to perform analyses on the basis of existing assumptions, e.g. 100 percent displacement.

Another industry representative noted that product- and import-country variables would be useful to be able to identify product-types and country's that could potentially yield the most comparative emissions benefits. This representative was not concerned either about further verification of the existence of production displacement, rather in the data's practical use for guiding export policy.

Meanwhile, a third industry representative presented a contrasting view that investigation of the displaced production issue was in fact important to move forward with the statistics.

Concluding synthesis

Industry representatives, researchers, SCB and the environmental NGO all noted that a life cycle approach and that applied in input-output analysis was a relevant method for producing data to assess climate effects of exports.

A diversity of views was expressed on the relevance of displaced production in analyses. The Swedish department of climate and enterprise has stressed its importance, and an industry representative at the workshop also stressed its relevance. On the other hand, other industry representatives were more pragmatic, noting the usefulness of data on comparative emissions based on simple assumptions without the need to verify or otherwise the existence of production displacement.

On this point, it is further interesting to note that the Swedish EPA, an environmental NGO and business representatives noted the value of measures of comparative emissions as a complement to measures of territorial emissions, production-based emissions and consumption-based emissions.

Researcher contributions to the workshop also stressed the necessity of methodological assumptions on the use of marginal or average data, and not directly related to the issue of displaced production.

The suggestion to use comparative emissions as a means to meet net-zero climate targets was pointed out by a government agency. An environmental NGO pointed out that this would combine hypothetical assumptions with emissions measures based on physical data, which was problematic, and potentially so for Sweden's reputation in international climate policy development.

The high quality of contributions and discussion point to the success of the workshop in achieving the stated goals.

The stakeholder contributions are being incorporated into the ongoing project, e.g. in assessing the "relevance" and "accuracy" criteria of statistical quality. In light of expressed interest in better understanding and verifying displaced production as a phenomenon, Statistics Sweden is also employing external experts in trade economics to further investigate it.