

Developing statistics to measure the climate change impacts of a country's exports

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Statistics Sweden's Instructions from the Government 2023

- Feasibility study with the aim of suggesting a method to produce statistics to follow up exported products effect on global emissions
 - Evaluate existing measures of the climate impacts of exports
 - Develop a measure for the climate impact of exported products *compared to equivalent foreign products*

The Swedish parliament has noted 3 ways exports can affect global emissions

Three concepts for how exported products can have an effect on global emissions:

- **Production phase:** Lower/higher greenhouse gas emissions in supply chain for product X in country Y than the same product in country Z
- **Use phase:** Product X (e.g. a heavy-duty lorry) produced in country Y (e.g. a heavy-duty lorry) has a higher fuel efficiency than product X produced
- **System effects:** Product X (e.g. used in a wind power plant) produced in country Y is a key element in producing greenhouse gas free electricity



Methodologies for Production phase measures for exports in different stages of maturity

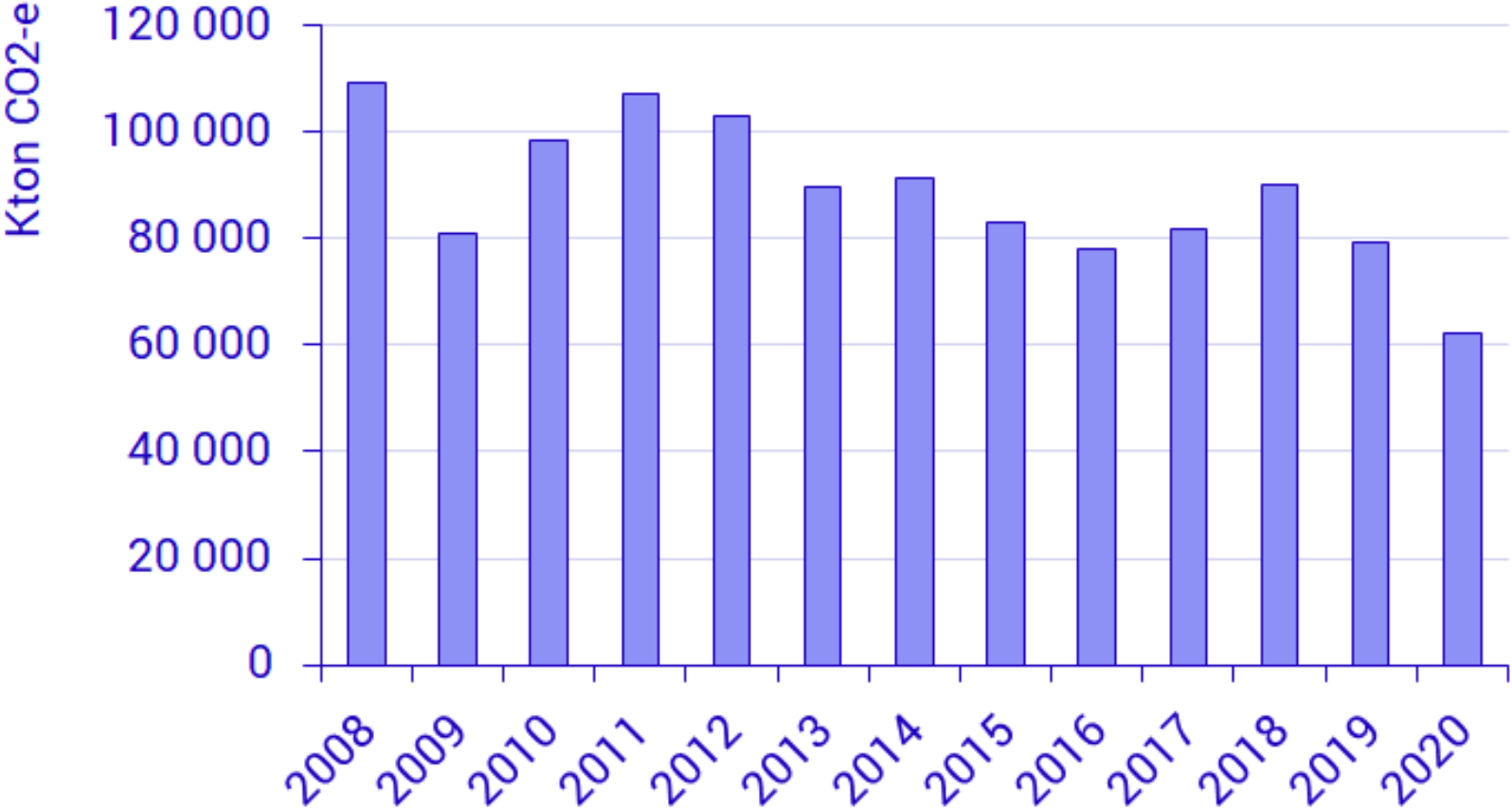
- Input-output analysis

- Life cycle assessment (LCA)

- Focus on primary processes (see e.g. CBAM proposal)

Which measure(s) fulfil code of practice and quality requirements for official statistics?

Statistics Sweden publishes data on Environmental pressures from Sweden's exports already



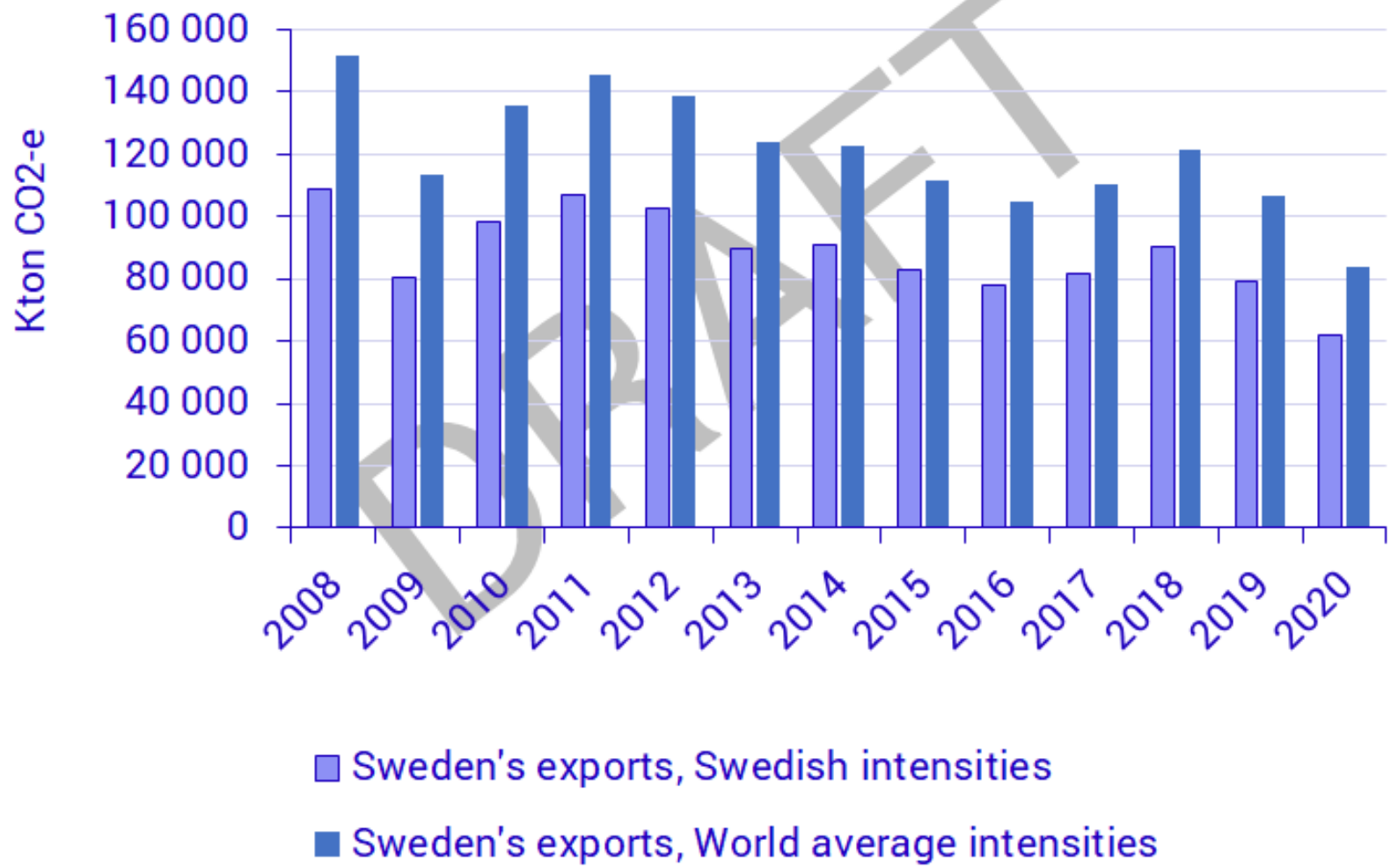
Comparing a country's exports with equivalent foreign products: international average production intensity

- Rewards countries that improve environmental efficiency of export sectors
- Captures "environmental competitive advantage"
- Presented in successive high-quality peer-reviewed scientific papers:

Kander, A., Jiborn, M., Moran, D. D., & Wiedmann, T. O. (2015). National greenhouse gas accounting for effective climate policy on international trade. *Nature Climate Change*, 5(5), 431-435.

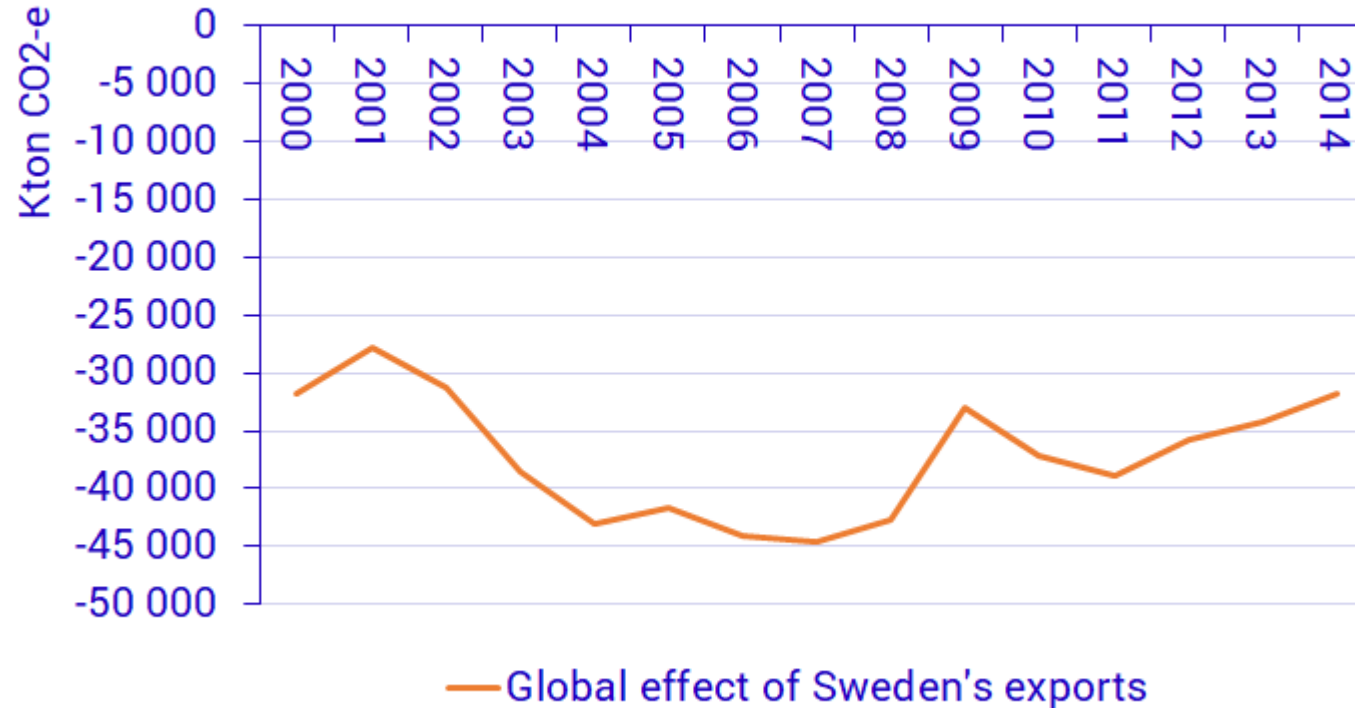
Jiborn, M., Kander, A., Kulionis, V., Nielsen, H., & Moran, D. D. (2018). Decoupling or delusion? Measuring emissions displacement in foreign trade. *Global Environmental Change*, 49, 27-34.

Comparing Sweden's exports with equivalent foreign products: international average production intensity



Illustrative time series based on: Statistics Sweden's official data <https://bit.ly/3kOM0ga> and Jiborn et al. 2020 <https://bit.ly/3L3Epoz>

The Swedish Parliament's enquiry assessed Sweden's exports compared to the international average intensity



"Sweden's exports lead to reduced global emissions according to researchers calculations and assumptions"

SOU 2022:15 Sveriges globala klimatavtryck <https://bit.ly/3L3oGpC>

Final thoughts

- Is it feasible to produce a statistical measure of the climate impact of exported products *compared to equivalent foreign products*
- Such a measure will be complementary to existing ones – territorial, production and consumption-based emissions:
 - Do they provide valuable extra information for policy?
- Will further harmonization and standardization of global multiregional input-output data support the adoption of these indicators?