



POLICY BRIEF

Consumption-based emissions

POLICY BRIEF:

Consumption-based emissions

Andreas Lind, Louise Kristine Carus Andersen & Charlotte Louise Jensen





Introduction

The Nordic countries have all set targets to reach climate neutrality within their territories, which requires effort in all national sectors. But the Nordic region also wants to lead by example. And that implies grappling with an additional challenge: consumption-based emissions.

Territorial emissions, also known as production-based emissions, refer to the greenhouse gases emitted within a country's borders.

Consumption-based emissions consider the total greenhouse gas emissions associated with goods and services consumed domestically, accounting for their entire lifecycle.

The purpose of this brief is to emphasize the need for better accounting of as well as policy-making efforts for consumption-based emissions across the Nordic countries, to showcase the main challenges and opportunities in doing so and to highlight the possibilities for Nordic collaboration.

Traditionally, environmental- and climate policies have centered around territorial emissions, focusing on emissions occurring within the country's own borders. However, the world's interconnected economies and intricate supply chains require a shift toward an approach that better acknowledges the emissions embedded within the imported products, offering a fuller and fairer representation of their full environmental impact, and the related climate impacts generated outside the country's borders.

When looking at consumption-based emissions, the Nordic countries all have big imports of consumer goods, generating emissions outside of national borders. Thus, moving towards a just and global effort to reduce greenhouse gas (GHG) emissions therefore requires the Nordics to also take responsibility for these emissions.

The overall **challenges** include accounting for consumption-based emissions and reducing these emissions. Reducing consumption-based emissions are especially hindered by lack of political prioritization, lack of political targets (and plans for reaching those targets), and finding the balance between systemic versus individual action.

There are ample opportunities for Nordic collaboration on accounting for and reducing consumption-based emissions. In particular, Nordic collaboration should focus on the following:

- Standardize consumption-based emission accounting
- Set targets for consumption-based emission reductions
- Support research on alternatives to products and services with a high GHG footprint
- Support research and innovation in humanities and social sciences with regards to alternative lifestyles, cultural-, and behavioural changes
- Focus on green public procurement

The Nordic Stocktake and Visions project

For the Nordic Council of Ministers, the organizations CONCITO, CICERO, IVL Swedish Environmental Research Institute, University of Iceland and Reykjavik University, and Tyrsky Consulting have carried out the project “Nordic Stocktake and Visions – Pathways to climate neutrality”.

The consortium has taken stock of GHG emissions in the Nordic countries, and described and assessed the national pathways towards climate neutrality in the Nordic region. The results are described in the report “Nordic Stocktake”. The Nordic Stocktake is intended as a regional tool to support the Global Stocktake process and spur to further climate action, both within the Nordics and beyond.

As a part of the “Nordic Stocktake and Visions – Pathways to climate neutrality” project, the consortium held five webinars on topics of special relevance for reaching climate neutrality in the Nordic region. The webinars can be viewed on Norden.org.

This policy brief is a follow-up to the webinar on “Consumption-based emissions analyses – how and why?”, organized by CONCITO.

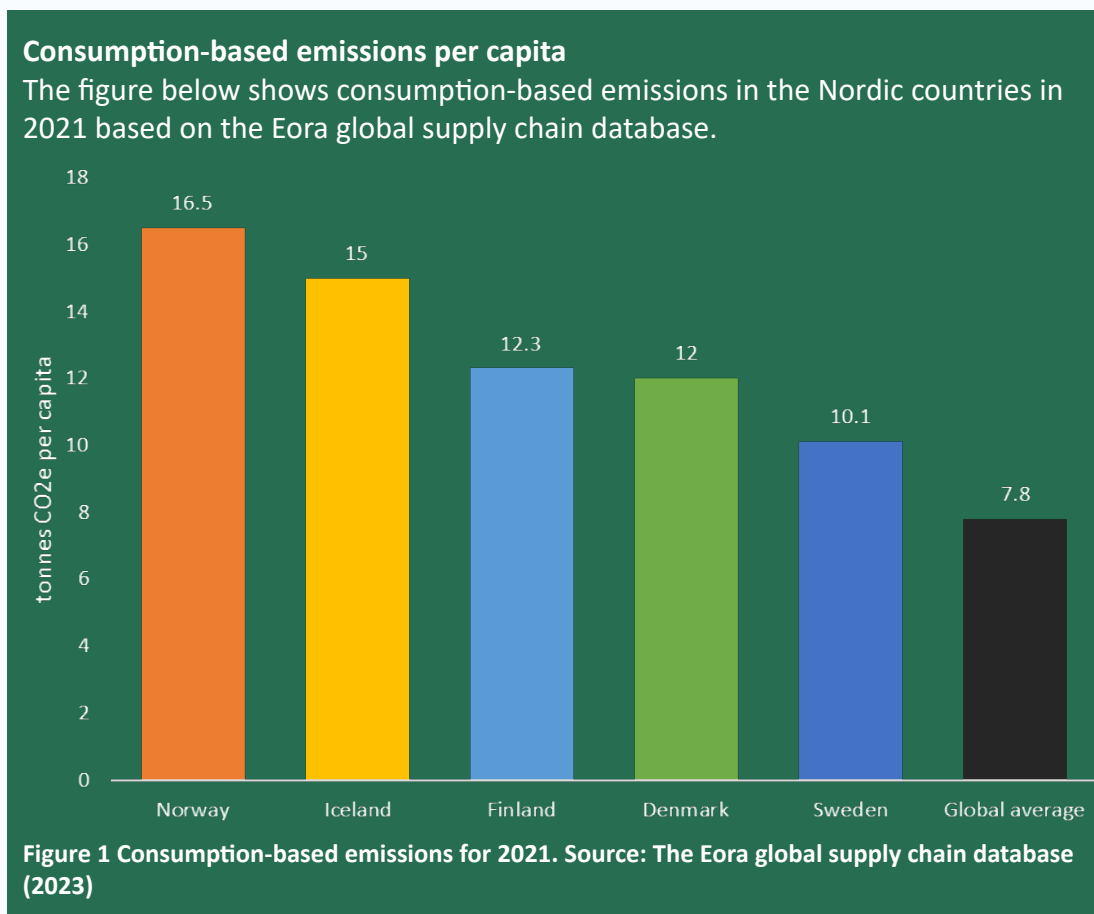
The project is a part of the initiative “Climate transition in the Nordics” to support the Nordic Vision 2030. The overall aim of the Nordic Vision is to become the most sustainable and integrated region in the world by 2030.

Consumption-based emissions across the Nordic countries

Consumption-based emissions across the Nordic countries are all significantly higher than the global average of 7.8 tonnes CO₂e per capita. This is highly problematic. To illustrate, global emissions would be almost 100 gigatons CO₂e/year instead of the current global emissions of just over 50 gigatons CO₂e/year if all world citizens lived like the average Dane.

With different accounting methods, national accounts of consumption-based emissions are difficult to compare directly. Some studies, however, allow for a comparison. According to a recent (2023) study drawing on the Eora global supply chain database, consumption-based emissions range from 10.1 tonnes CO₂e/year per capita (Sweden) to 16.5 tonnes CO₂e/year per capita (Norway).

Most importantly, most of the Nordic countries' consumption-based emissions take place outside national borders. They are thus not addressed in national climate mitigation policy.



In **Denmark**, the Climate Act from 2020¹ states that the government shall publish a status of Denmark's global climate impact every year, which includes consumption-based emissions. The report from 2023 estimated the consumption-based emissions to 63 Mt CO₂e in 2021 (approximately 50% higher than the territorial emissions of 45 Mt CO₂e in 2020), and which equal to 11 tons CO₂e per capita. More than half of these emissions occurred abroad, most notably in Germany and China². A recent report from CONCITO estimated the consumption-based emissions per capita to be a bit higher at 13 tons CO₂e³, the main differences stemming from the differences in calculation methods (The national account draw on attributional LCA where CONCITO's account draw on consequential LCA) and how ILUC-emissions are calculated.

There is limited data available on consumption-based emissions in **Finland**. In 2015, emissions were estimated to be 73 Mt CO₂e, about a third larger than production-based emissions. Two thirds of the emissions were caused by households, the rest by public consumption and investments. An estimated 47% of the emissions were produced abroad⁴. The emissions from households have been estimated more recently. According to this newer study, household emissions declined from 2000 to 2019 by 6 Mt CO₂e, from 61 Mt to 55 Mt. In 2019, the average carbon footprint per capita for household consumption was 10 t CO₂e. The emissions correlate with income, with the highest decile having emissions around three times as large as the lowest⁵.

In **Iceland**, only one study has been conducted on consumption-based emissions⁶. The national consumption-based carbon footprint was 22.5 t CO₂e per capita. Of this, 46% of the emissions came from household consumption-based emissions, equal to 10.4 t CO₂e per capita. The footprint is dominated by emissions derived from transport, food, and goods with imported goods responsible for 71% of household emissions.

Based on data from Statistics Norway and Eurostat, the consumption-based emissions in **Norway** were estimated to be 58.2 Mt CO₂e in 2017, which equals 11.1 t CO₂e per capita. Of these 42% took place abroad, mainly in other European countries and in Asia. Household consumption accounted for 64% of the footprint⁷.

Consumption based emissions have been included in **Sweden's** official statistics since 2019. Sweden's consumption-based emissions are calculated through a multiregional input-output analysis following a methodology that was developed in 2015 to 2018⁸. In 2020, Sweden's consumption-based emissions were 79 Mt CO₂e, which is approximately 65 % higher than the territorial emissions (48 Mt).

Across the Nordic countries, only very few policies are aimed at mitigating consumption-based emissions. If the Nordic region want to lead by example, this area needs much more focus in the coming years.



Challenges in accounting for and reducing consumption-based emissions

The main challenges related to consumption-based emissions can be grouped under two headlines:

- Accounting for consumption-based emissions.
- Reducing consumption-based emissions.

Accounting for consumption-based emissions

Different approaches can be used to calculate consumption-based emissions. The two most common approaches are normative/attributional LCA (ALCA) and consequential LCA (CLCA)⁹. ALCA is currently the most widely used approach and is “as is” average supply-mixes of products (assuming that products are produced using existing production capacity).

On the other hand, CLCA models a change in demand of the product and the related changes in supply and associated emissions. The consequential approach also includes the climate impact from indirect land use change (iLUC) and deforestation to either grazing or fodder production, which is often omitted in the ALCA. The CLCA however works with marginal assumptions that can be subject to interpretation.

The different approaches and the different data used by different actors can result in very different results for the same entity (country/region). This can foster confusion and distrust in results, which is often used as an excuse for not setting political targets for consumption-based emissions. For example, which method should be used to set a baseline for a consumption-based emission target?

Reducing consumption-based emissions

Reducing emissions from consumption is challenging due to especially three factors:

- *Lack of political prioritization*

Policies addressing emissions from consumption are conspicuously absent across the Nordic countries. This is due to a combination of lack of political prioritization and concerns regarding the potential adverse impacts those types of policies will have. Taxation on consumer goods risk having a high impact on low- and middle-income citizens and a negligible impact on high-income citizens (who in general have a higher consumption footprint¹⁰). More research is also needed to fully understand the effects and impacts of policies targeting consumption-based emissions, either to dismiss unfounded concerns about regressive effects or to highlight policy tools that need to be accompanied by supplementary, social policy.

- *Lack of political targets (and plans for reaching those targets)*

None of the Nordic countries have set a reduction target for consumption-based emissions. Tied to the challenge described above, this highlights a lack of political focus on this area which is necessary in order to create the systemic conditions for changed consumption patterns.

- *Finding the balance between systemic vs. individual action*

There is a challenge in finding the balance between systematic change and individual action regarding lowering consumption-based emissions. Individual action is often emphasized politically as the most important condition for lowering consumption-based emissions, but individual action needs to be facilitated by systemic changes, e.g. in terms of regulatory changes or removal of regulatory barriers for e.g. circular economy initiatives, so that climate-friendly lifestyles are enabled by restricting climate damaging consumption patterns and offering alternatives (see for instance <https://concito.dk/udgivelser/fremme-baeredygtige-livsstile-klimakrise> for inspiration).

Opportunities for Nordic collaboration on consumption-based emissions

If the Nordic countries want to be the most sustainable region in the world (according to the Nordic Vision 2030) and want to lead by example in the green transition, there is a major need for addressing the consumption-based emissions in the region. We see the following opportunities for Nordic collaboration in this area:

- 1 Standardize consumption-based emission accounting**
There is an opportunity for the Nordic countries to collaborate on developing standardized methodologies for calculating consumption-based emissions, ensuring consistency and comparability in data reporting and use of different approaches. At the very least, this type of work could help ensure transparency in how the different Nordic countries total their consumption-based emissions, and how actual targets should be formulated.
- 2 Set targets for consumption-based emission reductions**
To credibly lead by example, the Nordic countries should set targets for reducing the emissions from consumption. Targets should be followed with strategies for and tools to reduce the most climate intensive consumption categories. e.g., by changing diets, changing mobility patterns, lowering the climate impact of public procurement, ensuring a long lifetime of products etc.
- 3 Support research on alternatives to products and services with a high GHG footprint**
Reaching consumption-based emission levels aligned with the Paris Agreement would require transformation and significant changes in a range of sectors. More innovation and research targeted areas/sectors with the highest consumption-footprint is a necessary step.

Support research and innovation in humanities and social sciences with regards to alternative lifestyles, cultural-, and behavioural changes

4 There is a need for further innovation and research in the social science and the humanities with regards to what facilitates and creates cultural and behavioural changes that enable low-consumption/low-footprint lifestyles. Cultural and lifestyle changes furthered by social innovation are just as important as technical solutions or new alternative materials/production processes¹¹.

Focus on green public procurement

5 A very significant and effective way of addressing consumption-based emissions would be to fully leverage the public procurement muscle across the Nordic countries. This could also inspire other countries in focusing on green public procurement (GPP), a voluntary instrument set by the EU to inspire a resource-efficient economy¹².

Sources

- 1 Klima-, Energi- og Forsyningsministeriet. (2020). Lov om klima. LOV nr 965 af 26/06/2020. Retrieved from, <https://www.retsinformation.dk/eli/ta/2020/965>
- 2 Energistyrelsen. (2023). Danmarks globale klimapåvirkning. Retrieved from, https://ens.dk/sites/ens.dk/files/Analyser/hovedrapport_-_danmarks_globale_klimapaavirkning_-_global_afrapportering_2023.pdf
- 3 Minter, M., Jensen, C.L., & Chrintz, T. (2023). Danmarks globale forbrugsudledninger. CONCITO. Retrieved from, <https://concito.dk/files/media/document/Danmarks%20globale%20forbrugsudledninger.pdf>
- 4 Seppälä, J., Ollikainen, M., Savolainen, H., Häkkinen, T., Saarinen, M., Liimatainen, H., Vainio, A., Kurnitski, J., Niemistö, J., Niva, M. & Weaver, S. (2022). Kuluttajien mahdollisuudet Suomen päästövähennysten vauhdittamiseksi. The Finnish Climate Change Panel. Retrieved from, <https://www.ilmastopaneeli.fi/wp-content/uploads/2022/12/ilmastopaneelin-raportti-5-2022-kuluttajien-mahdollisuudet-suomen-paastovahennysten-vauhdittamiseksi.pdf>
- 5 Ministry of the Environment Finland. (2023). Annual Climate Report 2022. Retrieved from, <https://julkaisut.valtioneuvosto.fi/handle/10024/164392>
- 6 Clarke, J., Heinonen, J. and Ottelin, J. (2017). Emissions in a decarbonised economy? Global lessons from a carbon footprint analysis of Iceland. *Journal of Cleaner Production*, 166, pp.1175–1186. doi:<https://doi.org/10.1016/j.jclepro.2017.08.108>.
- 7 Steen-Olsen, K., Solli, C. & Larsen, H.N. (2021). Forbruksbasert klimaregnskap for Norge. Retrieved from, <https://www.framtiden.no/filer/dokumenter/Rapporter/2021/Forbruksbasert-klimaregnskap-for-norge-2021.pdf>
- 8 Naturvårdsverket, 2021. Naturvårdsverket, www.naturvardsverket.se/om-miljoarbetet/forskning/miljoforskning/forskningsattsningar-samhalle/pabyggnad-om-konsumtionens-miljopaverkan—prince, hämtat 2021-11-23.
- 9 CONCITO. (2023). GHG emissions from Danish consumption 2016 – causal link between consumption and GHG emissions. Retrieved from: https://concito.dk/files/media/document/Bilagsrapport%201_GHG%20emissions%20from%20Danish%20consumption%202016.pdf
- 10 Oxfam. (2020). Confronting carbon inequality. Retrieved from: <https://oxfamilibrary.openrepository.com/bitstream/handle/10546/621052/mb-confronting-carbon-inequality-210920-en.pdf>
- 11 Foulds, C., & Haunstrup Christensen, T. (2016). Funding pathways to a low-carbon transition. Retrieved from: <https://www.nature.com/articles/nenergy201687>
- 12 Green business (n.d.). Green Public Procurement. European Commission [online] Retrieved from, https://green-business.ec.europa.eu/green-public-procurement_en. [Accessed 09.10.2023]