Measuring the Climate Footprint of Tourism in the Nordics with SF-MST

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A common framework is essential

- Measuring GHG emissions attributable to tourism is a complicated task.

- Current findings on GHG emissions attributed to tourism have strived and accomplished the task differently, resulting in **significant differences** in the results, see **figure**.

- Therefore, there is a need for a **common framework**.

- **Recommendation**: Follow the Statistical Framework for Measuring the Sustainability of Tourism by UN Tourism, which utilises well-defined statistical frameworks (TSA, SEEA etc.).

*Figure: The proportion of global greenhouse gas emissions attributed to tourism*

Source: Own research
UN Tourism Framework: “The must haves”

- **Direct**:
  - Visitors’ direct emission (e.g., driving own vehicle)
  - Transport*
  - Hotels*
  - Agriculture*
  - Electricity supply*

- **Indirect**:
  - Resident economic units
  - Non-resident economic units

- **Imported goods and services**

- **Outbound visitors from country A**
  - Visitors’ expenditure (pre- and post-trip expenditure by outbound visitors) in country A

- **Domestic visitors in country A**

- **Inbound visitors in Country A**

- **International transport to and from country A**

*An example of origin, not exhaustive.*
UN Tourism Framework: “The full story”

*An example of origin, not exhaustive.*
Calculations

- CRT has performed calculations for Denmark and Finland.

- For Denmark, our calculations encompass GHG emissions from **direct**, **indirect**, and **imported** flows, alongside the **international transport** of tourists (complete carbon footprint of tourists in Denmark).

- For Finland, we calculate the GHG emissions from **direct** and **indirect** flows.

- In the Danish TSA, both **domestic** and **inbound** tourism are accounted for. In the Finnish TSA, **outbound**, **domestic**, and **inbound** tourism are all encompassed.
Comparison

- Each calculation is **correct and follows the same framework (SF-MST)**.

- Each calculation is **comparable to the TSA** for its respective country.

- However, due to differences in the TSA between Denmark and Finland, the **results for GHG emissions are not comparable** for the direct and indirect GHG emissions from tourism.

- **Key findings**: Harmonizing the carbon footprint of tourism in the Nordics necessitates harmonizing “CO2-ready” TSA populations and harmonizing the solution to common challenges on methodology practices and data gaps.

**Figure**: GHG emissions from tourism in Denmark and Finland (2019)

**Note**: The values cannot be shown as the results are still unpublished. Imports and international transport are not included in Finland's calculations.

**Source**: Centre for Regional and Tourism Research
**Big data for international transport: Overview**

- This part of the calculation is **not** based on an IO model.

- Instead, the method is **inspired by a study from Norway***, that requires the following information based on the country of origin and type of transport mode used:

  - **Advantage**: Distinguish between different detailed means of transport (e.g., electric cars versus diesel cars).

  - **Disadvantage**: Does not include indirect emissions like an IO-model.


<table>
<thead>
<tr>
<th>Distance</th>
<th>Emission per person km</th>
<th>Number of travellers</th>
</tr>
</thead>
</table>
Big data for international transport: Distance

- For **air travel**, we utilize data from Copenhagen Airport for insights into the origins and destinations of inbound travelers.

- This includes details such as stopovers and the number of business class passengers.

- For **other transport modes**, we use Google Maps (big data) to estimate the distance travelled. The distance is calculated from the largest city to Copenhagen as an estimate of the average distance.

- A trip by a specific transport mode (e.g., car) can involve the use of multiple transport modes (e.g., car and ferry).

**Figure:** Routes by individual transport (car, etc.)

**Table:** Distance (in kilometers) for a round trip

<table>
<thead>
<tr>
<th>Nationality of tourists</th>
<th>Car, autocamper, or motorbike</th>
<th>Ferry (incl. transport mode)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Finland</td>
<td>1.825</td>
<td>412</td>
</tr>
<tr>
<td>Norway</td>
<td>1.216</td>
<td>412</td>
</tr>
</tbody>
</table>
**TIMELINE OF THE PROJECT**

2022

**REPORT**
A feasibility study for the Nordics countries.

2023

**RESULTS**
Pilot compilations for Denmark and Finland.

2024

**DIRECT AND INDIRECT**
Pilot compilations for the rest of the Nordics ready for calculations of direct and indirect GHG emissions by tourism, and feasibility study.

2025

**IMPORT AND INT. TRANSPORT (NOT FINANCED)**
Pilot compilations of GHG emissions from import and int. transport and other harmonisation needs.

? **MULTI REGIONAL ASPECT (NOT FINANCED)**
Depending on the outcome of regionalizing the TSA across the Nordics.
Thank you for your attention

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