A comprehensive approach to MST piloting: The Tourism Sustainability Satellite Account

Johanna Schulze Düding, consultant and head of tourism practice
Madrid, December 14, 2022
Introduction and Background

- The German Environment Agency commissioned a consortium consisting of DIW Econ among others to **develop a national sustainability measurement system for German tourism**
- The result was the first TSSA for Germany
- **TSSA** stands for **Tourism Sustainability Satellite Account**
- It is based on **methodology of Tourism Satellite Account (TSA)** and is consistent with **national accounts** and the **system of environmental-economic accounting (SEEA)**
- First TSSA for Germany was developed with reference year 2016
- Update with reference year 2019
## TSSA Indicators

### Economic Indicators
- Gross value added (GVA)
- Number of employees
- Labor productivity

### Environmental/Ecological Indicators
- Greenhouse gas (GHG) emissions
- CO₂ emissions contained in tourism-related products
- Water use
- Energy use
- Polluting emissions; differentiated by Nitrogen oxide (NOₓ) emissions and particulates emissions (PM10 & PM2.5)

### Social Indicators
- Index for quality of labor conditions
- Gender Pay Gap (unadjusted)
- Low wage quota
- Overlong working hours
- Involuntary fixed-term work contract
- Adequate qualifications
- Share of households in Germany that can at least finance a one-week vacation trip per year
- Average gross wage

### Management Indicators
- Number of officially certificated sustainability destinations in Germany
- Share in number of touristic arrivals/departures with eco-friendly means of transport (i.e. public transport by bus and train)
TSA Background and Methodology in Germany

TSA calculation approach:

• Follows internationally accepted guidelines and standards of TSA framework
• Need for TSA because tourism is not a part of the official statistics

• Outcome:
  o Direct and indirect gross value added effects
  o Direct and indirect employment effects of the tourism industry
  o Tourism ratios and tourism shares
Tourism Ratio: share in total gross value added related to tourism expenditure

Tourism ratio by industry in 2019 (official number of NACE economic sector in brackets)

<table>
<thead>
<tr>
<th>Industry</th>
<th>Tourism Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Land transport (49)</td>
<td>18.2%</td>
</tr>
<tr>
<td>Water transport (50)</td>
<td>8.1%</td>
</tr>
<tr>
<td>Air transport (51)</td>
<td>63.1%</td>
</tr>
<tr>
<td>Accommodation and gastronomy (55-56)</td>
<td>80.7%</td>
</tr>
<tr>
<td>Rental and leasing activities (77)</td>
<td>4.0%</td>
</tr>
<tr>
<td>Travel agency and tour operator (79)</td>
<td>93.7%</td>
</tr>
<tr>
<td>Arts, entertainment and recreation (90-93)</td>
<td>35.9%</td>
</tr>
<tr>
<td>Other economic sectors</td>
<td>1.6%</td>
</tr>
<tr>
<td>Overall tourism industry</td>
<td>4.0%</td>
</tr>
</tbody>
</table>
Calculation Example: Linking SEEA and TSA

Tourism-induced GHG emissions in the accommodation and gastronomy sector

<table>
<thead>
<tr>
<th>SEEA</th>
<th>TSA</th>
<th>TSSA</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Air emissions account</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GHG emissions (in tons CO$_2$-eq) in the accommodation and gastronomy sector</td>
<td>Tourism ratio of accommodation and gastronomy in percent</td>
<td>Share of tourism related GHG emissions in the accommodation and gastronomy sector</td>
</tr>
<tr>
<td>3,270 tons CO$_2$-eq</td>
<td>*</td>
<td>80.7 %</td>
</tr>
<tr>
<td></td>
<td></td>
<td>=</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2,639 tons CO$_2$-eq</td>
</tr>
</tbody>
</table>
GHG emissions of the German tourism industry 2015 vs. 2019

GHG emissions by touristic sectors (in 1,000 tons CO₂-eq)

- Land transport (49)
  - 2015: 19,108
  - 2019: 17,689

- Water transport (50)
  - 2015: 37,194
  - 2019: 29,528

- Air transport (51)
  - 2015: 27,579
  - 2019: 22,770

- Accommodation and gastronomy (55-56)
  - 2015: 3,492
  - 2019: 2,704

- Rental and leasing activities (77)
  - 2015: 356
  - 2019: 315

- Travel agency and tour operator (79)
  - 2015: 198
  - 2019: 179

- Arts, entertainment and recreation (90-93)
  - 2015: 2,730
  - 2019: 2,612

Tourism induced GHG emissions (in 1,000 tons CO₂-eq)

- Land transport (49)
  - 2015: 3,611
  - 2019: 2,117

- Water transport (50)
  - 2015: 2,218
  - 2019: 3,002

- Air transport (51)
  - 2015: 2,785
  - 2019: 2,639

- Accommodation and gastronomy (55-56)
  - 2015: 9
  - 2019: 13

- Rental and leasing activities (77)
  - 2015: 176
  - 2019: 168

- Travel agency and tour operator (79)
  - 2015: 1,233
  - 2019: 937

- Arts, entertainment and recreation (90-93)
  - 2015: 9
  - 2019: 8

- Other economic sectors
  - 2015: 9,898
  - 2019: 10,145

- Overall tourism industry
  - 2015: 39,610
  - 2019: 38,940

• Total emissions of the tourism industry have declined, but less sharply than in the economy as a whole
  ➢ Tourism was responsible for 4.6 % of total GHG emissions in Germany in 2015, in 2019 for 5.2 %

Data basis: Own calculation based on national accounts/air emission accounts (Destatis); TSA Germany (DIW Econ et al. (2017 / TSA Destatis 2021)
Tourism Share: the sector-specific share of total gross value added in tourism

Tourism share by industry in 2019 (Official number of NACE economic sector in brackets)

- Accommodation and gastronomy (55-56) 36.6%
- Land transport (49) 10.4%
- Water transport (50) 7.8%
- Air transport (51) 1.6%
- Rental and leasing activities (77) 3.9%
- Travel agency and tour operator (79) 0.4%
- Arts, entertainment and recreation (90-93) 1.6%
- Other economic sectors

Data basis: Own calculation based on TSA Germany / Destatis (2021)
Calculation Example: Linking TSA and social indicators

**Gender pay gap in the air transport sector**

<table>
<thead>
<tr>
<th>Social Indicator</th>
<th>TSA</th>
<th>TSSA</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gender Pay Gap</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Difference between the average earnings of men and women in the air transport sector in percent</td>
<td>51.0 %</td>
<td>*</td>
</tr>
<tr>
<td>Tourism share of air transport sector in percent</td>
<td>3.9 %</td>
<td></td>
</tr>
<tr>
<td>Share of the Gender Pay Gap in air transport in the tourism industry as a whole</td>
<td>=</td>
<td>1.79 %</td>
</tr>
</tbody>
</table>

→ Sum up all sectors weighted by the specific tourism share for the gender pay gap of the whole tourism industry
Gender Pay Gap in the German Tourism Industry

Data basis: Own calculation based on official national statistics (Destatis); TSA Germany (DIW Econ et al. 2017 / Destatis 2021)
Gender Pay Gap in the German Tourism Industry 2014 vs. 2018

Data basis: Own calculation based on official national statistics (Destatis); TSA Germany (DIW Econ et al. 2017 / Destatis 2021)
Perceived Quality of Labor Conditions in the German Tourism Industry 2014 vs. 2018

Data basis: Own calculation based on DGB-Index; Scientific use file; TSA Germany (DIW Econ et al. 2017 / Destatis 2021)
Low wage quota in the German Tourism Industry 2014 vs. 2018

Data basis: Own calculation based on Destatis (2021); TSA Germany (DIW Econ et al. 2017 / Destatis 2021)
Lessons learned

• TSSA is a modular system that is adaptable to the specific needs of the country/region/...

• It offers
  • Monitoring system
  • Benchmarking system

• Data availability is challenging

• Open issues:
  • Insufficient data to include other indicators (e.g. biodiversity, land use)
  • Limited to the supply side
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