TRADE IN ENERGY TECHNOLOGY GOODS – GERMANY AND ITS TARGET MARKETS

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The Project

► “Analysis of German exports and imports of technology goods for the use of renewable energy and energy technology goods”

► Funded by German Ministry of Economic Affairs

► Carried out by GWS in cooperation with J. Blazejczak and D. Edler (DIW) between 2018 and 2020
Motivation

► In public debate, energy transition is often discussed focussing on costs

► It does, however, yield advantages to individual firms as well as regions or countries to provide the necessary goods

► Who trades what with whom? Where lie competitive advantages? What is Germany’s role in supplying and receiving energy technology goods?

► Challenge: Energy Technology Goods (ETG) cannot easily be found in official statistics
Energy Technology Goods

- Identification: Usage of Combined List of Environmental Goods (CLEG) from OECD and list of environmental protection goods (NIW)
  - 222 goods at the 6-digit HS classification level
  - 109 combined good positions
  - 5 groups of goods

- UN COMTRADE provides detailed trade data at sufficient granularity (237 individual countries or regions)

- Multiple use problem: categories are not homogenous and goods might serve multiple purposes
  - we can only identify “potential” ETG
World Market Trends

Global trade volume of ETG

Examples of included goods

<table>
<thead>
<tr>
<th>Measurement and control systems</th>
<th>Usage of renewable energy</th>
<th>Efficient use of energy</th>
<th>Energy transformation</th>
<th>Efficient processes and products</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thermometers (liquid filled)</td>
<td>PV cells and modules</td>
<td>Mineral insulating materials</td>
<td>Generators</td>
<td>Batteries</td>
</tr>
<tr>
<td>Instruments and apparatus for physical or chemical analysis [...]</td>
<td>Wind turbines</td>
<td>Glas fibre insulation products</td>
<td>Steam turbines</td>
<td>Non-fossil vehicles</td>
</tr>
<tr>
<td>Manostats</td>
<td>Hydraulic turbines</td>
<td>Heat exchangers</td>
<td>Gas turbines</td>
<td>Rail-bound wagons</td>
</tr>
</tbody>
</table>

Source: UN COMTRADE, own depiction

1.07 Tn USD
5% of total trade
Germany was able to hold its market share over the observation period, while China increased its share in a growing market.
German exports are less concentrated on categories of goods than those of its large competitors.
Europe (ECS) is the main destination for German exports and is the receiver of the largest share of all technology groups.

Goods for the usage of renewable energy are exported most overall and account for the largest share in most regions (notable exceptions are North America (NAC) and South Asia (SAS)).
China is largest recipient of ETG, with renewable energy and measurement systems accounting for nearly equal shares.

German exports are less concentrated on countries than those of its large competitors.
Global German export performance

Source: UN COMTRADE, own depiction
Target market: France

France imported $39B of ETG in 2018

France is mainly receiving ETG from neighboring European countries

Germany is the main individual source of goods from all groups except energy transformation, where the US are leading

Source: UN COMTRADE, own depiction
Target market: China

- China imported $94B in 2018
- Nearly half of all Chinese imports are goods for the usage of renewable energy
- Main countries of origin are bordering the Pacific Ocean
- German provides the main source of measurement and control systems
  - Germany’s most exported goods are for the usage of renewable energy

Chinese ETG imports by group of good and destination, 2018, bn USD

Source: UN COMTRADE, own depiction
Conclusions and outlook

► We are able to identify a set of potential energy technology goods that can be distinguished into several thematic groups, building on existing definitions

► Numerous indicators suggest that diversification of the German ETG export portfolio is one of the main reasons the country was able stay competitive

► When interpreting the results, the multiple-use problem is to be kept in mind, as should changing technology costs

► Trade in energy related services are also of interest, data coverage, however, is sparse
Thank you for your attention!

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Sources


► R package chorddiag by Mattflor, https://github.com/mattflor/chorddiag
www.gws-os.com

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