



Session 4: What do Statisticians offer?

Practical experiences and examples of the European Statistical System

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Session 4 'What do statisticians offer?'*

Content

Practical experiences & examples of the European Statistical System

1. GHG emissions by economic activities
2. Carbon footprints – EU vis-à-vis rest of the world
3. Compilation issues

GHG emissions – published by Eurostat

Produced by European Environmental Agency, re-published by Eurostat:

1. UNFCCC greenhouse gas emission inventories

Produced by Eurostat in cooperation with national statistical institutes

1. annual air emissions accounts – AEA;
including early estimates based on proxy GHG emission inventories
2. quarterly air emissions accounts for greenhouse gases
3. carbon footprints (worldwide)

1 Greenhouse gas emission inventories (UNFCCC)

Emission inventories (UNFCCC)

- Eurostat re-publishes every year around June (T+18m)
- GHG inventories are produced by European Environment Agency, EEA, based on national inventories reported to UNFCCC
- European legal base: [EU's Climate Monitoring Mechanism](#)

Emission inventories (UNFCCC)

- Classification of emission source sectors = Common Reporting Format (CRF)
- 172 technical processes (fuel combustion, industrial processes etc.)

GHG emissions - EU27 2019 [%]					
		CO2	CH4	N2O	F-GAS
TOTAL	Total (excluding memo items, including international transport)	80	11	6	3
CRF - 1A1	Fuel combustion in energy industries	24	0	0	
CRF - 1A2	Fuel combustion in manufacturing industries and construction	12	0	0	
CRF - 1A3	Fuel combustion in transport	23	0	0	
CRF - 1A4	Other fuel combustion sectors	14	0	0	
CRF - 1B	Fuels - fugitive emissions	1	1	0	
CRF - 1D2	Multilateral operations (memo item)	0	0	0	
CRF - 1D3	Biomass - CO2 emissions (memo item)	15			
CRF - 2	Industrial processes and product use	6	0	0	3
CRF - 3	Agriculture	0	6	5	
CRF - 4	Land use, land use change, and forestry (LULUCF)	-7	0	0	
CRF - 5	Waste management	0	3	0	
CRF - 1D1A	International aviation (memo item)	4	0	0	
CRF - 1D1B	International navigation (memo item)	4	0	0	

73%

Emission inventories (UNFCCC) - compilation

- General emission model

$$\textit{Emission} = \textit{activity data (AD)} \times \textit{emission factor (EF)}$$

- Detailed metadata: national inventory reports (NIR)

2 Air emissions accounts (SEEA-CF)

Air emissions accounts

- greenhouse gas emissions originating from the EU economy (economic actors and households residing in the EU)
- as defined and delineated in national accounts
- **also include emissions from international transport** operated by economic actors established in the EU, same recording rules as national accounts.
 - Allows for comparability with gross value added, jobs, investments, exports, etc.

Air emissions accounts

- produced by the European Statistical System under the lead of ESTAT
- published in December (T+11m)
- legal base: [EU regulation 691/2011](#) on European environmental economic accounts (incl. air emissions accounts)

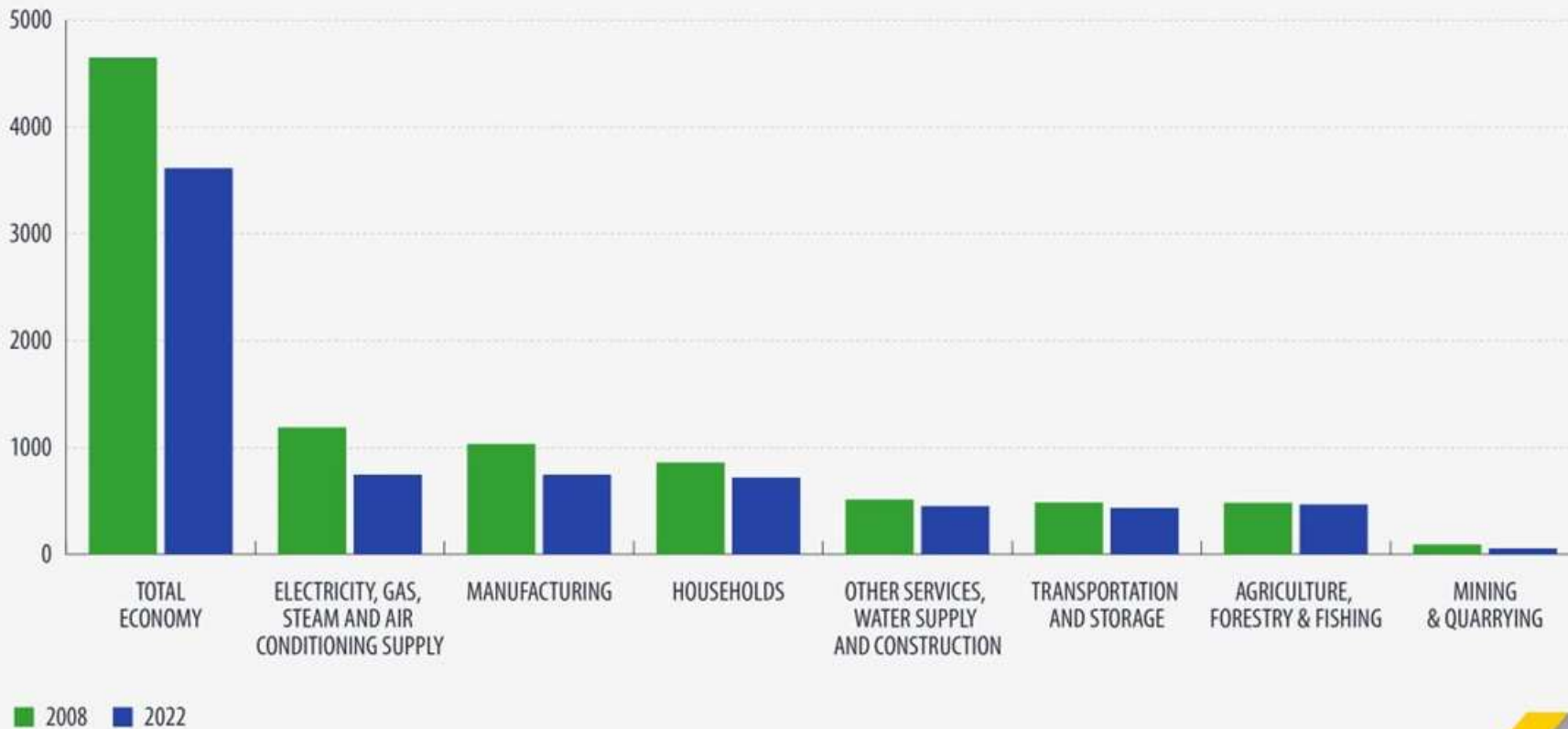
Air emissions accounts – data structure

- 64 industries (NACE classification)
- Households: 3 purposes (transport, heating, other)
- substances: GHG, CO₂, N₂O, CH₄, HFC, PFC, SF₆_NF₃
- Time series: 2008 – 2022
- Geographical coverage: EU, 27 EU Member States, IS, NO, CH, RS, TR
- Units: tonnes, tonnes CO₂-equivalents, per capita
- Intensities: kg per EUR gross value added (B1G)
kg per EUR output (P1)

Air emissions accounts

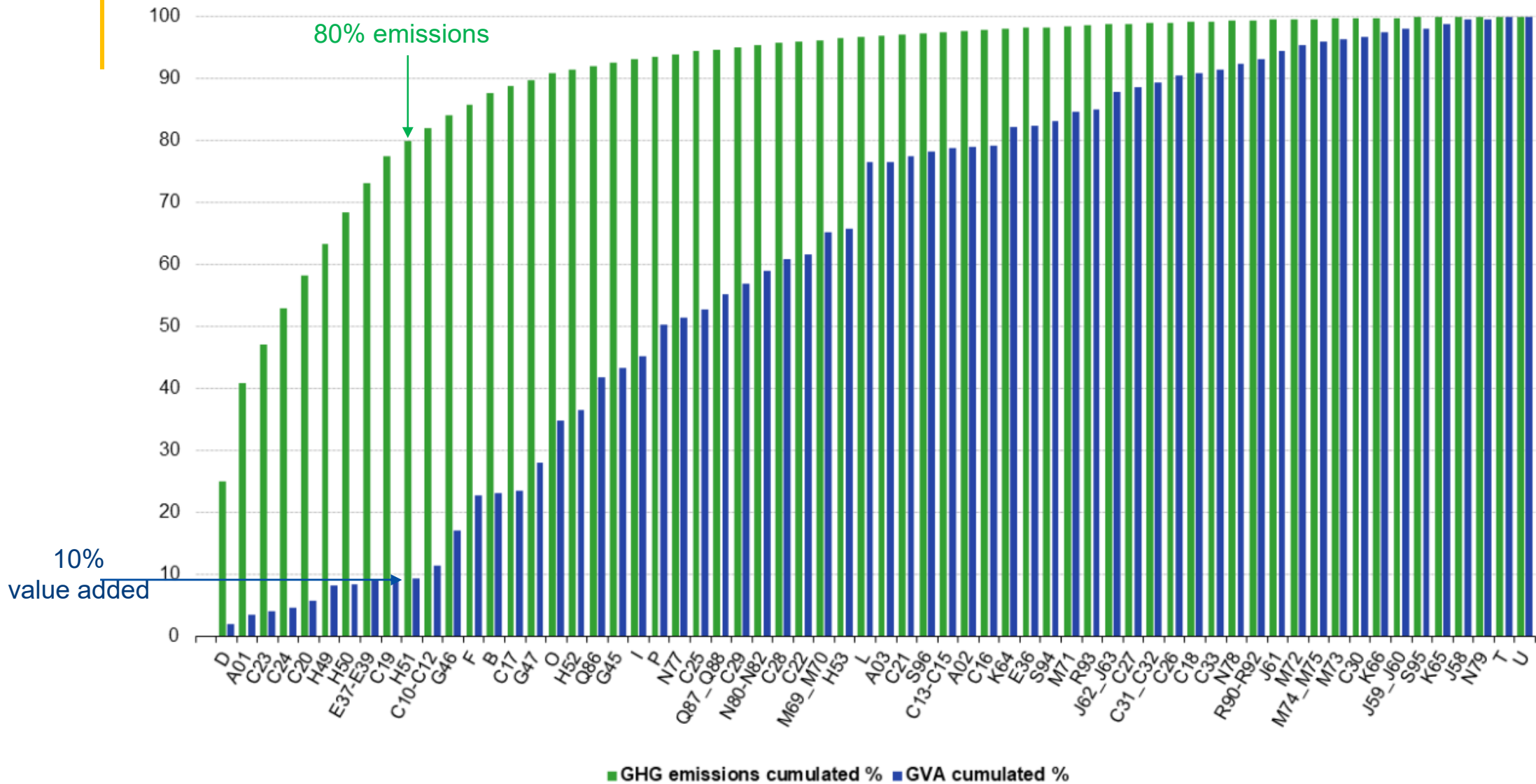
Greenhouse gas emissions by economic activity, EU, 2008 and 2022

(million tonnes of CO2 equivalents)



Greenhouse gas emissions and gross value added by 64 production activities (NACE), EU, 2021

(cumulated %)



3 Carbon Footprints

Carbon footprints - definition (national accounts)

- short: CO₂ embodied in final use
 - worldwide emissions arising
 - along the production chain of
 - products delivered to final use (P3, P5)

Carbon footprints – method

- Leontief-type inter-country input-output model
- Model inputs:
 - Inter-country input-output tables (FIGARO)
 - Air emissions accounts (CO₂)
 - global coverage (46 economies + rest of the world)
 - 64 industries/products

Model variants - overview

There are numerous variants of the generic model equation.

- ... providing different analytical perspectives,
- ... answering different policy questions.

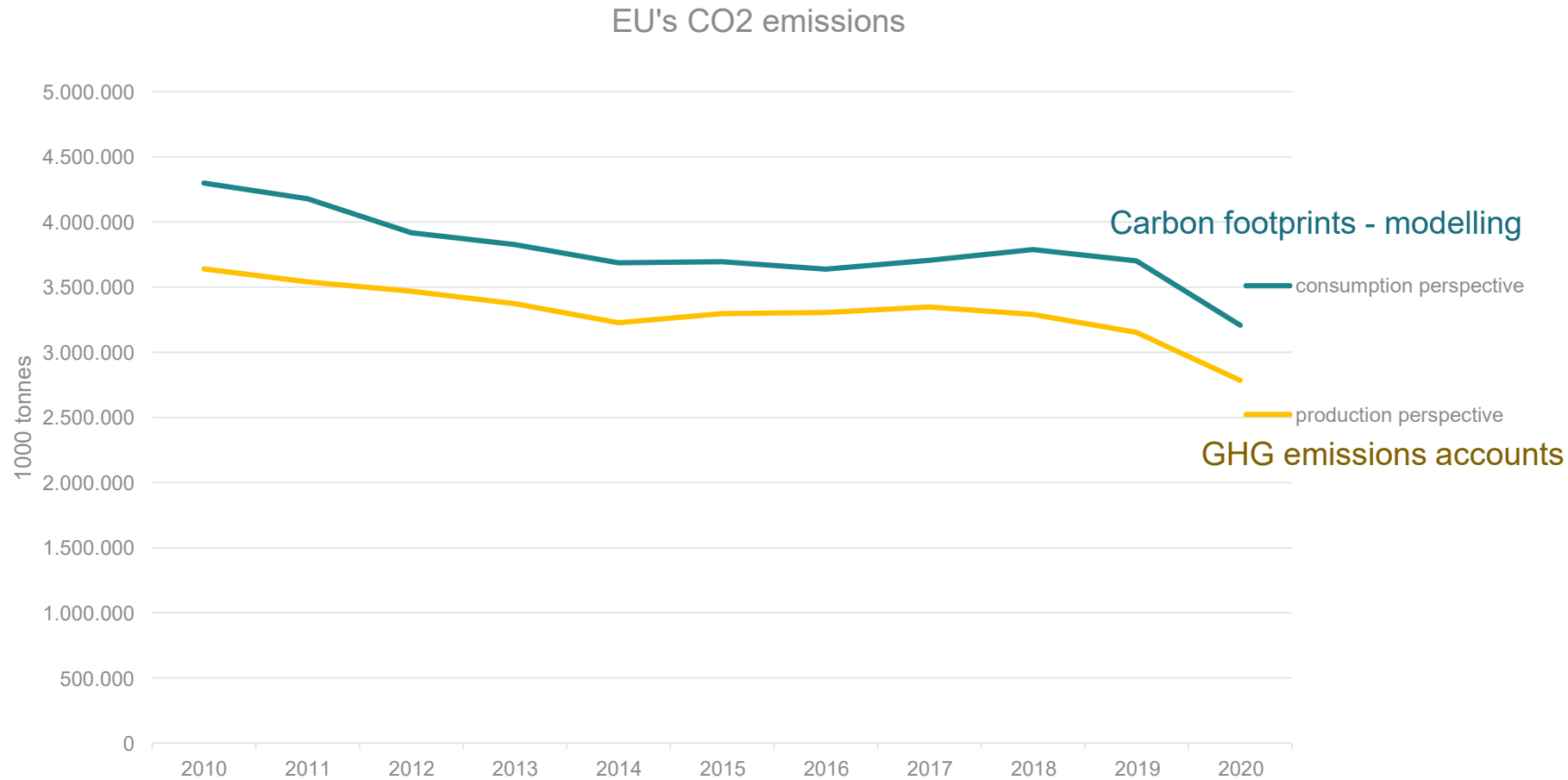
One may group the models into 3 clusters

1. **Final use perspective**
2. **Industry or final product perspective**
3. **Source or production perspective**

Carbon footprints – results

- Currently, Eurostat has implemented a model serving
- ‘**final use perspective**’ in combination with ‘**production perspective**’
 - global CO2-emissions embodied in **economies’ final use**
 - by **industry and geography of origin**

EU's CO2 emissions



Carbon footprints – next steps

- adding other greenhouse gases to the global model (next to CO₂)
- implementing all model variants
 - **Industry** or **final products** perspective is assumingly most interesting for central banks

Thank you



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