

Monitoring sustainable development and the role of input-output applications

- from a statistical institute's point of view



Maaïke Bouwmeester

Eurostat

**Environmental statistics and accounts;
sustainable development**

**Workshop – Input-output applications for sustainable development
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Overview

- I. Sustainable development*
- II. Monitoring the sustainable development goals*
- III. Environmental input-output applications from a statistical institute's point of view*
- IV. Working towards institutionalising input-output analysis*

I. Sustainable development





"Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs."

Our common future, 1987
(Brundtland report)

Sustainable development frameworks

- *Millennium development goals (2000 – 2015)*
- *Developing the post 2015 development agenda (2012 – 2015)*
- *Sendai framework, Paris agreement*
- *2030 Agenda for sustainable development;*
 - **17 goals**
 - **169 targets**
 - **232 indicators**

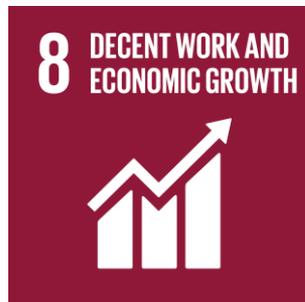


Sustainable development goals



Sustainable development indicators

- *List of 232 indicators established in 2017*
- *Inter-agency and expert group on SDGs*
 - **Develop and implement the global indicator framework**
- *Tier classification*
 - **Tier I: internationally agreed method and data available**
 - **Tier II: internationally agreed method, limited data availability**
 - **Tier III: no agreed method, no / limited data availability**
- *Input-output application: material footprint*
 - **Indicator for goal 8 and 12**
 - **Tier III**



II. Monitoring the sustainable development goals



Monitoring the sustainable development goals

- *By countries. At global level by United Nations*
- *European Union: Eurostat is in the lead of the monitoring report on sustainable development*
- *Result of a broad consultative process*
- *100 indicators, 55 aligned with the UN set*
- *Criteria for indicator selection:*
 - **Relevance for EU policies**
 - **Statistical quality**
- *Regular reviews*
- *Material footprint on the 'on-hold' list*

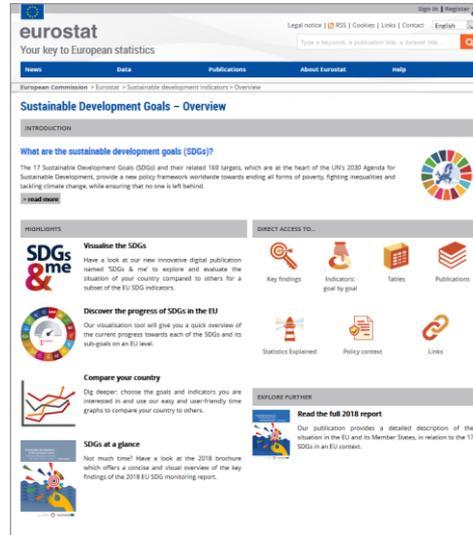


Eurostat 2018 EU SDG monitoring package

Monitoring report & Brochure



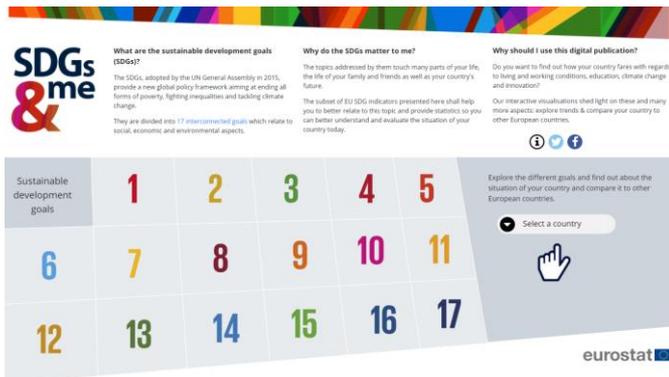
Dedicated SDG website



Statistics Explained articles



Digital publication



Online database



Eurostat 2018 EU SDG monitoring: overview of results



Goals for which trends cannot be calculated (*)

(*) Due to lack of time series for more than 25% of the indicators

III. Environmental input-output applications from a statistical institute's point of view



Results from input-output applications published by Eurostat

- *Air emissions due to final use of products*
 - **Air emission footprint**
- *Material flow account in raw material equivalents*
 - **Material footprint**
- *Soon: energy footprints*
- *For aggregate EU*
- *Air emission footprints and energy footprints from a single-region model (domestic technology assumption)*
 - **Emissions avoided due to trade**
 - **Model and input data are published; results can be reproduced**
- *Material footprints from a hybrid input-output model with more detail and an adjusted domestic technology assumption*

Input-output analysis by statisticians

- *Not core business; lower priority*
- *Limited resources*
- *Skills need to be developed*
- *Modelling requires making assumptions*
- *Challenge to ensure regular production*
- *Quality requirements*
- *IO analysis undertaken by some national statistical institutes (experience varies much)*



Further development needed

- *Conceptual foundation of the estimation approach is agreed, but different implementations -> limited comparability*
- *Different databases give different results, e.g. material footprints:*
 - **21 t/cap**, EU-27, 2008, WIOD
 - **23 t/cap**, EU-27, 2007, Exiobase
 - **24 t/cap**, EU-28, 2007 and 2008, UNEP (Eora)
 - **18 t/cap**, EU-28, 2007 and 2008, Eurostat
- *Availability of input data needs to be improved*
 - **Standardised and regularly produced multi-regional input-output database**
 - **Global environmental accounts databases**

IV. Working towards institutionalising input-output analysis



Institutionalisation

- *Collaboration by national statistical institutes, Eurostat, OECD, UN needed to set-up regular production of harmonised input data*
- *There is general agreement on the methodology to be used: multi-regional input-output modelling*
 - **Regular production following agreed standards**
 - **Validation of results**
- *For material footprint: agreement needed on the operationalisation of the methodology*
 - **Level of detail**
 - **Hybridisation: representing some flows in quantities not values**



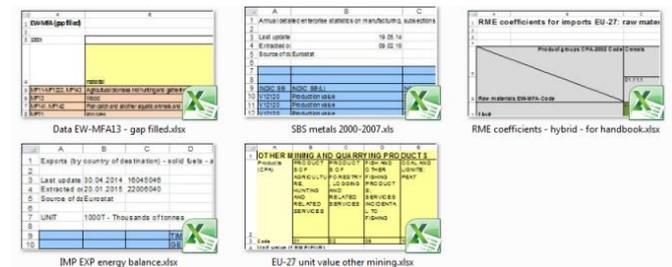
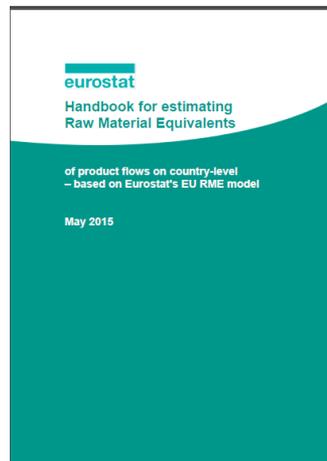
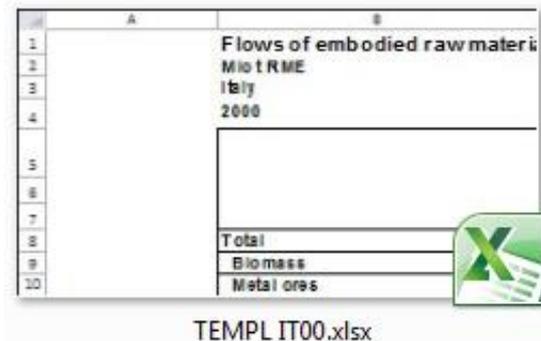
... in the meanwhile ...



Work in progress

Eurostat offers support

- *Capacity-building for national statistical institutes*
- *Single-region estimation tool published online (consumption-based accounting tool)*
 - **For any dataset with NACE A*64 break-down**
- *Country tool for estimation of material footprints (country RME tool)*
- *By providing required input data*
- *By answering questions and offering feedback*



Data collection material footprints

- *Voluntary data collection from national statistical institutes*
- *In 2018: data for 8 Member States (AT, DE, FR, MT, NL, PT, LV, LT) and 2 non-EU (CH, TR), varying year coverage*
- *Validation*
 - **Internal consistency**
 - **Plausibility (cross-country and compared to EU28 estimate)**
- *Results are generally consistent and plausible*
- *Tool and support enable country-level material footprint compilation*
- *Next step: publication of estimates*

FIGARO project



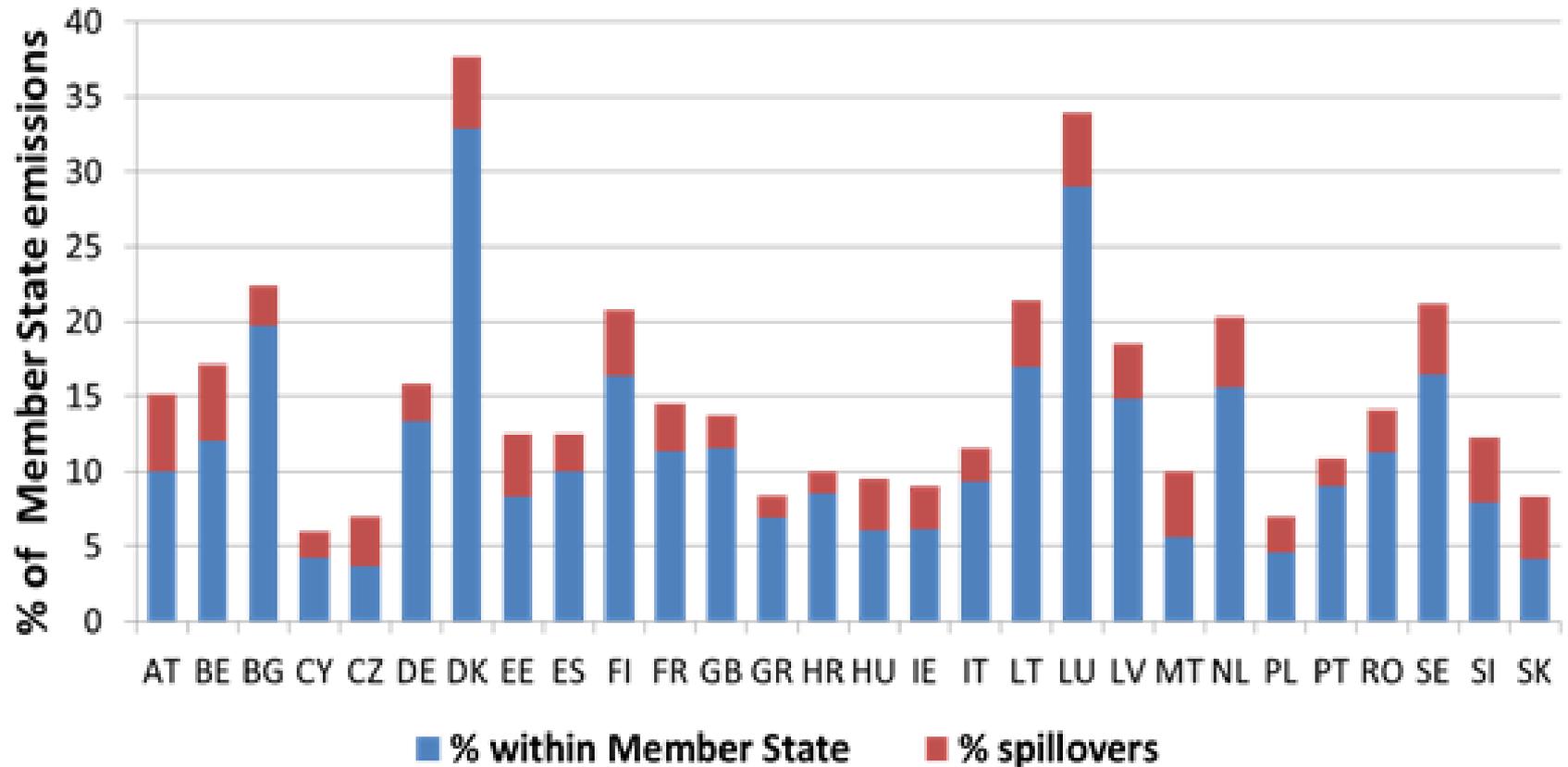
- *Multi-country input-output dataset developed by Eurostat and the Commission's Joint Research Centre.*
- *To become the institutionalised reference dataset*
- *28 Member States + USA, 64 products/industries*
- *Tables for 2010 were published in 2018 as experimental statistics*
- *Expected by end 2020:*
 - **Time series up to 2016 / 2018 (less detail)**
 - **Previous year's prices**

The screenshot shows the Eurostat website header with the European Union flag and the text "eurostat Your key to European statistics". Navigation links include "News", "Data", "Publications", and "About Eurostat". The breadcrumb trail reads "European Commission > Eurostat > Experimental statistics > FIGARO". The main content area is titled "EXPERIMENTAL STATISTICS" and "FULL INTERNATIONAL AND GLOBAL ACCOUNTS FOR RESEARCH IN INPUT-OUTPUT ANALYSIS (FIGARO)". A sub-section "Published statistics" is highlighted in red, with "FIGARO" listed below it. A descriptive paragraph states: "The FIGARO project compiles EU-inter country Supply, Use and Input-Output Tables (EU-IC-SUIOTs) also referred to as the FIGARO tables."

FIGARO environmental application with air emission accounts

- *Current tables include the 28 Member States and the US*
- *The first results focus on emissions by Member States embodied in extra-EU exports*
- *Challenges for communication:*
 - **No standard terminology**
 - **Many dimensions (origin, destination, industries, countries, ...)**
 - **Communicating limitations**

CO₂ emissions by Member State due to extra-EU exports



FIGARO and environmental applications – to be done

- *Changeover from IO applications based on the single-region EU table to FIGARO multi-country table*
- *Develop a method to estimate imported emissions*
- *Investigate feasibility of changing over to a full model based on a world table (include rest-of-world)*
- *Granularity of the tables need to be improved for material flow footprints*

Final thoughts & suggestions

- *Policy makers have a large role in sustainable development*
- *Inform policy makers*
- *Not one-off, but monitoring of trends, requires regular publication of data*
- *Work towards high-quality estimates*
- *Be ready to explain different results across models*
- *Reach out to your national statistical institute*



Thank you for your attention



Maaike.Bouwmeester@ec.europa.eu