

## **Creating a global environmental database for input-output applications. Environmental extensions in the EXIOPOL project**

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### **Abstract**

The main objective of the input-output related cluster in the EXIOPOL project is to develop an Environmentally Extended Input-Output (EE I-O) database, i.e. a system of supply and use tables (SUTs) linked through international trade and extended by environmental data on the sectoral level. The database will cover the EU-27 and its most important trade partners (16 additional countries, covering over 90% of the global GDP and over 80% of the imports to the EU). Environmental extensions are divided in the two broad themes Natural resources (inputs into the economy) and Residuals (outputs from the economy) and will cover the following categories: material extraction, land occupation, energy use, water use and emissions to air, soil and water. For all countries considered in the EXIOPOL database, the team will prepare sectoral environmental data, which will be attached either to the corresponding monetary flow data in the SUTs (in the case of products) or as physical extensions to these tables (in the case of primary resources and emissions). This paper presents ongoing work in the development of the database module on environmental extensions. For each category of environmental extensions, we present the number of disaggregated categories and the main data sources used. We discuss the main limitations imposed by availability of primary data and levels of disaggregation, when applying the data in an input-output framework. We discuss how primary data is transformed into a sectoral matrix structure and how data is integrated into the overall EXIOPOL database. Finally, we provide an outlook towards how the created EE I-O database can be applied in the future to calculate environmental indicators in a world-wide context, including, among others, indicators on global warming, acidification, nitrification, and indicators on the use of materials, energy, land and water.

**Keywords:** environmentally extended input-output analysis, emissions, energy use, land appropriation, material flows, water.