Overall review of the EXIOPOL project and approach towards harmonisation of SUT and environmental extensions

Topic: Organized session: EXIOPOL
Author: Arnold Tukker

The Integrated Project (IP) EXIOPOL (A New Environmental Accounting Framework Using Externality Data and Input-Output Tools for Policy Analysis) has been set up by FEEM and TNO (being co-ordinator and scientific director) under the EU's 6th Framework Program. It has a budget of 5 Mio Euro and runs between Spring 2007 and 2011. A key goal is to to set up an environmentally extended (EE) Input-Output (I-O) framework with environmental extensions in which as many of these estimates as possible are included, allowing the estimation of environmental impacts and external costs of different economic sector activities, final consumption activities and resource consumption for countries in the EU.

The EE I-O work in project also forces scientists that worked on rather separate fields such as IO analysis (IOA) Material Flow Analysis (MFA) and Life cycle assessment of products (LCA), to organise their approaches and data in a unified framework. Where in theory such unified frameworks have been developed (e.g. SEEA, UN et al, 2003), EXIOPOL is probably one of the first projects that integrates data on such a broad scale. In this paper we want to discuss the architecture of the project, and how all data harmonization and transformation steps have been performed. This paper discusses the architecture of the proposed database, and our experiences and proposed solutions for problems related to integrating data and indicators systems that have been set up using different conventions (FEEM&TNO, 2006; Tukker et al., 2009). In short steps included:
1. Harmonizing and detailing SUT
a. Constructing Use tables in basic prices via reversed engineering
b. Detailing SUT with auxiliary data from FAO and a European AgriSAMS for agriculture, the EIA database for energy carriers and electricity, various resource databases for resources, etc.
2. Harmonizing and estimating extensions
a. Allocating available resource extraction data (e.g. FAOSTAT, Aquastat) to sectors
b. Estimating emissions on the basis of activity data and TNOs TEAM model
3. Linking the country SUT via trade
a. Splitting of Import Use tables and allocating imports to countries of exports using UN COMTRADE trade shares
b. Confronting the resulting implicit exports with exports in the SUT, adjusting differences and rebalancing via RUGs GRAS procedure
4. Importing all data in EXIOBASE developed by CML, a specially constructed database system with extensive reporting on errors and inconsistencies allowing for iterative improvement of the database.

Note: this paper is part of the EXIOPOL special session in which also papers of Heijungs/Koning en Bouwmeester/Oosterhaven will be presented, and for which a session proposal has been submitted to the scientific chair. Please put these papers in the same session.