

LCADB.SUDOE: LIFE CYCLE INVENTORIES DATABASE OF THE SOUTHWEST OF EUROPE

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ABSTRACT

LCADB.sudoe (<http://lcadb.sudoe.ecotech.cat/>) is a database of life cycle inventories of the products and process of the productive sectors of the SUDOE area. The main aim is to share life cycle data with companies, administration, research institutions and in general LCA practitioners for improving the efficiency of the productive sectors. LCADB.sudoe tries to promote the inclusion of environmental information as a decisions factor in the design of products and process.

INTRODUCTION

Data collection is one of the main parts to perform a Life Cycle Inventory (LCI) of the Life Cycle Assessment (LCA) method (ISO, 2006). During the last decades, some databases were created in order to compile consistent and transparent LCI data, such as the ecoinvent (Frischnecht et al., 2007) and the ELCD (JRC, 2012) databases at Europe level.

However, there is a lack of specific databases for the SUDOE (Spain, France & Portugal) area that include local inventory data to avoid the uncertainty of using European data (e.g. specific process and products such as: wine, cork, oil, fish, etc., differences in technology level, efficiency or transport distances). Therefore, a LCI database for the SUDOE area could provide geographic specific LCI with quality data that also focuses on themes with special importance in this regional area (e.g. water).

The main objective of this project is to develop a common database for LCI in the SUDOE region (Spain, Portugal and France) useful for projects and collaboration between the participant institutions. Furthermore LCADB.sudoe (<http://lcadb.sudoe.ecotech.cat/>) aims to be a replicable and useful data management tool for other LCA databases initiatives especially in Latin America. There are 10 topics covered in the database, as summarized in table 1.

Table1. Topic, scope and some of the specific products and process of LCADB.sudoe

Topic	Scope of topic	Specific products & process in SUDOE area
Agriculture	Intensive, Extensive, Fruit, Horticulture...	Products as: tomato, fruits, cork. Process as: machinery, agrochemicals doses, operation times, diesel.
Fishing	Fishery	Products as: tune. Process as: machinery, operation times, diesel.
Construction	Construction, mobility, street furniture	Products: construction building materials, infrastructures for recharging electrical car, street furniture products
Energy Production	Renewable & Non-renewable	Products as: biomass production, energy crops.
Waste treatment	Municipal waste treatment	Technologies and infrastructures available of SUDOE area for municipal waste treatment
Water	Municipal Waste Water treatment and Rainwater use	Technologies and infrastructures available of SUDOE area to treat and use several kinds of water
Manufacture process	General	All the production and services process involved in productive sectors of SUDOE regions.
Services		
Transport		
Use and Consumption		

MATERIALS AND/OR METHODS

The database presented in this chapter is being developed in the context of the Ecotech-Sudoe project (ECOTECH-SUDOE project, soe2/P2/E377).

An on-line application (<http://lcadb.sudoe.ecotech.cat/>) and manual of users & editors were developed to facilitate the introduction of datasets of primary data by different users (LCA practitioners, decision-makers in companies and designers and engineering's of products, processes and services, etc.) and its previous review.

Related to the inventories organization, these has 4 sections: .

- **Information:** includes all the relevant information of the project such as name, type, ID (NACE code), system boundaries (flow chart), etc.
- **LCI & Validation:** includes data about the methodology and approach used.

- **Administrative:** includes the contact details of the author for the purpose of giving feedback, asking for supporting documentation or information.
- **Inventory:** includes all the flows and components of the process.

The steps for the creation of the database are shown in Figure 1.

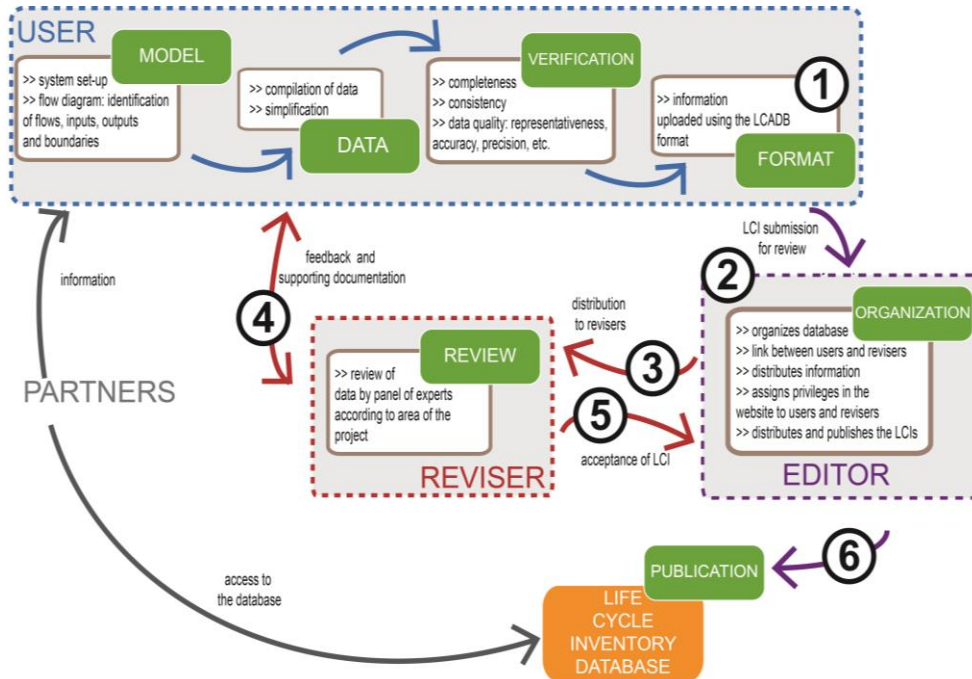


Figure 1. Steps and user of the creation of one dataset in LCADB.sudoe

The dataset is uploaded into the system and sent to the editor of the topic with the aim to be reviewed. The editors of the project organize the different LCIs, as they are the link between the revisers and users. The reviewer receives the information and evaluates the content of the inventory; the points to be assessed are: complete submission of the data in each step (i.e. all required fields completed), nomenclature according the elemental flows from the International Reference Life Cycle Data System, and the correct and sufficient information for the LCI.

The reviewer should contact the database author using the contact data provided in the forma for feedback or in the case that further documentation and/or complementary information is required. The editor, previous communication with reviewer, sets the status of the process: accepted, need to be improved, rejected. In any case the reviser notifies the editor about this decision.

RESULTS

The results of this phase were the development of the LCADB website as a tool for the database creation. The LCADB website has been tested, at user level, for more than 20 research institutions. Another result was the 2 manuals for a proper use of the tool: one for users and another for revisers & editor. The user's manual also defines the quality guidelines of the LCI data collection and the system modelling, that were created according to the



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ecoinvent (Weidema et al., 2012) and the ELCD databases (JRC, 2012) The expert's manual includes a list of the revisers per category and a checklist in order to review each of the phases of the process in the LCI and assure its completeness.

Currently the database contains more than 100 different datasets and it is provided that the total quantity rises due to the increasing participation of SUDOE & Spanish LCA research institutions in LCADB.sudoe. The inventories categories covered now are: Agriculture (72%), followed by Manufacture processes (9%), Water (5%), Energy production (4%), Cities (3%), Services (3%), Waste (2%), Fishing (2%) and Waste (1%). The inventories accessibility is 61% public, 22% public for partners and 17% private. It is also important to note that half of the inventories uploaded (48%), had been published in journals or in other scientific resources and therefore were evaluated through peer-review process.

CONCLUSIONS

The LCADB.sudoe is a useful tool for compiling consistent and transparent data of local and specific products & processes of the Sudoe area.

Regarding to complete and share life cycle inventory (LCI) data with other existing life cycle databases like ecoinvent and ELCD, we are still working to develop an informatics data management tool capable to export and import datasets. An expert committee with high expertise in LCA has been configured for the review process to secure a high quality, uniform and useful LCI database.

This project fulfils its final objective of improving productive sectors of the Sudoe area (South of France, Spain and Portugal) by giving access to useful information about processes in 10 different categories to LCA practitioners, decision-makers in companies and designers and engineering's of products, processes and services. The database is oriented to public and private participants, national and international. Furthermore LCADB.sudoe aims to be a replicable and useful data management tool for other LCA databases initiatives especially in Latin America.

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