INTEGRATION OF QUEBEC WOOD INDUSTRY DATA IN THE QUEBEC LCI DATABASE: HOW CAN THE INDUSTRY DIRECTLY BENEFIT?

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1 LIFE CYCLE ASSESSMENT (LCA) AND LIFE CYCLE INVENTORY (LCI) DATA

Life Cycle Assessment (LCA) provides a holistic assessment and a structured methodology for making better-informed decisions. Policy makers and stakeholders worldwide use LCA as input for carbon footprinting, GHG reporting, benchmarking, ecodesign, marketing, EPDs, responsible procurement and policy decisions. Of particular relevance to the timber industry, LCA is increasingly used in the building sector to evaluate and compare the environmental footprint of competing building materials.

The cornerstone of all LCA studies is Life Cycle Inventory (LCI) data, i.e. data that quantifies the inputs and outputs of individual processes along a product’s life cycle (e.g. extraction activities, manufacturing processes, product use and end-of-life processes) and describes how these processes are interconnected.

Any product, from a simple wood plank to a complex electronic device, is ultimately connected to countless processes, hundreds of which may be significant in the context of a study. Since it would be impossible to generate, in the context of a given study, LCI data on all processes of interest, LCA practitioners heavily rely on LCI databases, which contain quantitative data on the inputs and outputs of individual processes as well as on how these processes are interconnected.

High-quality LCA studies require high-quality and representative LCI data. When these are unavailable to LCA practitioners, it can lead to variable results and reduced methodological credibility. Several LCI database initiatives have come forth worldwide, but remain isolated and regional. In addition, LCI is arguably the most time-intensive methodological step and is the main culprit for the high costs of LCA studies.

2 QUEBEC LCI DATABASE PROJECT

Until recently, there was no LCI database that appropriately represented the Quebec industrial and economic context. The Quebec LCI Database project began in 2010 when the Quebec government (MDDEP) awarded the Interuniversity Research Centre for the Life Cycle of Products, Processes and Services (CIRAIG) $1.5M CAD for its development, recognizing the need for such an initiative to support the government’s sustainability goals. The Quebec government also saw a clear opportunity to generate reliable data on the environmental advantage conferred by the availability of hydropower, and hence enhance industry competitiveness internationally.

The starting point for this three-year project was a Quebec adaptation of the world-renowned Swiss ecoinvent database. The ecoinvent database is built according to a strict methodological guide [1], and each dataset is reviewed by a panel of editors, both contributing to the consistency and quality of the database. The Quebec LCI database is the first National Database Initiative to have joined ecoinvent in a major undertaking towards a global LCI database [2].

In total, the three year project allowed the creation of over 900 datasets, over 44% of which specifically represent Quebec processes. These datasets are available both as data integrated in the global ecoinvent LCI database and as standalone data via the CIRAIG website.

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3 WOOD PRODUCT DATA IN THE QUEBEC LCI DATABASE

The forestry and wood product sector was identified as a priority from the onset of the project. Datasets were created for saw log, sawn wood, engineered wood joist, wood siding, glued laminated timber and oriented strand board.

The main finding of that data collection is that the environmental impact of softwood saw log from Quebec is generally underestimated by the corresponding pre-existing LCI datasets that the industry would use. However, this is compensated by the use of hydroelectricity for some finished products.

Although the project is formerly finished, data collection on wood harvesting and processing is still taking place as part of wood product LCI database project. This project consist of collecting LCI data from the Quebec wood product industry with a web interface (www.icv-lci.ca), in order to produce an automated summary sheet describing the carbon footprint of the product of the data provider.

4 USING THE LCI DATABASE

The principal use of the Quebec LCI database in general, which applies to the wood data, is to make available high quality and relevant LCI data. There are multiple ways the wood industry can benefit from these data.

The most obvious and important use of the LCI data is as a basis for the wood industry to provide credible information on the environmental footprint of Quebec-sourced wood products in order to influence purchasing or design decisions. Indeed, this type of information is increasingly used by architects and developers that have to choose between different materials for specific applications.

Even if actors of the wood industry decide not to actively push this type of data through, e.g. the production of Environmental Product Declarations (EPDs), the data will still be in wide use due to its inclusion in the most widely used LCI database, and will still be included in LCA-based footprinting tools.

The industry can also use the data as a means to benchmark their environmental performance. Indeed, the database contains what is considered to be generic, average data. A given company can easily use the LCI datasets as templates for data collection and as a benchmark against which to evaluate its performance.

5 CONTRIBUTING TO THE LCI DATABASE

Although the Quebec LCI database project is finished, it is still possible to submit data that either updates or improves existing data or that defines processes for products hitherto unavailable in the LCI database. Companies and industrial associations can, alone or in partnership with LCA experts, collect data on the inputs and outputs of the target processes and integrate these in the Quebec LCI database.

By supporting and instigating data creation and update projects, the wood industry will ensure that the users of life cycle based environmental information will have access to the most up-to-date data. This prevents the wood industry from being unduly penalized by LCA based on LCI data that is outdated or not entirely representative of the technology used to produce e.g. a given structural product.

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REFERENCES
