



Materials Science & Technology

## Press release

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*Applied research serving the environment*

# Leading Life-Cycle Assessment database significantly expanded

*More and more commercial organizations want definitive information about the environmental effects of their products and activities. The tool they use to achieve this aim is life-cycle assessment, a process which helps to quantify the resources consumed during the entire lifetime of a product and the emissions which it causes during this time. The Swiss Centre for Life Cycle Inventories, an organization set up by the ETH Zurich and Lausanne, Empa, Paul Scherrer Institute (PSI) and Agroscope Reckenholz-Taenikon (ART), located in Duebendorf at Empa and known in short as the ecoinvent Centre, has been providing harmonized, quality-assured life-cycle assessment data for the past five years, information which makes this task significantly easier. In November 2007 a substantially extended and updated Version 2.0 of the ecoinvent data was released. At an international meeting in Lausanne on March 14<sup>th</sup> 2008 the applications of the ecoinvent data in industry, research and politics are discussed in detail and the new content presented to an international audience.*

When the myClimate Foundation works out the equivalent compensation value of the CO<sub>2</sub> emissions caused by air traffic or Migros, a Swiss retailing chain, awards it most climate friendly products the "CO<sub>2</sub> Champions" label, when members of the eco-bau association calculate the environmental impact of different types of buildings or the Swiss Directorate General of Customs defines the conditions for a positive ecobalance of biogenic fuel – the common factor in the background of all these activities is the use of life-cycle assessment data publicized by the ecoinvent Centre. The database is in demand in the rest of Europe too, providing for example generic data used in tools for the environmental evaluation of different management systems treating municipal waste (such as WRATE, Waste and Resources Assessment Tool for the Environment, in the UK) or products ("Bilan Produit", an online tool used in France). Data from the ecoinvent database is comprehensive, transparent, harmonized and of assured quality, which means it can be tailored to suit a particular application and so create a flexible basis for customers from industry, research and the authorities.

### **Multifaceted range of uses**

At the symposium, the database's wide range of uses is illustrated with examples drawn from the most varied backgrounds. The revised regulations covering the mineral oil tax in Switzerland require that fuels

derived from renewable raw materials produce less environmentally damaging emissions and show a positive ecobalance in total. The life cycle inventory data collected in the database and very clearly documented in the course of the recent extension is indispensable for the enforcement of this new law, as Mathias Tellenbach, Head of the Consumer Goods Section of the Swiss Federal Office for the Environment (FOEN) explains. Environdec, the leading European organization for issuing environmental product declarations (EPD), recommends the use of the database as a source of information when preparing such declarations covering electric power and district heating. Ms Birgit Bodlund, Senior Advisor on Environmental Issues at Vattenfall, a Swedish power utility, explains in her presentation that the environmental product declarations issued by her organization are also based on information from the ecoinvent database. She praises the transparency of the database, which permits her to critically and independently evaluate the quality of the data being used. Scientists at renowned universities in Europe, North America and Asia are using the ecoinvent data collection as a rich source of information of guaranteed quality to assist them in finding answers to the variegated questions thrown up in the course of their research activities. Mark Huijbregts, a researcher and lecturer at Radboud University in Nijmegen, Holland, uses the database, for example, to demonstrate in which areas the environmental impact of products and services correlates with their fossil primary energy demand. This is a valuable result, because it shows in which cases a greatly simplified and therefore very economic energy balance provides an adequate approximation of the environmental impact of a particular product.

#### **Data set substantially extended and updated**

Over the past four years the database has been significantly expanded and, in selected areas, updated. Today there are about 4000 data sets available to the over 1200 clients in more than 40 countries. The extension of the database has taken place primarily in the areas of biogenic fuels and renewable raw materials, information and communication technology, metal treatment and compressed air, specialty chemical products and petrochemical solvents, new energy technologies and electricity mixes of new EU member states, Asian and American countries, and also European and American agricultural products. Empa has, as an example, prepared life cycle inventory data, which can be applied in a modular way, on the manufacture, usage and disposal of computers (both desktop and laptop) and printers, parts such as printed circuit boards and hard drives and components including integrated circuits (ICs) and diodes. The work also encompasses the life cycle inventories of the metals which are use in electronic components such as gold, silver indium and tantalum. The range of ecobalance data on chemicals has been extended by the ETH Zurich's Institute for Chemical and Bioengineering (ICB) to cover petrochemical solvents and specialty chemical products. The PSI has produced a life cycle inventory dealing with energy supplies in the USA, and in particular has also widened and increased the sophistication of the database coverage in the area of road transport. In addition to refining the existing emission models for nitrates and heavy metals, ART has also recently added ecobalance data on European and American farming products to ecoinvent. The company ESU-services has created life cycle inventories for metal treatment and machining processes such as deep drawing, milling and drilling, as well as for compressed air supplies covering systems of various capacities and air pressures. Basler & Hofmann has contributed ecobalance data on novel devices such as stirling engines, microturbines and fuel cells, and a consortium of private ecobalance consultants and research

institutes have added life cycle inventory data on fuels and fibers made of renewable raw materials. The latter case provided the data on which the new tax regulations mentioned earlier are based.

Data sets covering road and rail transport, photovoltaics and mixed electric power from European countries, and plastics and cardboard have been updated.

The work carried out in extending and updating the ecoinvent database was financed by the Swiss Federal Offices for the Environment, for Energy and for Agriculture, by national and international industrial associations, through income derived from the sale of database licenses and through internal funding.

### Handing over the baton at the ecoinvent Centre

The conference on 14<sup>th</sup> March 2008 also marks the occasion of a change of leadership at the ecoinvent Centre. The incumbent Managing Director, Rolf Frischknecht, has over the past ten years managed and led the conception and creation of the database system, its development and the introduction of Version 1.0, followed by the expansion and update work culminating in the recent release of Version 2.0. Annette Koehler and, recently Mireille Faist Emmenegger have provided support in the marketing and sales areas. From March 17<sup>th</sup>, Bo Weidema and Roland Hischier will take over the management of ecoinvent. Bo Weidema, as new Managing Director of the ecoinvent Centre, will be responsible for implementing strategy and for business development. As Deputy MD, Roland Hischier will take responsibility for operational matters, coordinate product development and is the contact person for marketing and sales matters.

### For more information:

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The "naturemade star" eco-power certification, represented here by the biogas plant in Silvaplana-Surlej, Switzerland, is based partly on ecoinvent data.

Image: Raetia Energie

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