

Research Center of
 Mining and
 Metallurgy
CIMM

Life Cycle Inventories of the Latin-American Electricity Production Systems
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Research Center for Mining and Metallurgy and the University of Concepción, Chile;
 National Technological University, Argentina;
 Technological University of Parana and the University of Sao Paulo, Brazil;
 Catholic University of Perú;
 Mexican Center of LCA and Sustainable Development;
 Ecoglobal and ALCALA from Costa Rica.

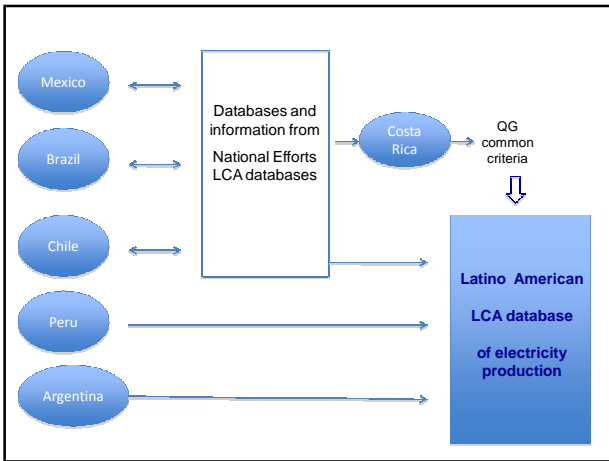
International Workshop on Worldwide efforts on LCA Databases. Tokyo, 8 of February of 2010

The project focuses on the capacity building for developing Regional LC Inventories. Also in establishing general rules for harmonization of sound and comprehensive life cycle inventory data and information.

- Training and capacity building workshops in all countries.
- Students (Brazil, Peru, Chile, Argentina)
- E-learning platform for communication among partners, and for virtual courses to be given by the International partners for capacity building (A.P. Arena – Argentina)
- Quality Guideline (A. Quirós – Costa Rica)
- Data gathering and processing (all countries except Costa Rica)
- Critical review of the project deliverables (review panel)




↓
 PRé - M. Goedkoop
 Empa - R. Hirschler
 IRTA, Spain - R. Irusta
 University Rovira i Virgili – F. Castells
 University of Portugal – Susana Xará



Quality Guideline

- ◇ Brazilian LCI
- ◇ Mexican LCI
- ◇ Chilean Mining and Energy LCI

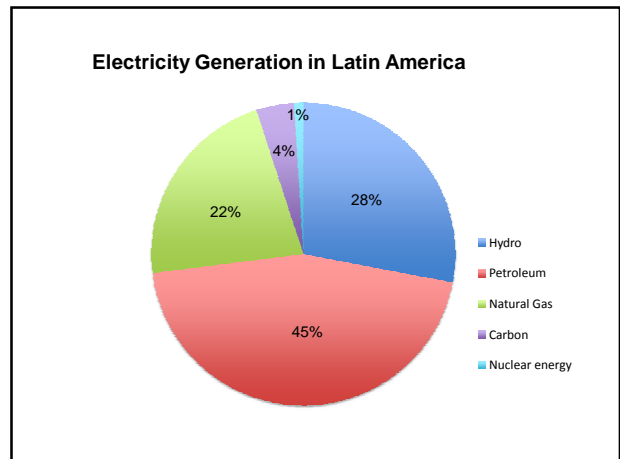


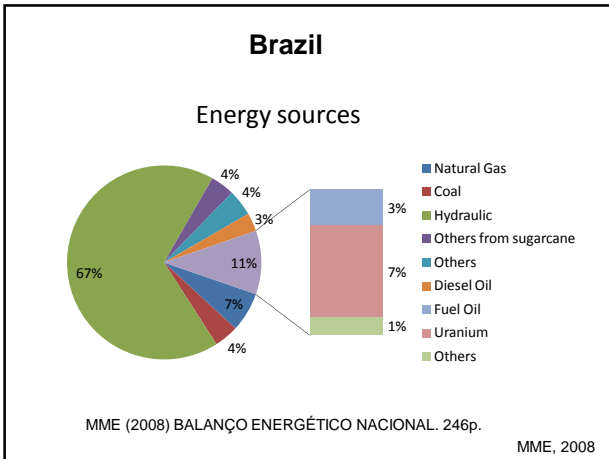
To define common criteria to establish

- a supporting base for data documentation and verification,
- statistical rules for inclusion (filters),
- measurements for uncertainty

LCA Databases

- The databases are being built in [Sima Pro](#).
- In case of a lack of data will be compensated with data from [Ecoinvent](#) database.
- Such an approach requests that all datasets are to be developed on a [unit process level](#) and are accompanied by a transparent and comprehensive documentation.





Electricity production systems

	Thermo	Hydro	Nuclear
Argentina	X	X	X
Brazil	X	X	X
Mexico	X	X	X
Peru	X	X	
Chile	X	X	

Each country is building the LCI database using common protocols / rules for LCI data.

Chilean LCI of electricity production

CIMM - University of Concepción

Cradle to Gate

Functional unit: the production of one mega watt-hour (MWh) of electricity at the power plant gate.

System boundaries: include all operations from primary fuel extraction, fuel transportation to the power plant and the actual energy transformation. Plant or dam construction, maintenance operations and waste management are also included.

System breakdown:

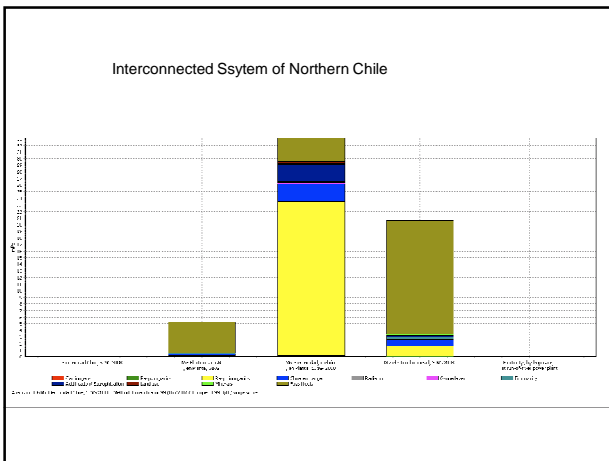
- SING:
 - Thermo electric plants: carbon, diesel, natural gas
 - 90% of population
- SIC:
 - Hydro electric plants (60%)
 - Thermo electric plants (40%)

Data Collection

institutional information, such as sustainability reports, environmental monitoring reports, is complemented with reports from the National Energy Commission and the Electricity load distribution centre, to determine:

- Electricity mix in SING and SIC over the time period of 15 years.
- Number and location of power plants.
- Type of electricity generation system per plant.
- Installed power capacity.
- Type of generation technology.
- Primary energy source.
- On Yields.
- Specific fuel consumption
- Electricity generated over the time span.
- Atmospheric emission data (partial coverage from monitoring).

Ecoinvent database is used to provide information on emissions and waste generation, as well as on production infrastructure. Since most fuels are imported, associated environmental loads are also estimated using Ecoinvent.



Peruvian LCI of electricity production

Pontifical Catholic University of Perú

Cradle to Gate

Functional unit: the production of one mega watt-hour (MWh) of electricity at the power plant gate.

System boundaries: Plant or dam construction, maintenance operations and waste management are also included.

Data collection: public information, which was later corroborated with interviews and surveys.

Plant Name	Capacity (MW)	Technology	Location
Alfonso Ugarte	1013	Hydro	Mantaro
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