

Expanding and Updating the Economic Input-Output Life Cycle Assessment Website

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Green Design Institute

- **Research and educational programs to develop practical pollution prevention and waste reduction technologies, methods, and tools for sustainable development. Started 1992 as university initiative.**
- **Focused on:**
 - **Interdisciplinary, systems research**
 - **Industry, agency and societal needs**
 - **Development of practical methods and tools**
 - **Educational activities**
- **Participants from:**
 - **Engineering**
 - **Economics and Business Management**
 - **Science**
 - **Architecture**
 - **Social and Decision Sciences**
 - **Computer Science/Robotics**

EIO-LCA: Internet Based Life Cycle Assessment

- Cradle to grave analysis
- Model developed at Carnegie Mellon in 1995
- Available on Internet since 1999
 - Only easy to use, free, complete LCA model in world
- Over 1 million uses to date, thousands of registered users
- <http://www.eiolca.net/>
- Data and model increasingly valuable, especially with carbon footprinting interest.



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Carnegie Mellon

Example Output: GWP \$ 1 M Water, Sewer and Pipeline Construction

Sector	Emissions (Metric Tons CO ₂ Equiv.)			
	GWP	CO ₂	CH ₄	N ₂ O
Water, sewer, & pipeline construction	387	387	0	0
Power generation and supply	124	123	0	0
Cement manufacturing	57	57	0	0
Truck transportation	56	55	0	1
Iron and steel mills	55	55	0	0
Oil and gas extraction	21	4	17	0
Waste management & remediation services	20	3	17	0
Petroleum refineries	18	18	0	0
Air transportation	9	9	0	0
Coal mining	9	1	8	0
Pipeline transportation	8	4	4	0
Total for all 491 sectors	899	829	51	8

Why Use Economic Input-Output Models for LCA?

- Can use to scope problem – where are major impacts in supply chain?
- Can use as a check on process based models – alternative approach, consistent boundary.
- Can use in hybrid analysis to reduce effort and to improve accuracy.

Current EIO-LCA Models on www.eiolca.net

- **United States Models**
 - [1997 Industry Benchmark producer price](#)
 - [1997 Industry Benchmark purchaser price](#)
 - [1992 Industry Benchmark](#)
 - [1992 Industry Mini](#)
 - [1997 Pennsylvania \(PA\) state](#)
 - [1997 West Virginia \(WV\) state](#)
 - [1997 PA + WV combined state](#)
- **International Models**
 - [2002 Canada Industry Account](#)
 - 1995 Germany Industry Account
 - [2002 Spain Industry Account](#)

2002 Benchmark Model

- Revised input-output transaction matrix released 2008.
- 450 Sectors (versus 480 in 1992)
- Impact vectors: GHG, energy, conventional air emissions, toxics emissions, hazardous waste, water use
- Matlab version being tested.
- Documentation underway.

Copyright Problems

- www.eiolca.net is a professional service, not a supported product.
- Public data is used, but there is considerable work in data management.
- Data has been downloaded for commercial use for carbon footprinting, contrary to our 'fair use' copyright.

Conclusions

- Variety of eio-lca models available.
- Widely used tool.
- 2002 Benchmark coming.
- Would like to improve functionality of interface.
- Commercial use copying is vexing.