Uncertainty sources in the life cycle assessment of construction products in Brazil

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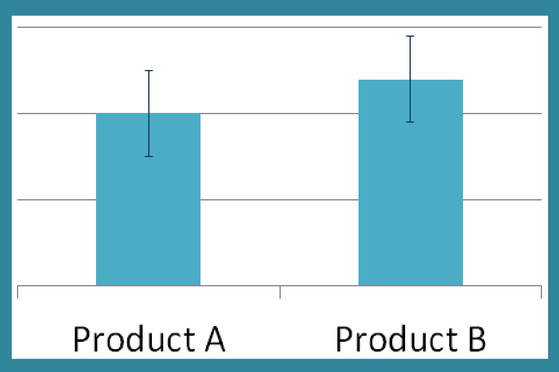
Context and Goal

- Uncertainty estimation is important in LCA, especially when comparing product alternatives



- Question : what is the main source of uncertainty in LCA : the process itself or upstream and downstream processes?

- Analysis of 09 construction products in Brazil

Methods

- LCI : product manufacturing - primary data collection (factory / literature) | upstream and downstream - Ecoinvent 3.2 global datasets

- Data quality assessment : Pedigree matrix universe: 01 factory (EPD)

- LCIA : IPCC 2013 - 100 years' timeframe

- GWP coefficient of variation : Monte Carlo sampling with 10.000 interactions

- CV distribution between itself and upstream / downstream processes : ANOVA

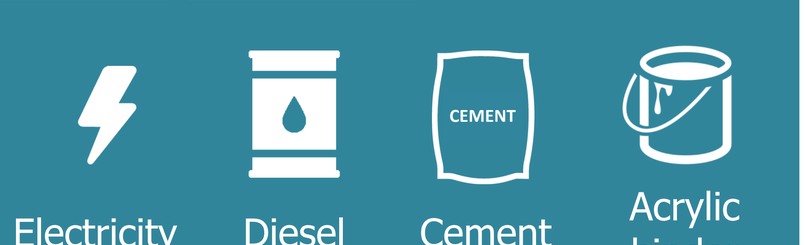
Construction products

cradle-to-gate

Results

CV of GWP (%)	Upstream or downstream (%)	Process itself (%)	
10.4	**78**	22	Clay block
21.1	**95**	5	Sand
15.1	**65**	35	Gravel
13.0	**82**	18	Concrete block
21.8	**97**	3	Concrete
18.2	**78**	22	Mortar
9.5	**60**	40	Acrylic painting
18.3	13	**87**	Sawnwood (native)
16.5	23	**77**	Sawnwood (planted)

Main contributors to uncertainty



Conclusions

- CV values for GWP indicator range from 9,5% to 21,1% - importance of considering uncertainty in LCA studies

- Upstream processes are a major uncertainty source in LCA of construction products

- Improving data quality of construction products requires better data for upstream processes: importance of a national database to increase LCA reliability

- Main upstream contributors: can help to define priorities for data collection

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