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### ► To cite this version:

Fernanda Belezario Silva, Olga Satomi Yoshida, Rachel Horta Arduin, Carolina Almeida Souza, Cladia Echevenga Teixeira, et al.. Uncertainty sources in the life cycle assessment of construction products in Brazil. VII International Conference on Life Cycle Assessment in Latin America, Jun 2017, Medellin, Colombia. 2017. hal-01944331

**HAL Id: hal-01944331**

**<https://hal.science/hal-01944331>**

Submitted on 19 Dec 2018

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

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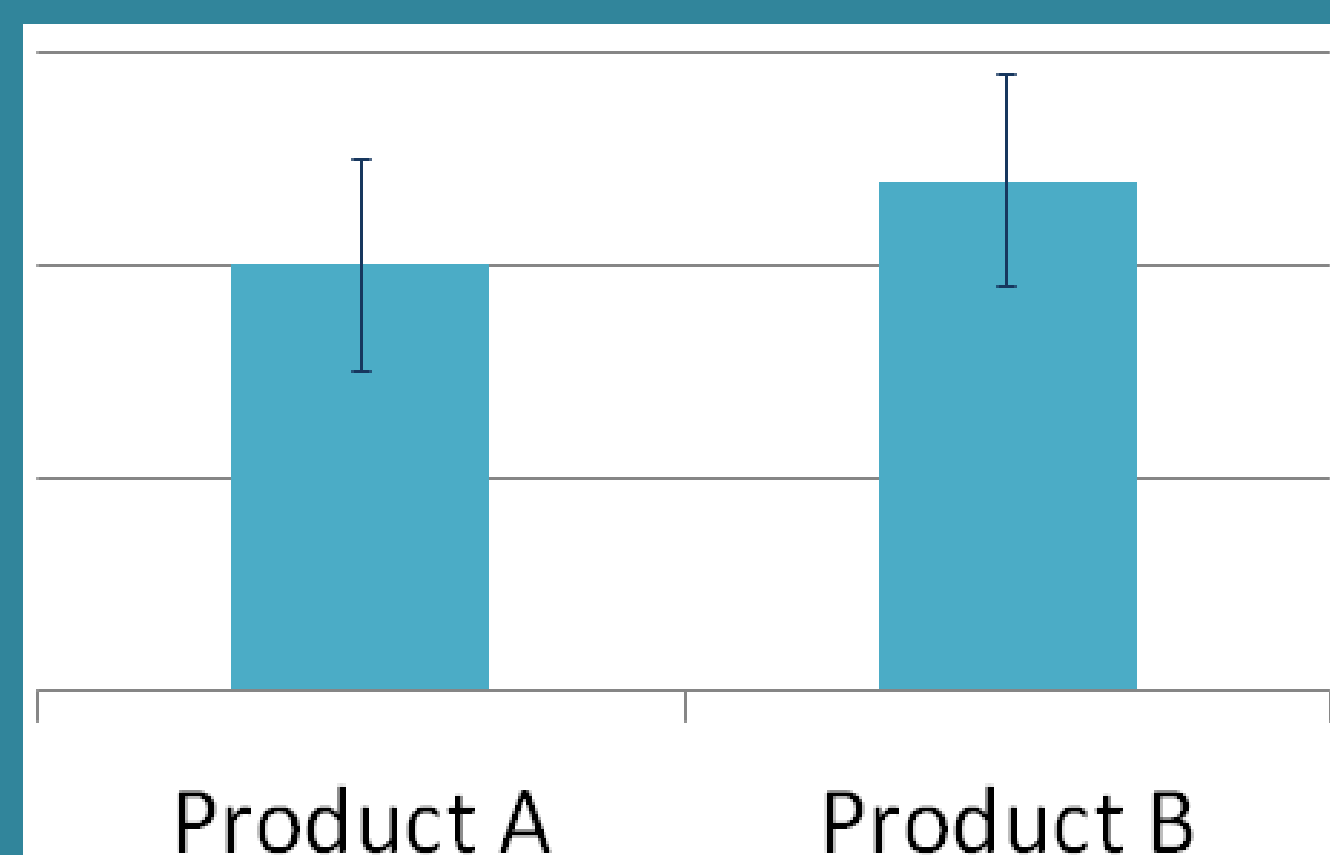
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## Context and Goal

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



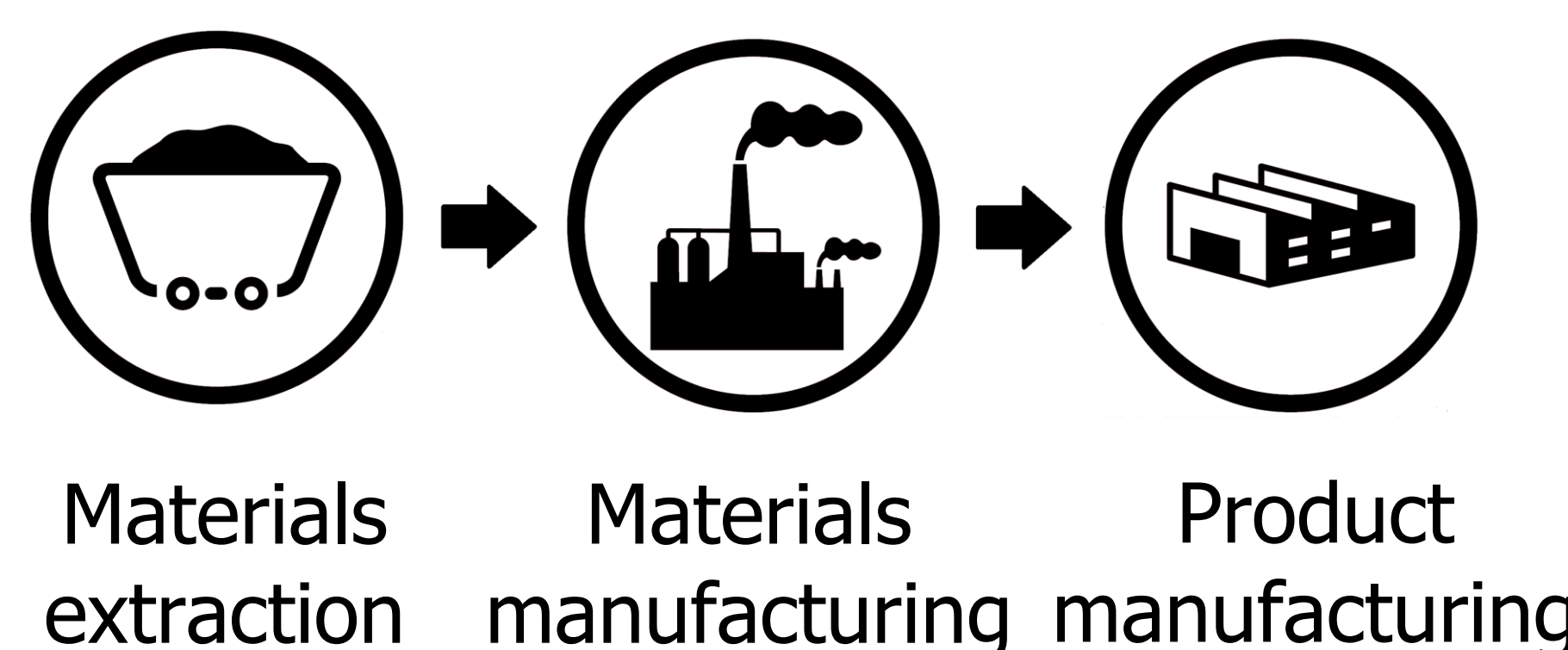
- Question : what is the main source of uncertainty in LCA : the process itself or upstream and downstream processes?

- 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

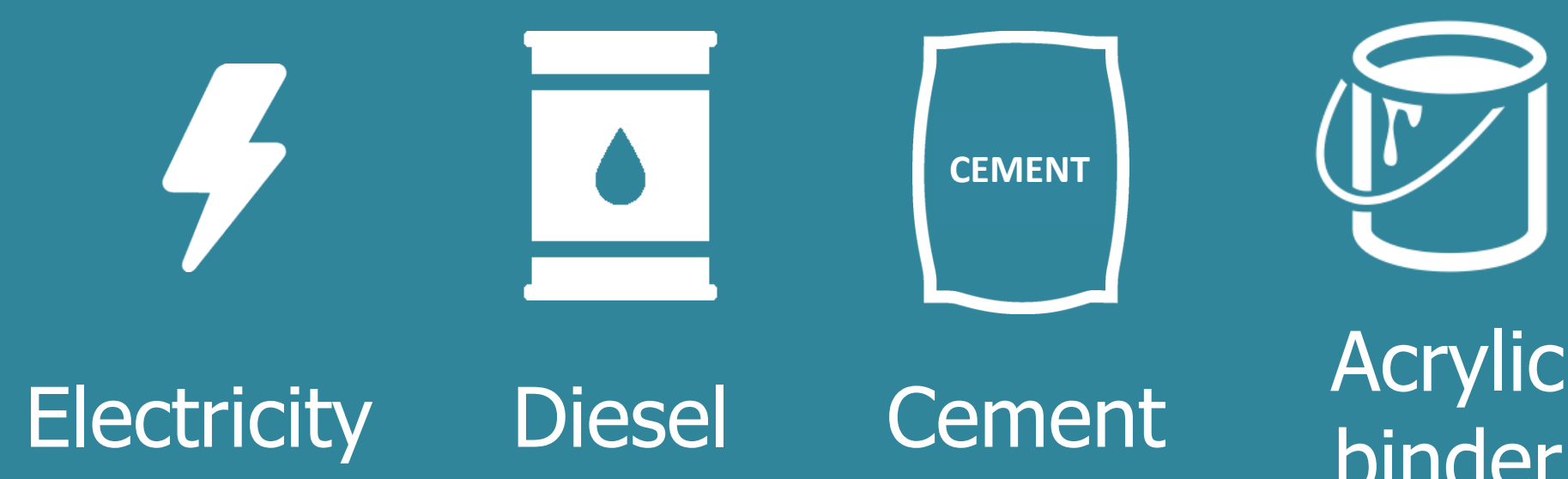


## cradle-to-gate

## Results

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