



Solution Architect for Global
Bioeconomy & Cleantech Opportunities



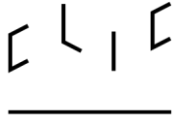
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Material Value Chains

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Helena Dahlbo

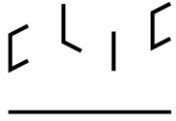
Finnish Environment
Institute

Material flow analysis of plastic for Finland

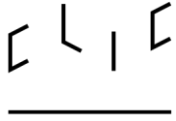


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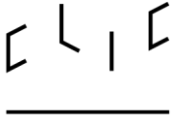
1. Introduction



Purpose of the project

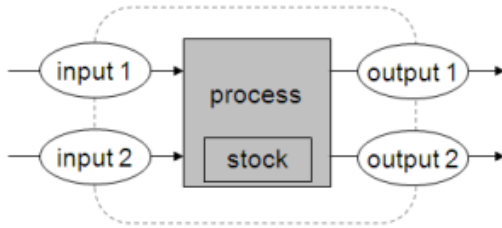
Establish the Finnish national plastics budget for 2013

- Use material flow analysis to investigate and quantify all plastic flows in Finland
- Identify the key processes, flows and stocks of the plastics budget

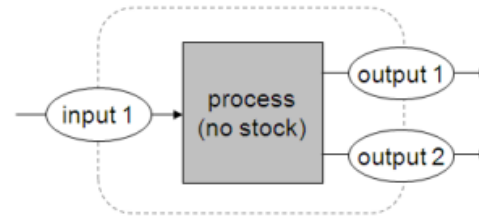


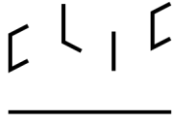
Principles of material flow analysis

1. Mass conservation
e.g. balance equation
sum of inputs = sum of outputs + change in stock

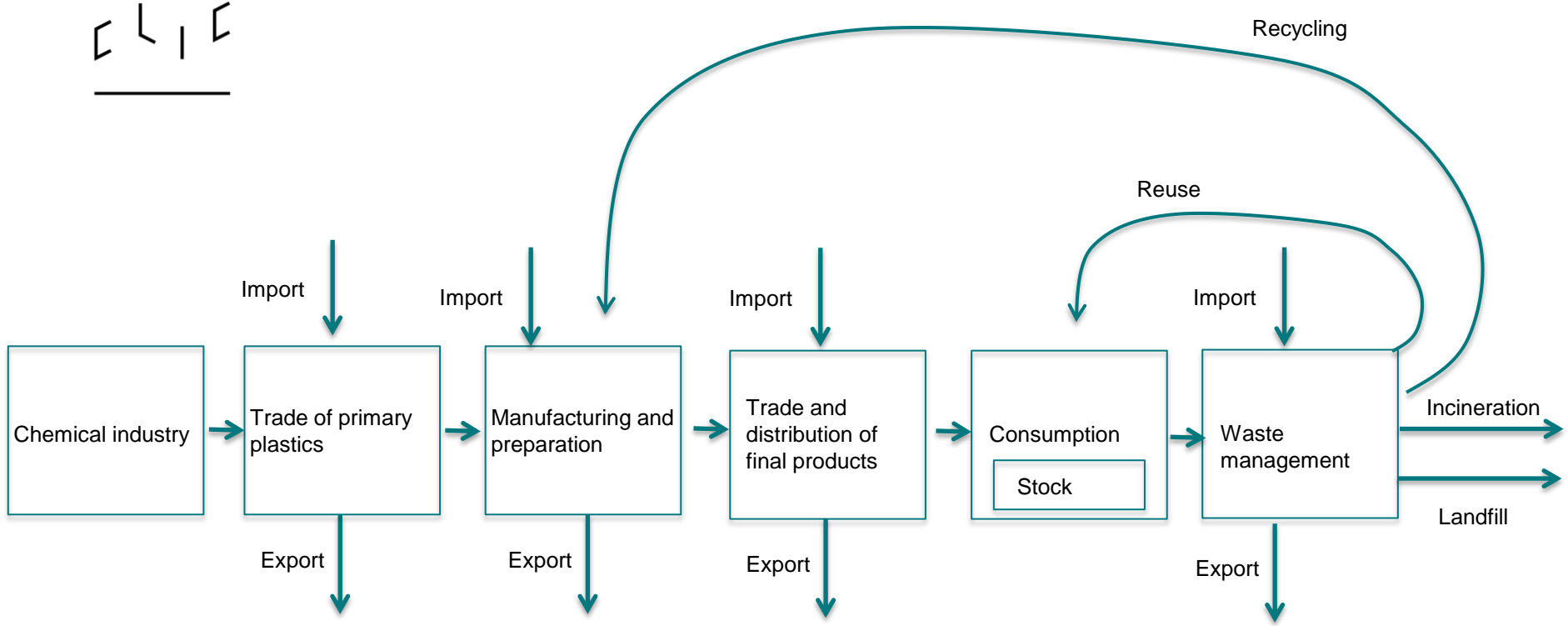
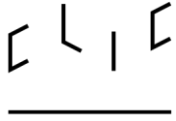


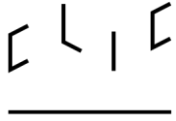
2. Linear relations
e.g. transfer coefficient equation
output 1 = TC1 * Sum of inputs
output 2 = TC2 * Sum of inputs
with TC1 + TC2 = 1



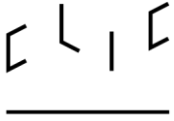


2. System definition





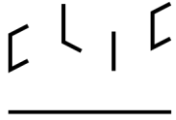
3. Uncertainty characterization



Uncertainty characterization

Necessary because of:

- Data limitations
- Limited system understanding
- Many different data sources with varying quality and appropriateness

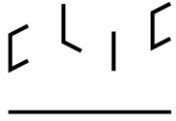


Uncertainty characterization

Data quality indicator	Sensitivity level	Score: 1	Score: 2	Score: 3	Score: 4
		Coefficient of variation (CV, in %)			
Reliability	-	2.3	6.8	20.6	62.3
Completeness/temporal/ geographic/other	High	0.0	4.5	13.7	41.3
	Medium	0.0	2.3	6.8	20.6
	Low	0.0	1.1	3.4	10.3
Expert estimate	-	4.5	13.7	41.3	124.6

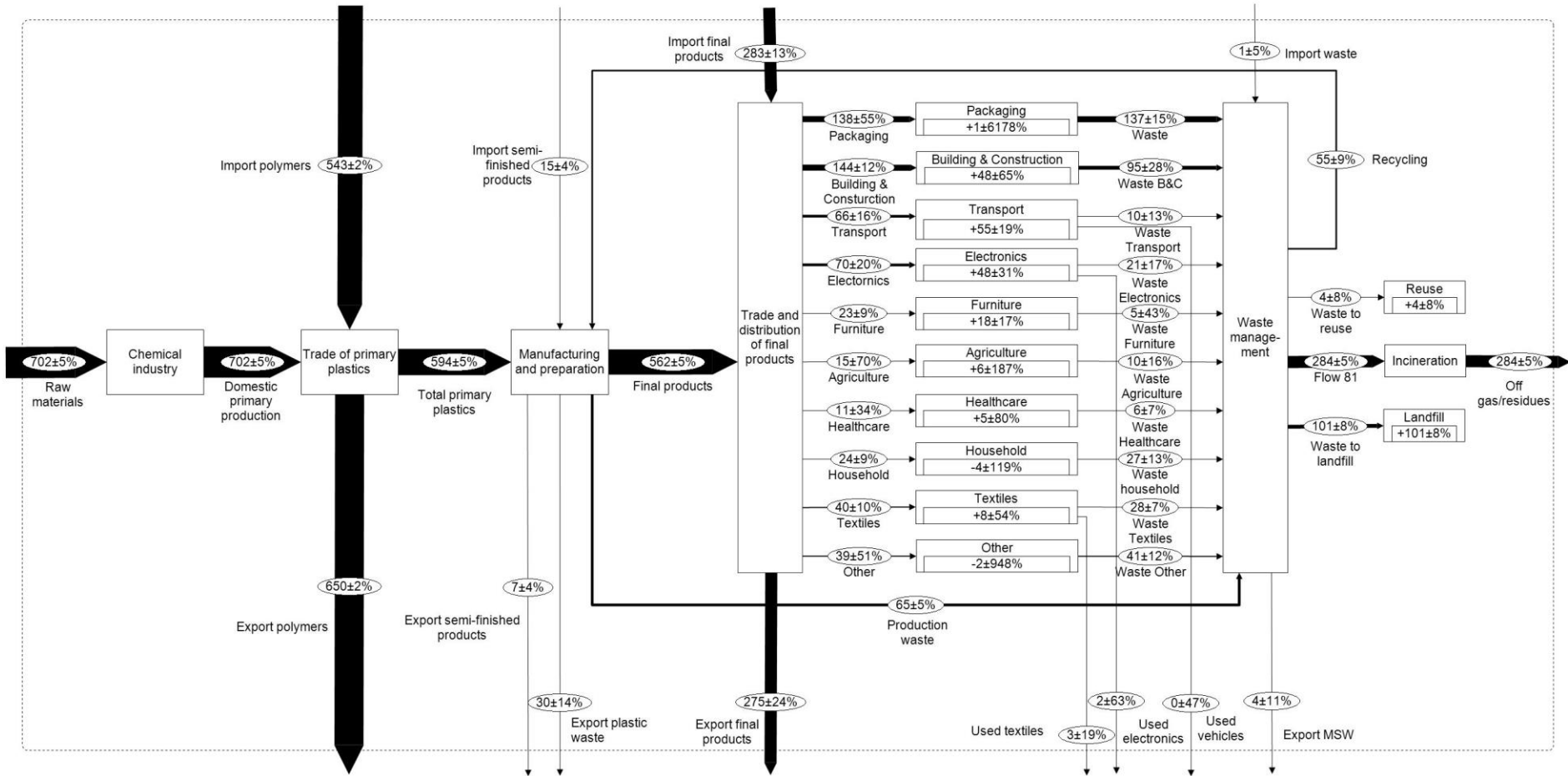
Total uncertainty of data point:

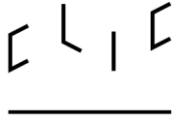
$$CV_{total} = \sqrt{CV_{reliability}^2 + CV_{completeness}^2 + CV_{geogr.corr.}^2 + CV_{temp.corr.}^2 + CV_{othercorr.}^2}$$



4. Finnish national plastic budget

Finnish national plastic budget in 2013





Thank you for your attention!

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