Using ecoinvent for EPD – four issues and one solution

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Issue 1 – LCI indicators

- Difficult to estimate

- Not clearly defined in standards

- Many EPDs have INA = indicators not assessed

- Some however have «-», empty or sometimes zero when not zero.

Resource use

Parameter	Unit	A1	A2	A3	A1 - A3	A4	A5	B1	B2
RPEE	MJ	23	0,17	21	43	0,75	1,86	0	3,5E-03
RPEM	MJ	0	0	1,22	1,22	0	0	0	0
TPE	MJ	23	0,17	22	45	0,75	1,86	0	3,5E-03
NRPE	MJ	544	12,37	8	565	33	10	0	2,4E-03
NRPM	MJ	0	0	0,24	0,24	0	0	0	0
TRPE	MJ	544	12,37	9	565	33	10	0	2,4E-03
SM	kg	INA	INA	INA	INA	INA	INA	0	INA
RSF	MJ	INA	INA	INA	INA	INA	INA	0	INA
NRSF	MJ	INA	INA	INA	INA	INA	INA	0	INA
W	m^3	162	6,8E-01	0,09	163	3,24	15	0	0,03

Parameter	Unit	B3	B4	B5	C1	C2	C3	C4	
RPEE	MJ	1,1	56	0	0	0,01	8,9	0	
RPEM	MJ	0,02	1,24	0	0	0	0	0	
TPE	MJ	1,13	57	0	0	0,01	8,9	0	
NRPE	MJ	12	623	0	0	0,98	1,88	0	
NRPM	MJ	0,00	0,24	0	0	0	0	0	
TRPE	MJ	12	623	0	0	0,98	1,88	0	
SM	kg	INA	INA	0	0	INA	INA	0	
RSF	MJ	INA	INA	0	0	INA	INA	0	
NRSF	MJ	INA	INA	0	0	INA	INA	0	
W	m^3	4	188	0	0	0,05	3,08	0	

RPEE Renewable primary energy resources used as energy carrier; RPEM Renewable primary energy resources used as raw materials; TPE Total use of renewable primary energy resources; NRPE Non renewable primary energy resources used as energy carrier; NRPM Non renewable primary energy resources used as materials; TRPE Total use of non renewable primary energy resources; SM Use of secondary materials; RSF Use of renewable secondary fuels; NRSF Use of non renewable secondary fuels; W Use of net fresh water

End of life - Waste*

Parameter	Unit	A1	A2	A3	A1 - A3	A4	A5	B1	B2
HW	kg	INA	INA	INA	INA	INA	INA	0	INA
NHW	kg	INA	INA	0,02	0,02	INA	0,51	0	INA
RW	kg	INA	INA	INA	INA	INA	INA	0	INA

Parameter	Unit	B3	B4	B5	C1	C2	C3	C4	
HW	kg	INA	INA	0	0	INA	INA	0	
NHW	kg	0,17	8,42	0	0	INA	7,72	0	
RW	kg	INA	INA	0	0	INA	INA	0	

HW Hazardous waste disposed; NHW Non hazardous waste disposed; RW Radioactive waste disposed; INA Indicator not assessed
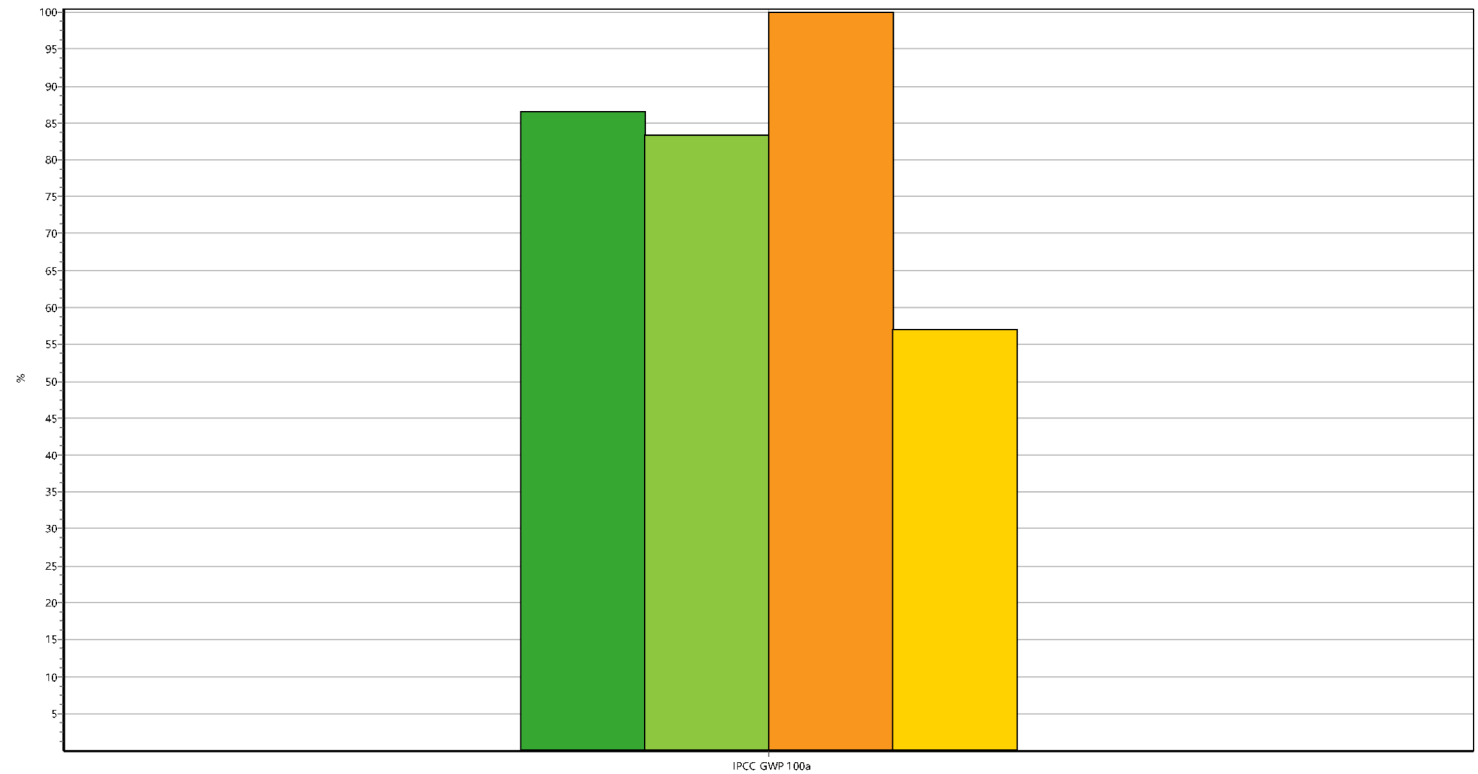*Results for waste only include direct wastes and not the indirect wastes from upstream and/or downstream processes.

End of life - Output flow

Parameter	Unit	A1	A2	A3	A1 - A3	A4	A5	B1	B2
CR	kg	INA	INA	INA	INA	INA	INA	0	INA
MR	kg	INA	INA	0,01	0,01	INA	0,04	0	INA
MER	kg	INA	INA	0,012	0,012	INA	0,47	0	INA
EEE	MJ	INA	INA	INA	INA	INA	INA	0	INA
ETE	MJ	INA	INA	INA	INA	INA	INA	0	INA

Parameter	Unit	B3	B4	B5	C1	C2	C3	C4	
CR	kg	INA	INA	0	0	INA	INA	0	
MR	kg	1,8E-02	1,8E+00	0	0	INA	1,75	0	
MER	kg	6,5E-02	6,5E+00	0	0	INA	5,97014	0	
EEE	MJ	INA	INA	0	0	INA	INA	0	
ETE	MJ	INA	INA	0	0	INA	INA	0	

CR Components for reuse; MR Materials for recycling; MER Materials for energy recovery; EEE Exported electric energy; ETE Exported thermal energy; INA Indicator not assessed
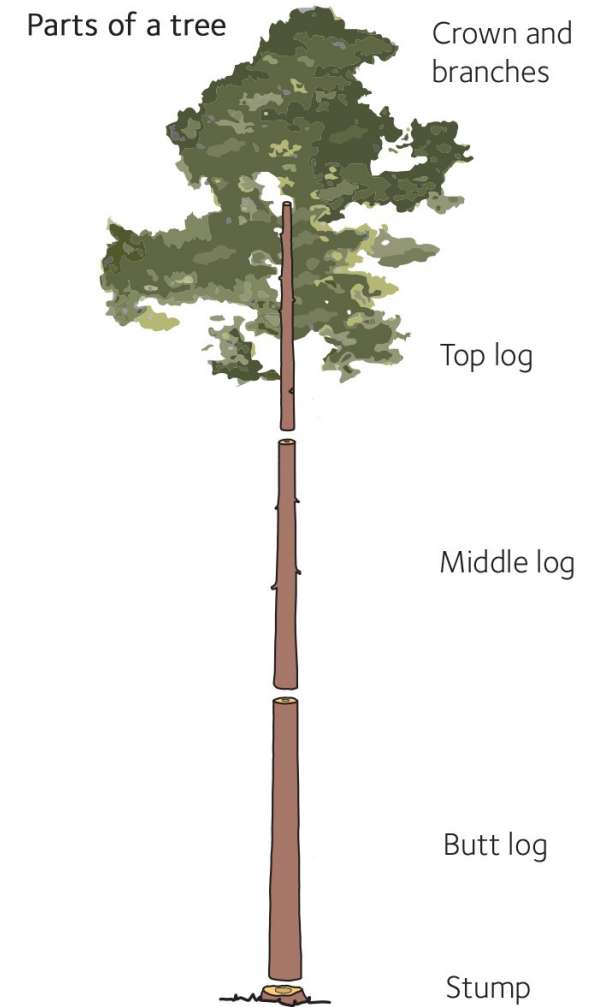
Reading example: 9,0 E-03 = 9,0*10^{-3} = 0,009

SUSTAINABLE INNOVATION

Issue 2 – no clear overall rule on co-product allocation

Illustration: Swedish wood

Issue 3: Forestry allocation correction in Ecoinvent v2.2 – solution in ecoinvent 3.x does not work in SimaPro

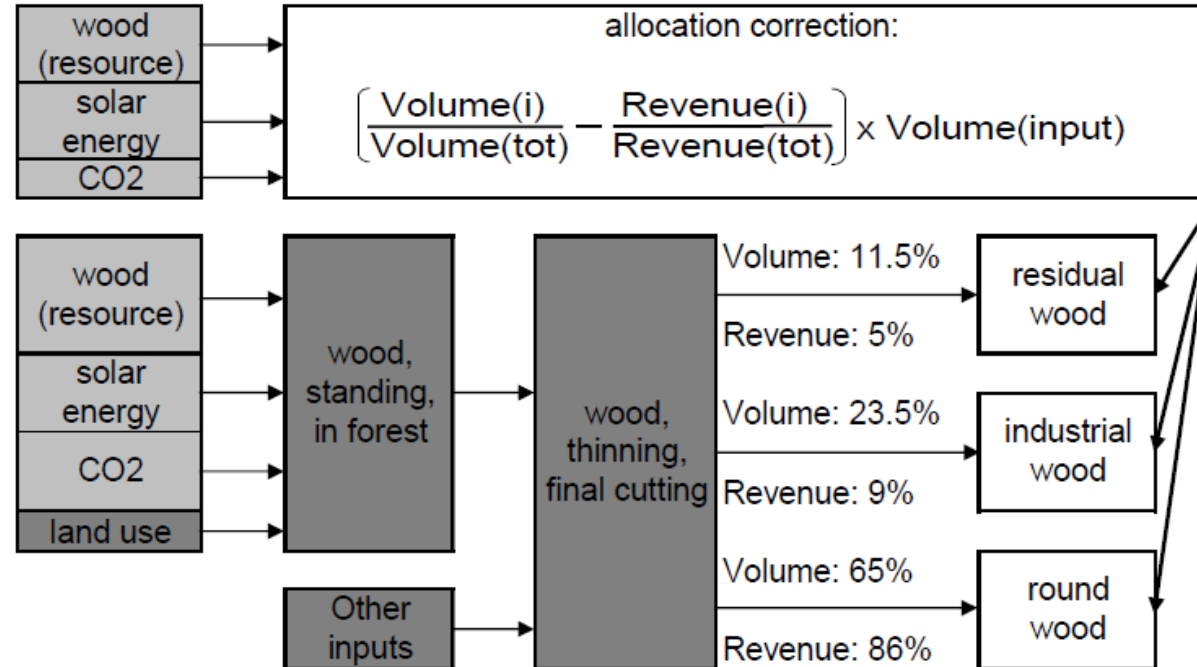| Use of renewable primary energy resources used as raw materials	MJ, net calorific value

Fig. 5.2   Example for use of allocation correction modules

Issue 4 – Representativeness and modules of datasets for products and waste

- Module C and D will be mandatory for EPD

- Datasets needs to be representative for a specific products and waste composition

- Interaction between «Market» and «Transformation» processes are often not real

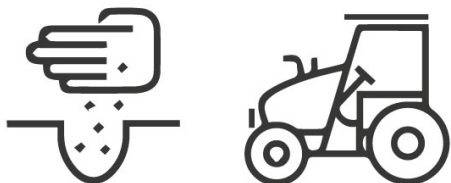- More about waste in the special session on module C and D

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One solution – database of modified LCI processes

- Adjust ecoinvent processes to LCI for EPD library. Alloc Rec ➡ EN 15804
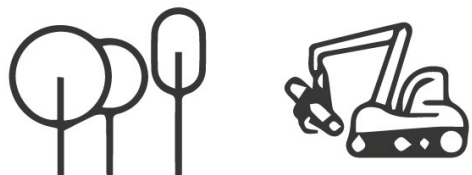
Raw-data

National activity
data from statistics
[m^2, m^3, kg, hr, etc. /year]

Silvilculture

Harvesting

Foreground inventory

Activities allocated to
product inventories
[m^2, kg, hr, etc. /m^3 of log]

Spruce sawlogs

Spruce pulpwood

Pine sawlogs

Pine pulpwood

Process-data

Greenhouse gas
emission data
[kg CO_2-eq./m^2, kg, hr, etc.]

Background
inventories
from ecoinvent

Impact assessment
from EN 15804

Impact assessment

Fossil greenhouse gas
emissions of forest products
[kg CO_2-eq./m^3 of log]

Spruce sawlogs

Spruce pulpwood

Pine sawlogs

Pine pulpwood

Thank you

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NorEnviro

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Furniture and textiles

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