

# How to use EPD to improve sustainable manufacturing in the building industry

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## ENVIRONMENTAL PRODUCT DECLARATION ISO 14025 ISO 21930 EN 15804



Eier av deklarasjonen  
Programoperatør  
Deklarasjonsnummer  
Godkjent dato  
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Spenncon AS  
Næringslivets stiftelse for Miljødeklarasjoner  
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SØYLE B45 M45  
Produkt

CONSOLIS  
SPENNCON

Spenncon AS  
Eier av deklarasjonen



NEPD-15-223-NO Spenncon, SØYLE B45 M45

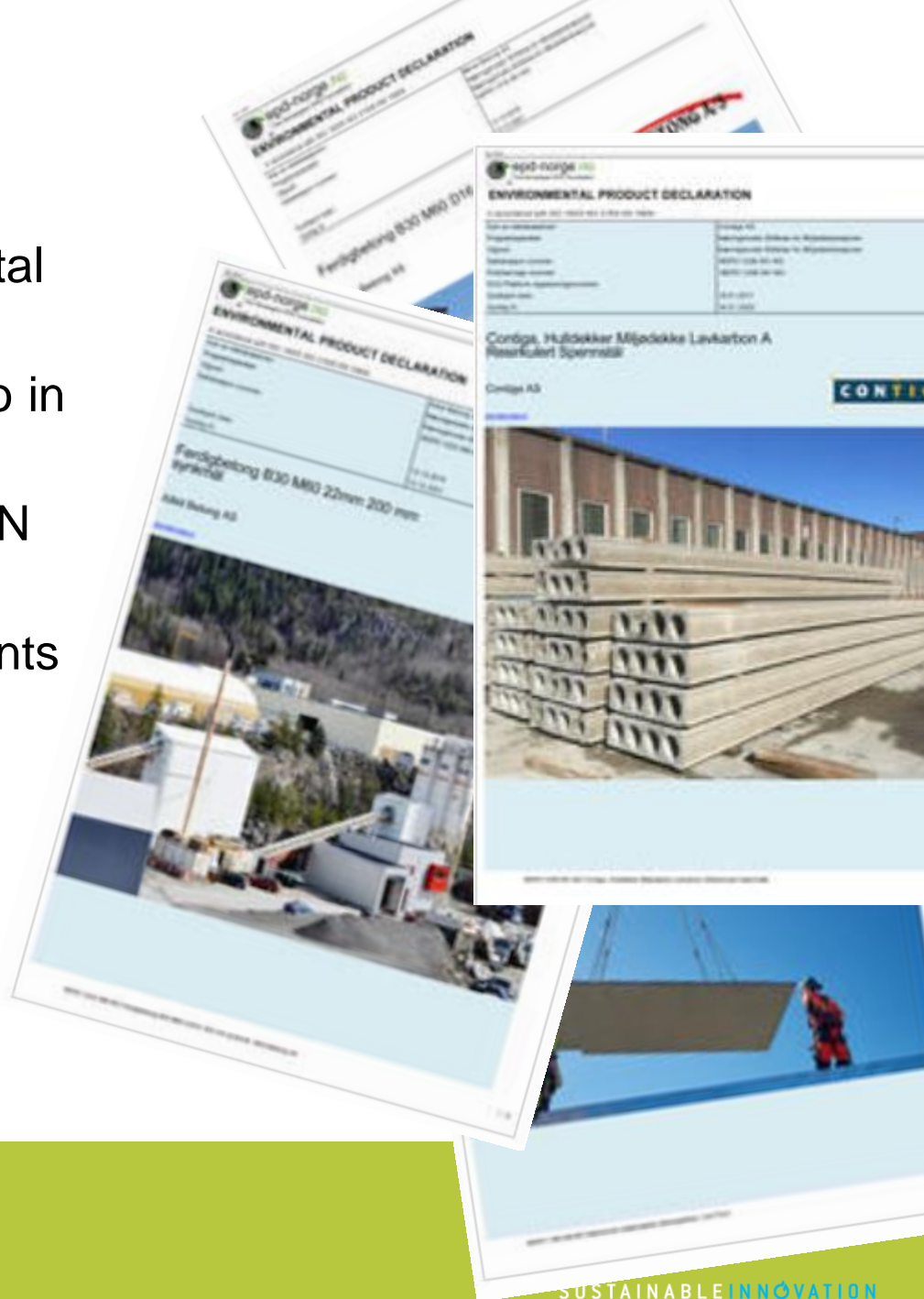
# Ostfold Research – National Research Center

- In Fredrikstad, Norway
- 24 researchers with expertise in sustainable innovation and LCA
- Value chain perspective – Life Cycle Assessment (LCA)
  - Documentation of Sustainability of goods, processes and services
  - Network based innovation processes



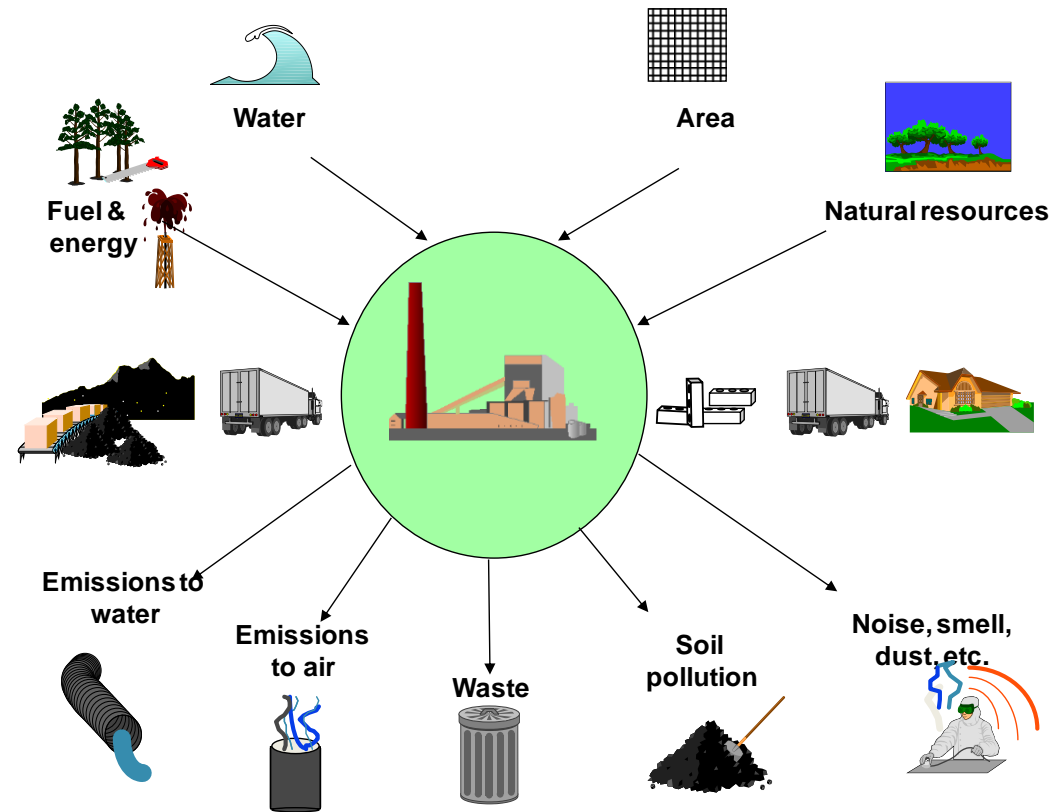
# What is an EPD?

- Third party verified environmental declaration
- Administrated by EPD-Norge.no in Norway.
- Regulated through ISO and CEN standards
- Based on Life Cycle Assessments (LCA)



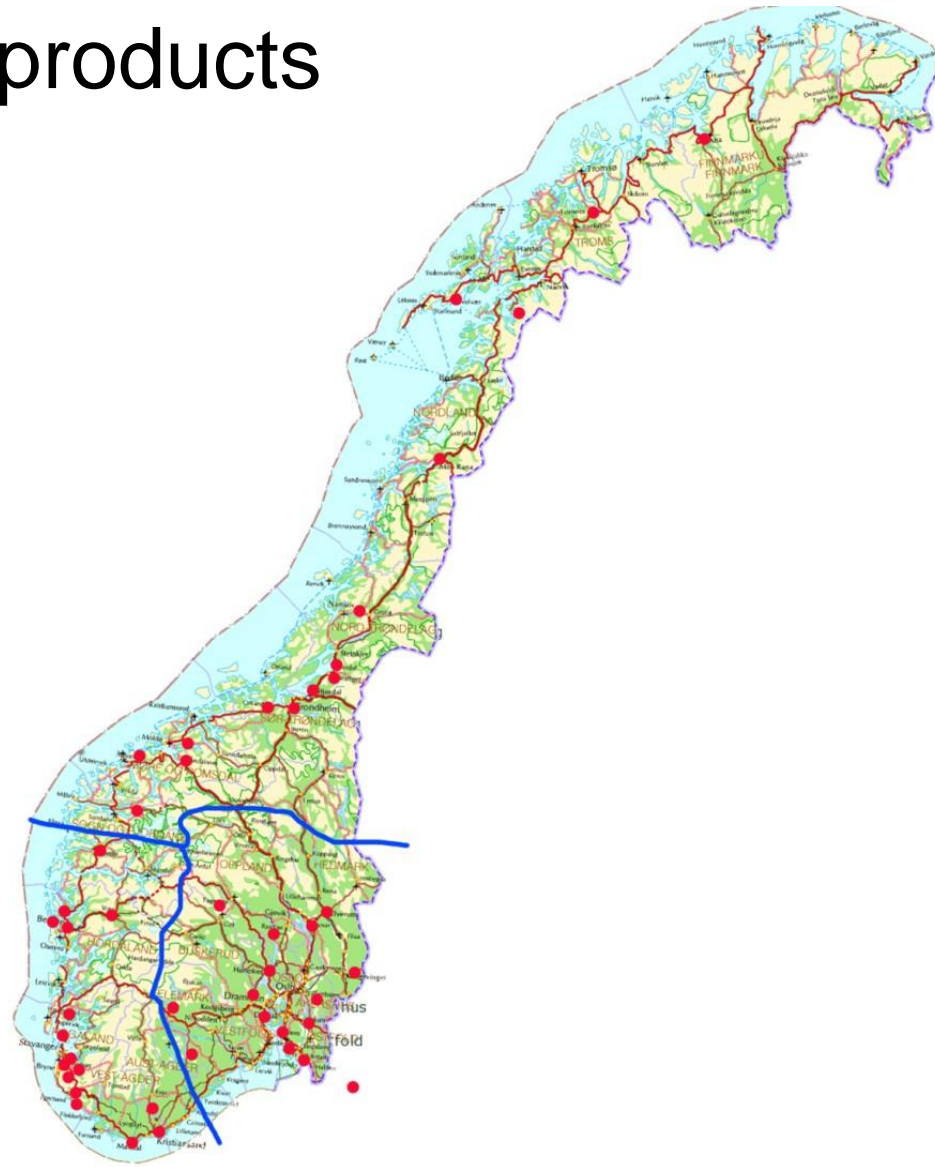
# What is LCA?

- Life cycle assessment
- Environmental profile from raw material to end of life
- Based on ISO 14040 and 14044



# EPD tool for concrete products

- Simplifies the LCA process and enables to easily develop EPDs for a large number of products and producer
- EPDs generated are in accordance with PCR for Precast Concrete Products (EPD Norway)
- Work with new PCR has started (to adapt to the new European PCR, EN 16757)





# EPD calculation tool

## Data library

### Raw materials

- Cement
- Aggregates
- Additives

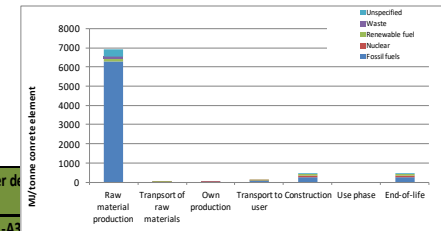
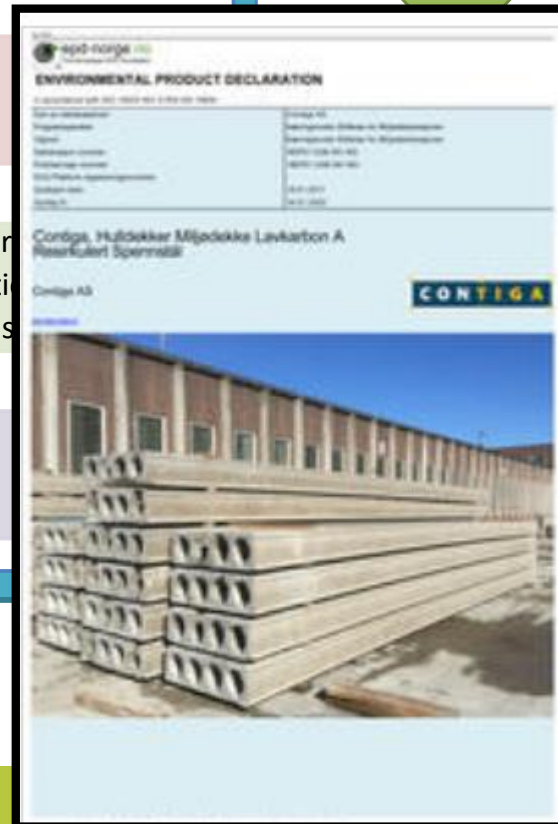
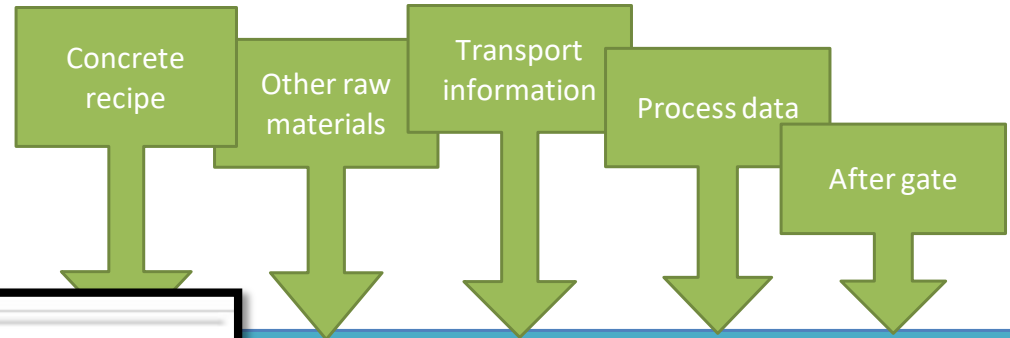
### Energy

- Electricity production
- Fuel extraction
- Fuel combustion

### Transport

- Vehicles
- Energy use
- Load

## Registration unit



	Unit	Per d				
		A1-A3				
	kg	64,63	2,14	66,77	22	
	kg PO <sub>4</sub> <sup>2-</sup> -ekv	1,06	0,08	1,14	0,38	
ential	kg C <sub>2</sub> H <sub>2</sub> -ekv	0,392	0,005927	0,40	0,134	
	kg CFC-11-ekv	0,00001	0,03	0,03	0,010	
	kg SO <sub>2</sub> -ekv	1,73	0,22	1,95	0,65	
00 yrs	kg CO <sub>2</sub> -ekv	516,30	40,08	556,38	187	

# How can this contribute to future environmental planning and manufacturing?



EPD as security for environmental choices in tenders.

EPD as basis for product development in the industry



# Decision makers in construction projects

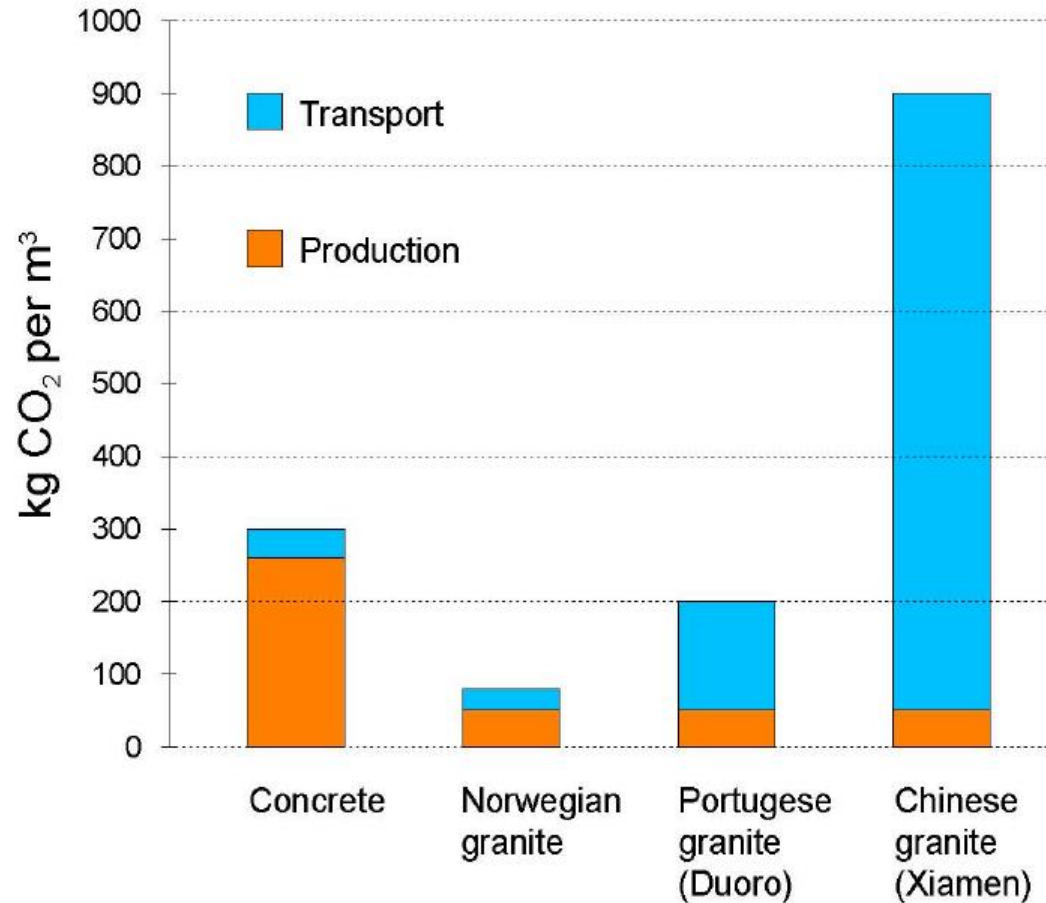
Use the most environmentally friendly solutions

- Compare numbers
- Look at them in relation to their own priorities and objectives

CEM II Anlegg FA				CEM II Standard FA			
A1	A2	A3	A1-A3	A1	A2	A3	A1-A3
2,07	15,63	619,64	637,34	1,86	9,39	619,64	630,89
1,05E-07	1,87E-06	2,38E-06	4,35E-06	7,74E-08	1,08E-06	2,38E-06	3,54E-06
0,015	0,021	0,051	0,087	0,015	0,013	0,051	0,079
0,08	0,17	0,89	1,15	0,08	0,13	0,89	1,11
0,02	0,02	0,27	0,32	0,02	0,01	0,27	0,31
2,51E-04	8,53E-06	1,48E-04	4,07E-04	6,52E-05	8,02E-06	1,48E-04	2,21E-04
22,30	231,70	2 440,17	2 694,17	19,47	147,20	2 440,17	2 606,84



# Important with decision on the correct basis





# The industry

## What and how to improve?

### Three important questions

- What are the main environmental impacts from this system?
- Where in the lifetime do they occur?
- Which parts of the system have the greatest potential for environmental improvement?

#### ENVIRONMENTAL PRODUCT DECLARATION

ISO 14025 ISO 21930 EN 15804

Eier av deklarasjonen

Programoperator

Utgiver

Norcem AS

Næringslivets Stiftelse for Miljødeklarasjoner

Næringslivets Stiftelse for Miljødeklarasjoner

EPD Norge LOGO



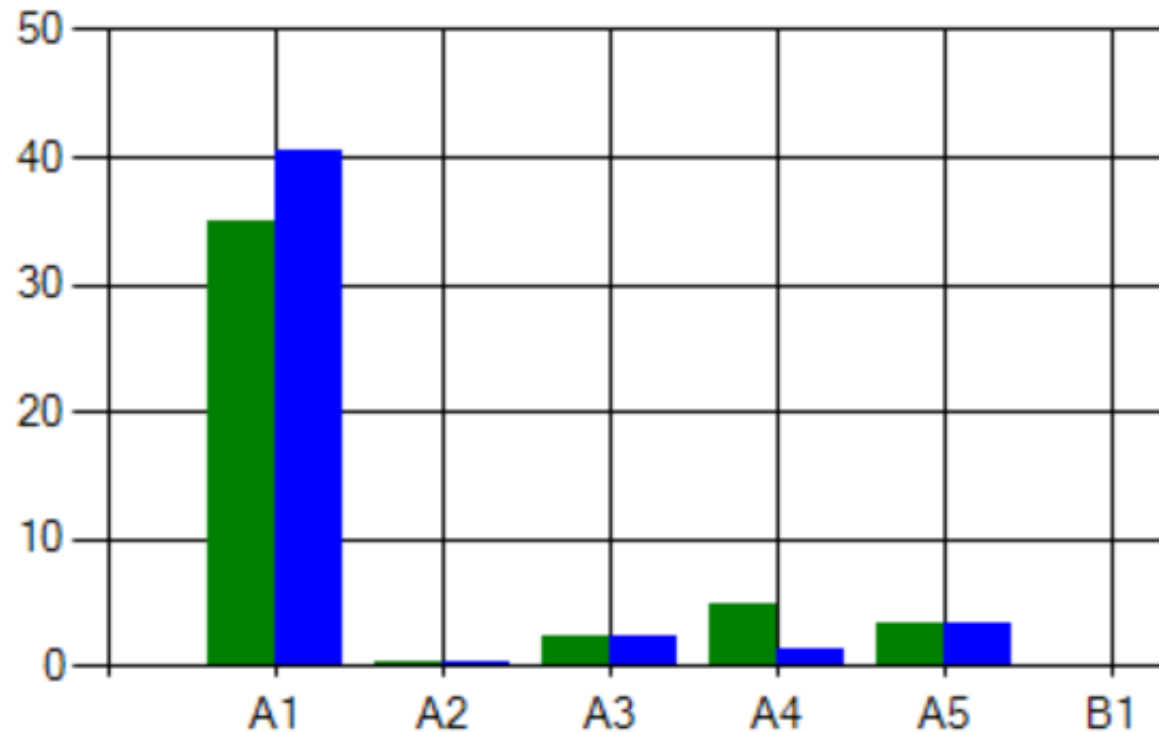
Klimadeklarasjon

#### miljøpåvirkning

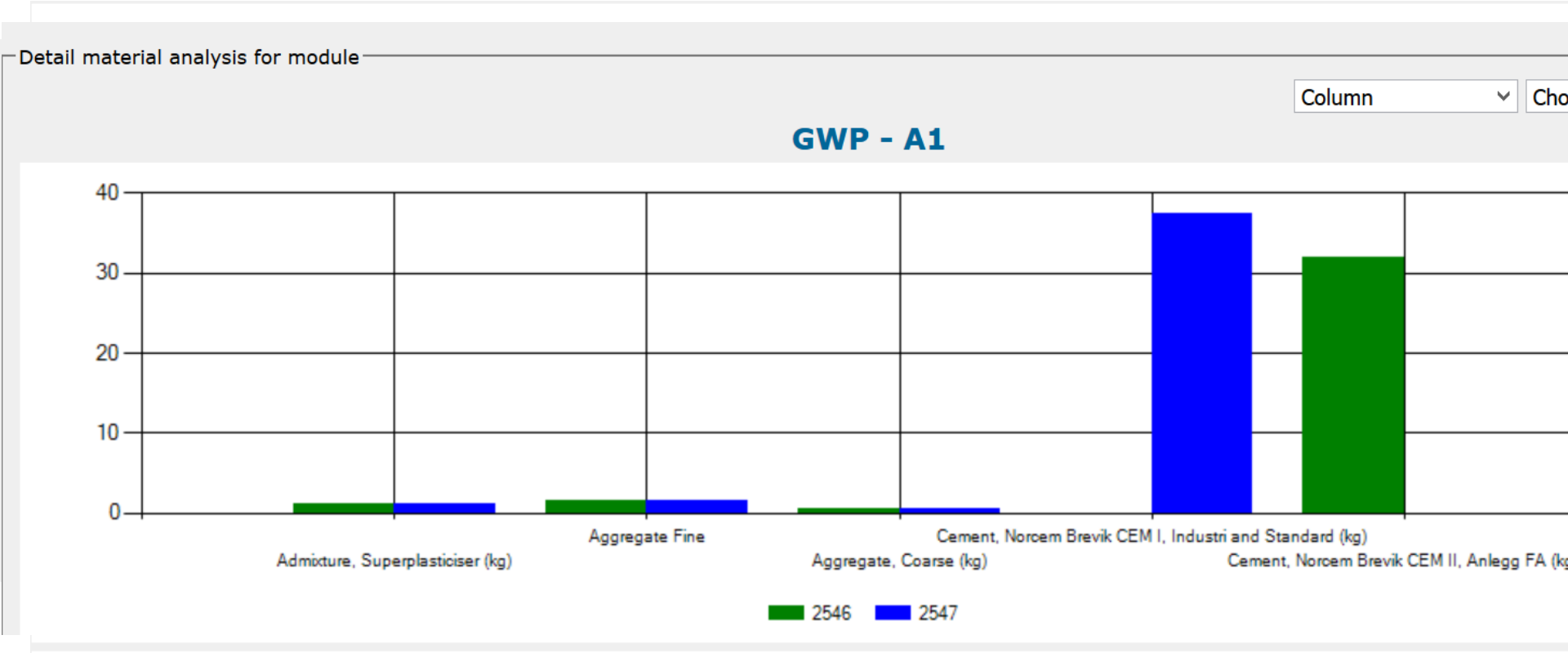
#### CEM II Anlegg FA

Parameter	Enhet	A1	A2	A3	A1-A3
global klimendring	kg CO <sub>2</sub> -ekv	2,07	15,63	619,64	637,3
uttømmingspotensial for atmosfærisk ozonlag	kg CFC11-ekv	1,05E-07	1,87E-06	2,38E-06	4,35E-06
uttømmingspotensial for atmosfærisk fotokjemiske stoffer	kg ethene-ekv	0,015	0,021	0,051	0,08
utotteringspotensial	kg PO <sub>4</sub> <sup>-3</sup> -ekv	0,08	0,17	0,89	1,1
utotteringspotensial for land og vann	kg SO <sub>2</sub> -ekv	0,02	0,02	0,27	0,3
biotisk uttømmingspotensial for ikke-fossile ressurser	kg Sb-ekv	2,51E-04	8,53E-06	1,48E-04	4,07E-04
biotisk uttømmingspotensial for fossile ressurser	MJ	22,30	231,70	2 440,17	2 694,1

# Different parts of the life cycle affect the environmental profile of a concrete product to varying degrees.



# Impacts through the life cycle



From the analysing module in the EPD-generator

# What now?

## **Near future, continue**

- increase demand for EPD of materials and solutions
- implement EPDs as support in decision making processes.

## **More efforts on:**

- communication of the properties of concrete in e.g. user phase.
- scenarios for consequences different concrete products may have on energy use, maintenance, adaptability etc in different buildings and use patterns.
- CO<sub>2</sub> uptake



# Conclusions

- For the Concrete Industry:
  - Time efficient
  - Cost efficient
  - Input to own product development
  - Input to supplier management
- Overall benefits from the tool:
  - More EPDs available
  - Objective, comparable, credible due to third party verification
  - Possibilities
  - Support in decision making processes
- Challenges :
  - From material to solution
  - User phase and CO2 uptake

# Thank you!



**Norsk Fabrikkbetongforening**  
Norwegian Ready Mixed Concrete Association



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