

The Dutch LCA and EPD database for building assessments

Structure, management and
control structure

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Short history of Dutch database

The wish to harmonise existing practice

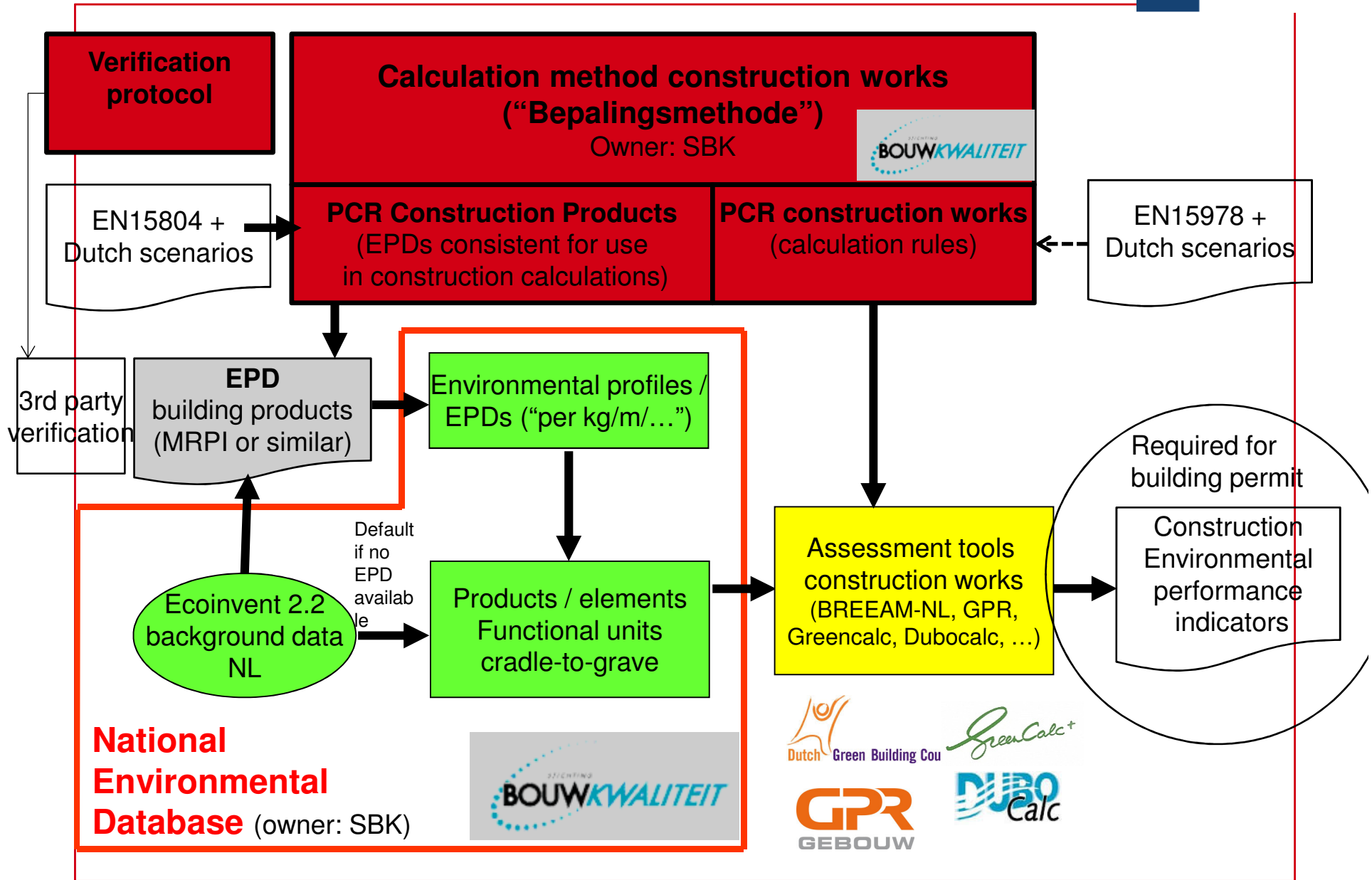
- 1999 MRPI - Dutch private program for Environmental Product Declarations
- 2001 NEN 8006 – Dutch method for Environmental Product Declarations
- 2001 – 2010
Several private building & construction calculation tools
each with own LCI / LCA database
(EcoQuantum, GreenCalc, GPR, BREEAM-NL, DuboCalc)
- 2010 Government coordinated stakeholder project -> aim: 1 calculation method
+ 1 database (combining different existing databases)
Independent association appointed as owner: SBK
 - Assessment of buildings – performance based
 - EPDs from products as input for building calculations
 - Method + database interconnected as one common framework for
manufacturers (data suppliers) and designers/consultants (data users)
- 2012 Release 1.1 National Environmental Database (NMD)
- 2012 EN15804 published
- 2014 Release 1.6 and method updated acc. to EN15804



Structure of Dutch database (www.milieudatabase.nl)



Government of the Netherlands





Three types of product information in database

- Category 1 3rd party verified (acc. to Dutch method) EPD from single manufacturer

- Category 2 3rd party verified (acc. to Dutch method) EPD from branch association / group of manufacturers
 - Representativeness clearly described

- Category 3 unverified data + defaults from EcoInvent
 - uncertainty factor + 30% in building calculation

NOTE Cat.1/2 information is not public (ownership manufacturer / association). Communication of product data is industry responsibility



Role of EPD

Dutch MRPI as example of EPD

- MRPI = 3rd party verified EPD – cat. 1 or 2
 - Verified according to Dutch method- “Bepalingsmethode”
 - Calculated with EcolInvent 2.2 dataset from National Database

- Accepted for National Environmental Database (NMD) without further verification
 - Cradle-to-gate → NMD owner adds default scenarios for Modules A4-A5-B-C-D (transport / installation / use / end-of-life / recycling)
 - Cradle-to-grave → NMD checks if scenarios fit into “products / elements” life cycles (and adapts if necessary)

- Functional units / declared units are checked by SBK for consistency with definitions “products / elements” in database
 - Example: window = window frame + glass + sealants + paint + ...
 - Scaling factors can be applied – eg for units in m¹, m², R-value etc

- Other 3rd party EPDs are NOT automatically accepted as cat.1 or 2 – for reasons of consistency for building calculations
 - Protocol foresees the possibility to be accepted on similar conditions as MRPI
 - Consistency (LCA background data, indicators) and quality/representativeness are key



Manufacturers provide EPD (modular)

<https://www.milieudatabase.nl/index.php?id=basisinformatie>

LCA Phases

BIJGAANDE PROFIELEN GELDEN ALLEEN VOOR GETOETSTE DATA!
LET OP BIJ HET AANLEVEREN VAN DE DATA OP DE VOLGORDE VAN DE KOLOMMEN VAN DE MILIEU-EFFECTCATEGORIEN!!
VUL NAAM PRODUCT IN EN EENHEID
versie juni 2013

Environmental indicators

NAAM PRODUCT																	
AANLEVEREN BASISPROFIEL PRODUCTIE																	
Production Impact category (A1-A3)	Abiotic depletion, non fuel kg Sb eq	Global warming (GWP100) kg CO2 eq	Ozone layer depletion (ODP) kg CFC-11	Human toxicity kg 1,4-DB	Fresh water aquatic ecotox. kg 1,4-DB	Marine aquatic ecotoxicity kg 1,4-DB ec	Terrestrial ecotoxicity kg 1,4-DB ec	Photochemical oxidation kg C2H4	Acidification kg SO2 ec	Eutrophication kg PO4--- eq	Abiotic depletion, fuel kg Sb eq	Total renewable energy MJ	Total non renewable energy MJ	Total Energy MJ	Water, fresh water use m3	Waste, non hazardous kg	Waste, hazardous kg
AANLEVEREN BASISPROFIEL TRANSPORT NAAR BOUWPLAATS																	
Transport Impact category (A4)	Abiotic depletion, non fuel kg Sb eq	Global warming (GWP100) kg CO2 eq	layer depletion (ODP) kg CFC-11	Human toxicity kg 1,4-DB	water aquatic ecotox. kg 1,4-DB	Marine aquatic ecotoxicity kg 1,4-DB ec	Terrestrial ecotoxicity kg 1,4-DB ec	Photochemical oxidation kg C2H4	Acidification kg SO2 ec	Eutrophication kg PO4--- eq	Abiotic depletion, fuel kg Sb eq	Total renewable energy MJ	Total non renewable energy MJ	Total Energy MJ	Water, fresh water use m3	Waste, non hazardous kg	Waste, hazardous kg
AANLEVEREN BASISPROFIEL CONSTRUCTIE																	
Construction Impact category (A5)	Abiotic depletion, non fuel kg Sb eq	Global warming (GWP100) kg CO2 eq	layer depletion (ODP) kg CFC-11	Human toxicity kg 1,4-DB	water aquatic ecotox. kg 1,4-DB	Marine aquatic ecotoxicity kg 1,4-DB ec	Terrestrial ecotoxicity kg 1,4-DB ec	Photochemical oxidation kg C2H4	Acidification kg SO2 ec	Eutrophication kg PO4--- eq	Abiotic depletion, fuel kg Sb eq	Total renewable energy MJ	Total non renewable energy MJ	Total Energy MJ	Water, fresh water use m3	Waste, non hazardous kg	Waste, hazardous kg
AANLEVEREN BASISPROFIEL GEBRUIK & ONDERHOUD																	
In-use Impact category (B1-B5, excl B6-B7)	Abiotic depletion, non fuel kg Sb eq	Global warming (GWP100) kg CO2 eq	layer depletion (ODP) kg CFC-11	Human toxicity kg 1,4-DB	water aquatic ecotox. kg 1,4-DB	Marine aquatic ecotoxicity kg 1,4-DB ec	Terrestrial ecotoxicity kg 1,4-DB ec	Photochemical oxidation kg C2H4	Acidification kg SO2 ec	Eutrophication kg PO4--- eq	Abiotic depletion, fuel kg Sb eq	Total renewable energy MJ	Total non renewable energy MJ	Total Energy MJ	Water, fresh water use m3	Waste, non hazardous kg	Waste, hazardous kg
AANLEVEREN BASISPROFIEL AFVALVERWERKING																	
End-of-life Impact category (C-D)	Abiotic depletion, non fuel kg Sb eq	Global warming (GWP100) kg CO2 eq	layer depletion (ODP) kg CFC-11	Human toxicity kg 1,4-DB	water aquatic ecotox. kg 1,4-DB	Marine aquatic ecotoxicity kg 1,4-DB ec	Terrestrial ecotoxicity kg 1,4-DB ec	Photochemical oxidation kg C2H4	Acidification kg SO2 ec	Eutrophication kg PO4--- eq	Abiotic depletion, fuel kg Sb eq	Total renewable energy MJ	Total non renewable energy MJ	Total Energy MJ	Water, fresh water use m3	Waste, non hazardous kg	Waste, hazardous kg



Products and elements – real time view

<https://www.milieudatabase.nl/viewNMD/>

Inzage in Nationale Milieudatabase B&U (real time)

View database

Elementcode	Elementnaam	Productcode	Productnaam	Type kaart	User
41.04	Isolatielagen	41.04.002	Steenwol MWA 2012; platen;	3	mineral wool association b
41.04	Isolatielagen	41.04.009	Vlaswol	3	SBK
41.04	Isolatielagen	41.04.008	EPS	3	SBK
41.04	Isolatielagen	41.04.006	XPS	3	SBK
41.04	Isolatielagen	41.04.005	PUR (lucht)	3	SBK
41.04	Isolatielagen	41.04.004	Fenolschuim	3	SBK
41.04	Isolatielagen	41.04.012	Rockfit 433 DUO	1	Rockwool B.V.
41.04	Isolatielagen	41.04.017	Rockwool MetaalbouwSysteem 209 DUO	1	Rockwool B.V.
41.04	Isolatielagen	41.04.023	Stybenex EPS plaat wit 15 kg/m3	2	Stybenex
41.04	Isolatielagen	41.04.021	Stybenex EPS plaat wit 30 kg/m3	2	Stybenex
41.04	Isolatielagen	41.04.022	Stybenex EPS plaat grijs 15 kg/m3	2	Stybenex
41.04	Isolatielagen	41.04.020	Stybenex EPS plaat grijs 20 kg/m3	2	Stybenex
41.04	Isolatielagen	41.04.024	Stybenex EPS plaat wit 20 kg/m3	2	Stybenex
41.04	Isolatielagen	41.04.018	NVPU; PU plaat; gecacheerd, alulaminaat	2	NVPU
41.04	Isolatielagen	41.04.019	NVPU; PU plaat; gecacheerd, mineraal glasvlies	2	NVPU

Beschrijving product

Productcode	41.04.009
Productnaam	Vlaswol
Elementcode	41.04
Elementnaam	Isolatielagen
Eenheid	m2
Productlevensduur	75
Transportafstand naar bouwplaats [km]	150
Code transport middel	900 Transport, lorry >16t
Type schaling	rechtevenredig

Productie, vervanging en afdanking per onderdeel

mat. code	materiaal	onderdeel	aantal	ehd	bouwafval	levensduur	afvalcode	afvalscenario	stort	verbr	recy
i_262	Vlas	isolatieplaat	3.8	kg	0.05	75	i_025	organisch via restmateriaal	15%	85%	0%

Cyclisch onderhoud per onderdeel

Emissies gebruiksfase

Cat.3 data (defaults SBK): public

Cat.1/2 data (manufacturer / association): not public

Product / element description life cycle (cat.3)



Specific national requirements (no completeness pretended)

Necessary for consistency building calculations, representativeness for the Dutch market and level playing field

For EPDs – additional to EN15804

- Default scenarios for the Dutch market if need (see building requirements)
- LCA background data NL version EcoInvent 2.2
- Modules A1-A3 (production) + C (end-of-life) + D (recycling)
- Deviating allocation procedures (still based on NEN8006)
- Reference service life defaults defined based on a Dutch publication
- Additional indicators: toxicity (CML)
- SBK Verification procedure

For building calculations / database – additional to EN15804 (15978)

- Default scenarios for the Dutch market if need, e.g.
 - Transport distances to site, to landfill
 - End-of-life scenarios
- Protocol for use of default data by SBK (cat.3) in case of missing 3rd party verified cat.1/2 data
- Module D is mandatory / included
- Design service life: residential 75y, non-residential 50y
- Number of replacements: can be a fraction, e.g. 2.75
- Additional indicators (toxicity) + weighting in one score (env. costs)



Summary

- The Dutch system for determining the environmental performance of buildings and construction works consists of **one environmental calculation method** and **one LCA/EPD database**

- The database consists of 3 sub-databases:
 - background data for LCAs (EcolInvent 2.2)
 - EPDs: 3rd party verified company EPDs (Cat 1), 3rd party verified branch EPDs (Cat 2) and generic environmental profiles of products (Cat. 3)
 - product/element descriptions cradle-to-grave

- The environmental calculation method comprises a full cradle to grave analysis for buildings (excl. the energy and water consumption during use). Product data are the input.

- The system was introduced in the National Building Regulations (Building Decree) in 2012 – mandatory calculation of the GWP and ADP of buildings

- The database is managed by an independent organisation (SBK) – manufacturer/association keeps ownership of EPD; SBK secures consistency for building calculations



Conclusion

- The system provides clarity/transparency in the market, prevents unnecessary work for the industry, and assists designers and LCA-professionals in finding the right (centralised) EPDs easily without compromising accuracy and integrity.