



thinkstep

Satisfy Market Requirements and exploit Improvement Potential

Webinar on
Environmental Product Declarations
(EPD) 30 May 2018

Presented by



thinkstep AG

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EPD International AB

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EPD Expert /
Project manager



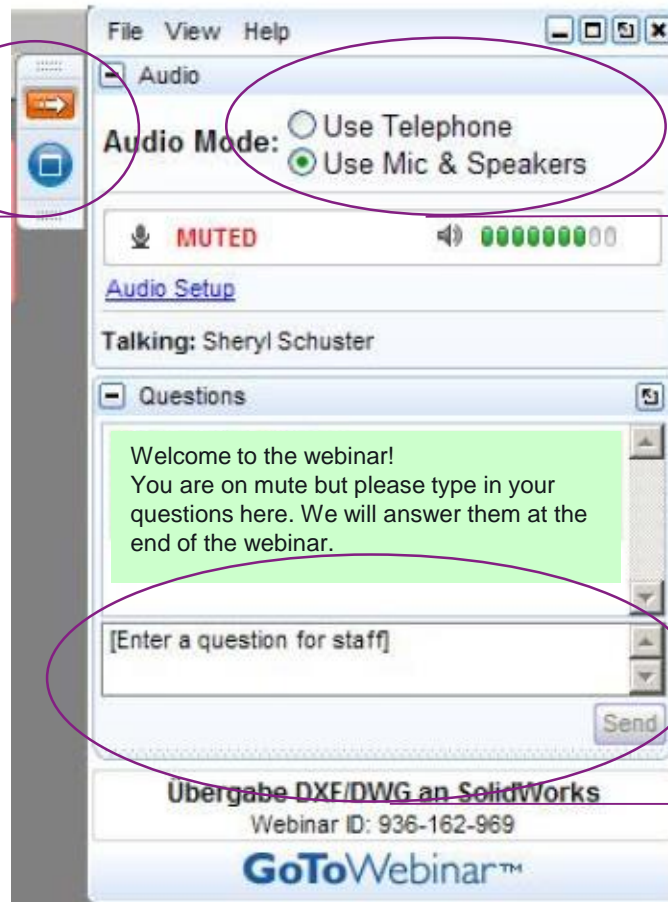
EPD International AB

Sebastian Stiller
Business developer /
Project manager

Use of the online conference software



Enlarge or minimize
the operations
window



Audio Settings

Questions &
Comments

1. Drivers of sustainable construction
2. Environmental Product Declaration
3. Legal Background
4. What's the course of an EPD project ?
5. Ways to the EPD



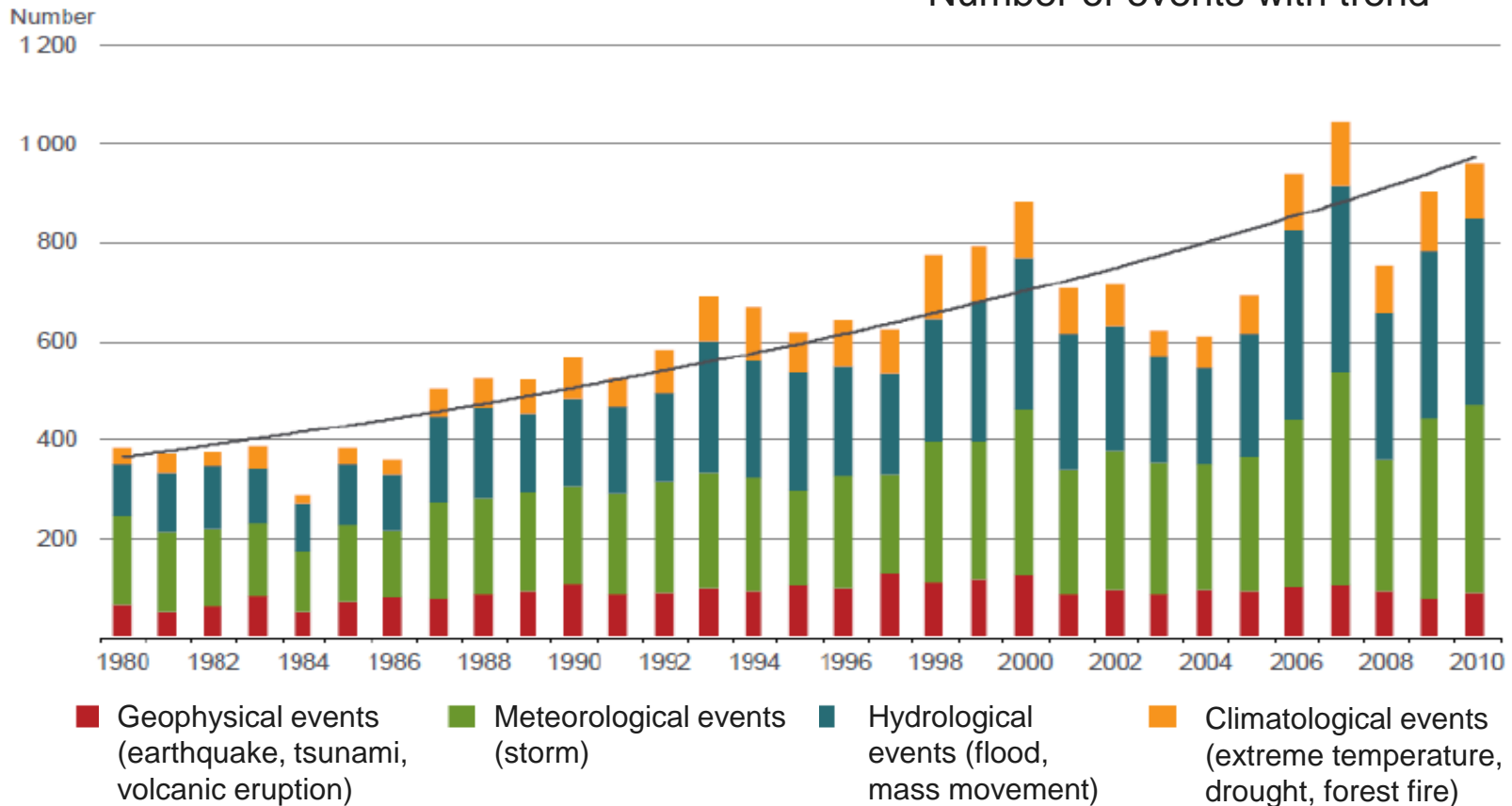
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Drivers of Sustainable Construction

Development extreme weather events



Number of events with trend



Source: 2011 Munich Re, Geo Risks Research, NatCatSERVICE



1/3

CO₂ emissions



40%

Energy use



25%

Water use



40%

Resource use



60%

of electricity demand
comes from residential
and commercial
buildings

Legislation

- Green Procurement
- EU Energy Performance of Buildings Directive (EPBD)
- EU directive on sustainability reporting
- Harmonization of European legislation
- EU Initiative: Resource efficiency in construction segment



Standardization, Labeling, Certification:

- PEF and OEF legislation (2020?)
- Harmonization of EN 15804 and PEF
- 2nd generation of Euro Codes (Lifecycle approach)

Sustainable Development Goals of the UN



Source: <http://www.worldgbc.org/green-building-sustainable-development-goals>

Market drivers for sustainable buildings



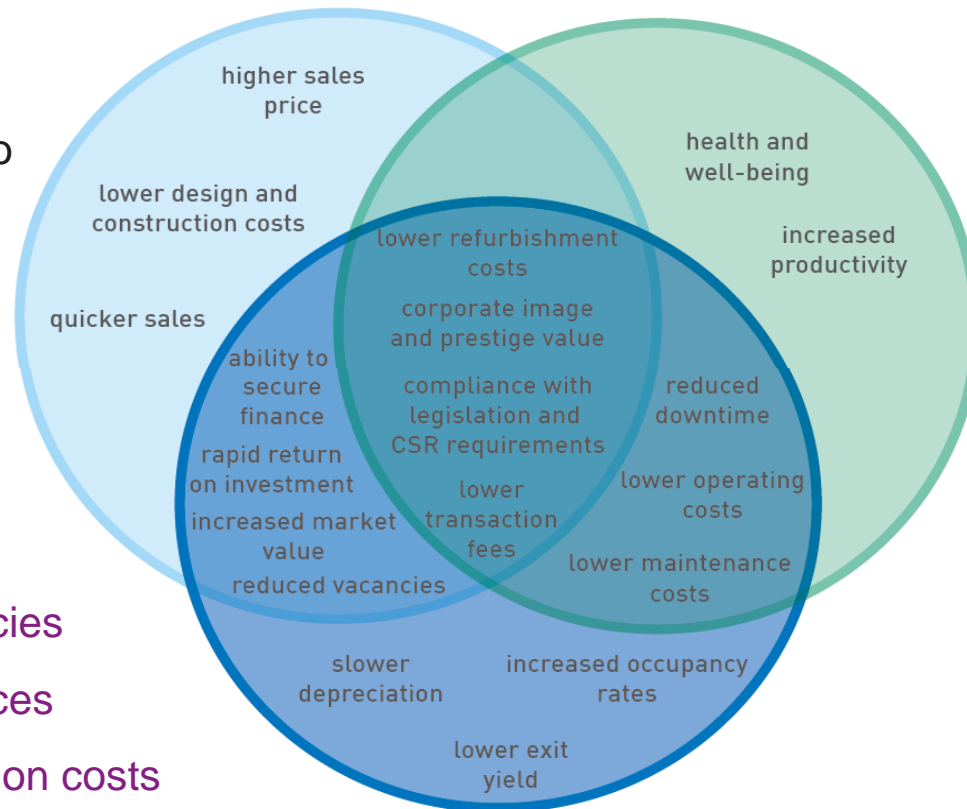
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Developer

Why would I want to build this green building?

Tenant

Why would I want to lease this green building?



Reduced vacancies

Higher sales prices

Lower construction costs

Higher rental income

Increased productivity of tenant

Lower absenteeism

Low costs throughout life cycle

Owner

Why would I want to own this green building?



“Green share” of the global market

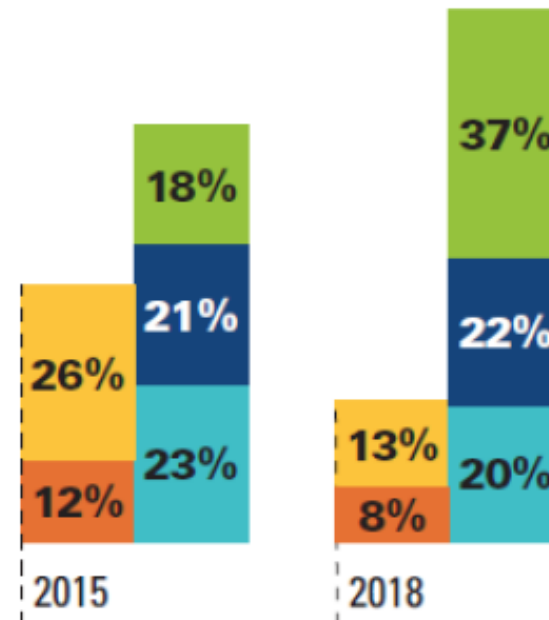


- Sustainable construction is no longer a niche market
- The real estate industry is demanding sustainable (green) projects

Level of Green Building Activity (according to global respondents)

Dodge Data & Analytics, 2016

- Exploring (no green involvement)
- 1% to 15% green projects
- 16% to 30% green projects
- 31% to 60% green projects
- More than 60% green projects



“Green share” of the German market (New construction)



Investment volume and share of green building, 2008-2014



In 2014 one in five euros was invested in sustainable buildings!

LEED v4 – EPDs, HPDs and Building LCA



FACT:

These **instruments** in LEED v4 influence 10% of total assessment

Building LCA

Environmental Product Declarations (EPDs)

Corporate Social Responsibility (CSR) reports

Health Product Declarations (HPDs)

Building life-cycle impact reduction

MRp1 | Up to 5 points



Building product disclosure and optimization – environmental product declarations

MRp2 | Up to 2 points



Building product disclosure and optimization – sourcing of raw materials

MRp3 | Up to 2 points



Building product disclosure and optimization – material ingredients

MRp4 | Up to 2 points



Assessment criteria

based on DGNB System example



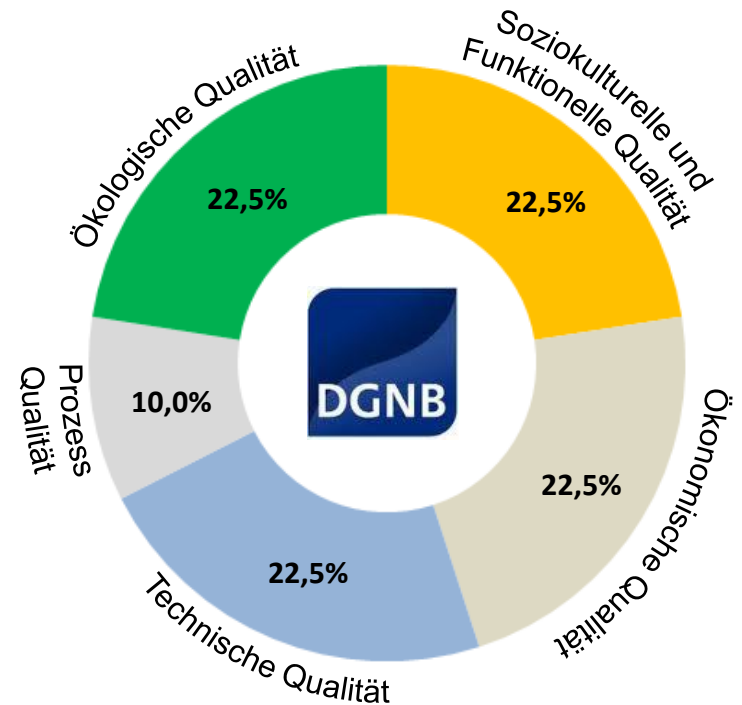
Beyond ecological and energy aspects to include:

- social criteria
- functionality
- technical quality
- economic quality.

Entire life cycle considered

Everything must be documented for verification management

→ including the processes for planning and construction progress.



FACT: > 1/3 of DGNB criteria require information about the integrated construction products
→ together these criteria influence about 50% of the weighted points.

Certification requirements to be met by construction product manufacturer



Submission of product information

Information about corporate sustainability



Environmental information (LCA, EPD)



Product descriptions, material safety data sheets and processing instructions



Test certifications, information about certified products (Blue Angel, EMICODE, etc.)

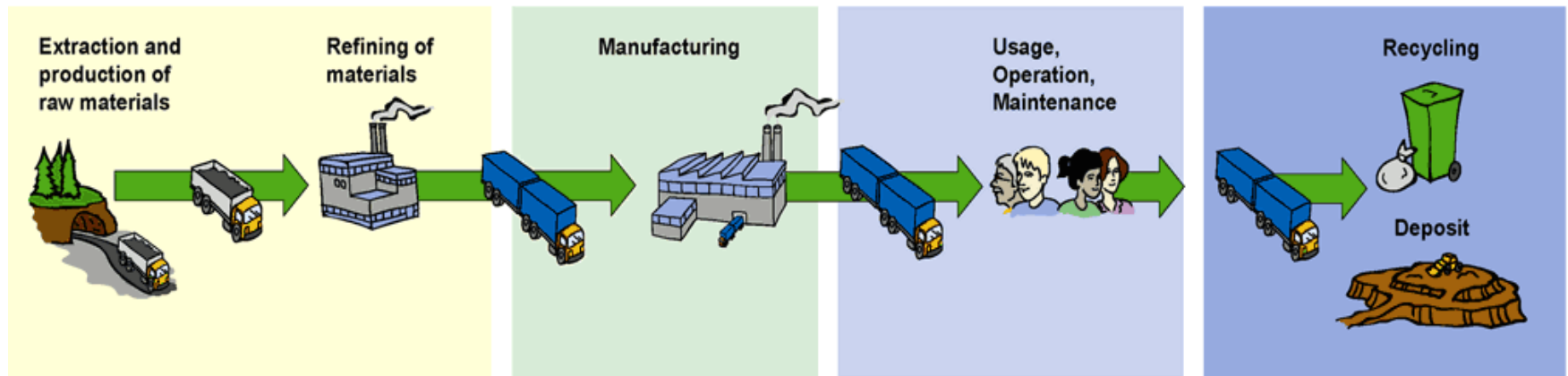


Documentation of
product performance

Certification of building performance

Environmental Product Declarations

Life cycle approach



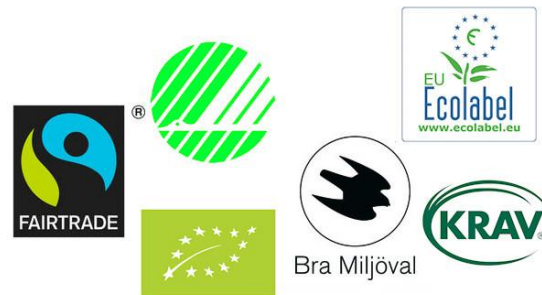
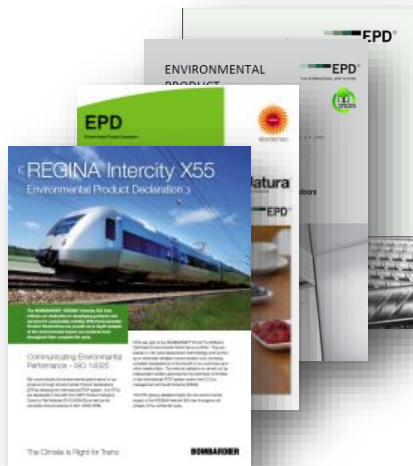
Environmental communication according to ISO 14020-series



Type I: Environmental labels

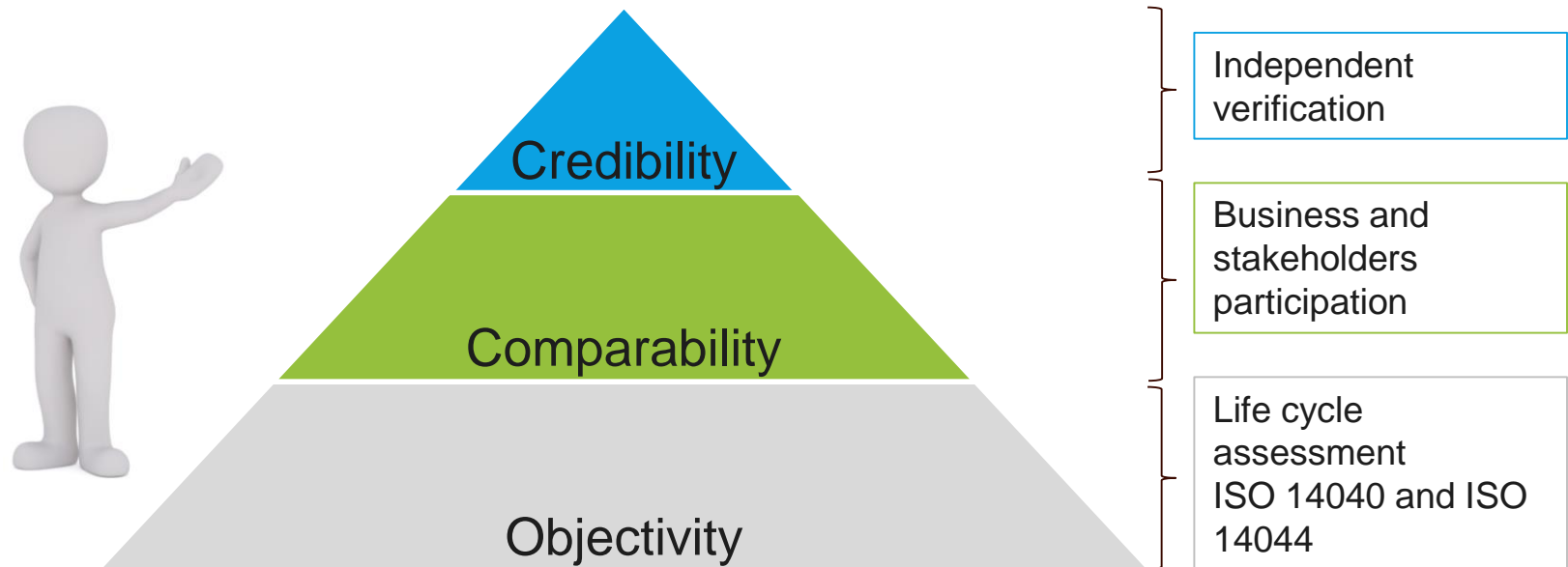
Type II: Self-declared environmental claims

Type III: Environmental Product Declarations (EPD)



Type III: Environmental Product Declaration (EPD)

- Declaration of product environmental performance
 - No comparison with others (except within the same product category)
- No requirement on "little" environmental impact
- Voluntary
- Product-specific rules required



Content of an EPD

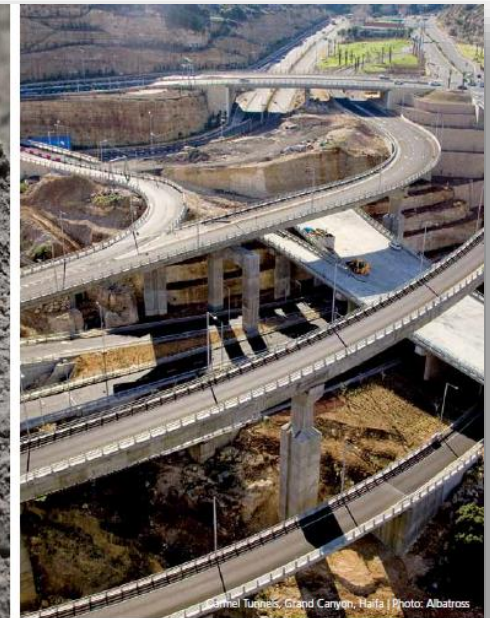


THE INTERNATIONAL EPD® SYSTEM

- Programme-related information
- Third party verification
- Product-related information
- Content declaration
- Environmental performance-related information
- Additional information



Nesher Cement / תחנה: דיברה, יז



Canal Tudes, Grand Canyon, Haifa / Photo: Albatross



נשר סמנטי סלטי ישראליים בע"מ
NESHER PORTLAND CEMENT ENTERPRISES LTD.



ENVIRONMENTAL PRODUCT DECLARATION

PORTLAND CEMENT - CEM I 52.5 N

Reference PCR document: Product Category Rules (PCR) for product group cement, 2010:09 version 2.0, date 16-05-2013.
UN CPC 3744

Year period of the underlying data to the EPD: 2012
Environmental Product Declaration in accordance with ISO 14025.
Life Cycle Assessment study has been performed in accordance with the requirements of EN 15804 and applicable PCR's.

1

NESHER ENVIRONMENTAL PRODUCT DECLARATION

Steps to create an EPD

Perform LCA
based on PCR

Compile information
in EPD format

Verification

Registration &
publication

- More than 100 PCRs available in the PCR library
- Verification by one of the 80 independent verifiers
- Cost- and time efficient development via EPD Process Certification and pre-verified EPD tools

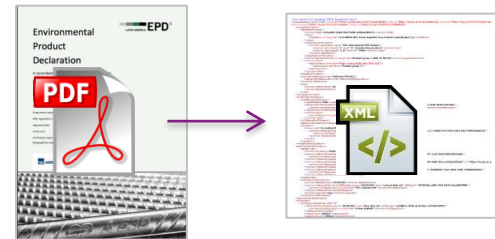
Additional services:

- Certificate
- Climate declaration
- ECO Platform logotype
- Dual-registration in other programmes
- Machine-readable EPD file

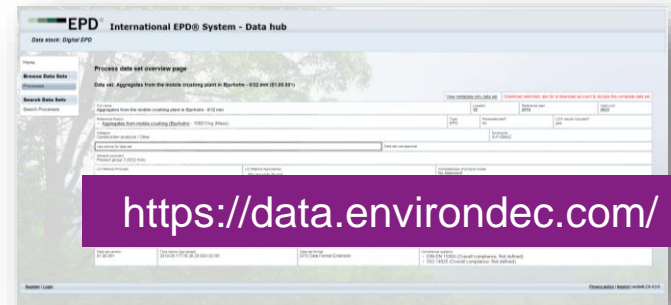


Machine-readable EPD

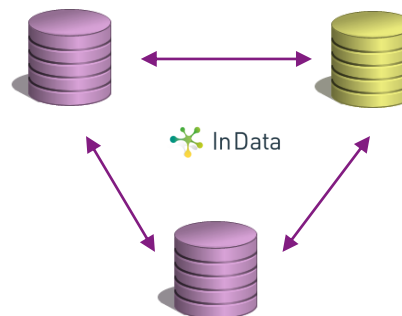
Transformation of EPD-information into a machine-readable digital format



Database hosted by the International EPD[®] System



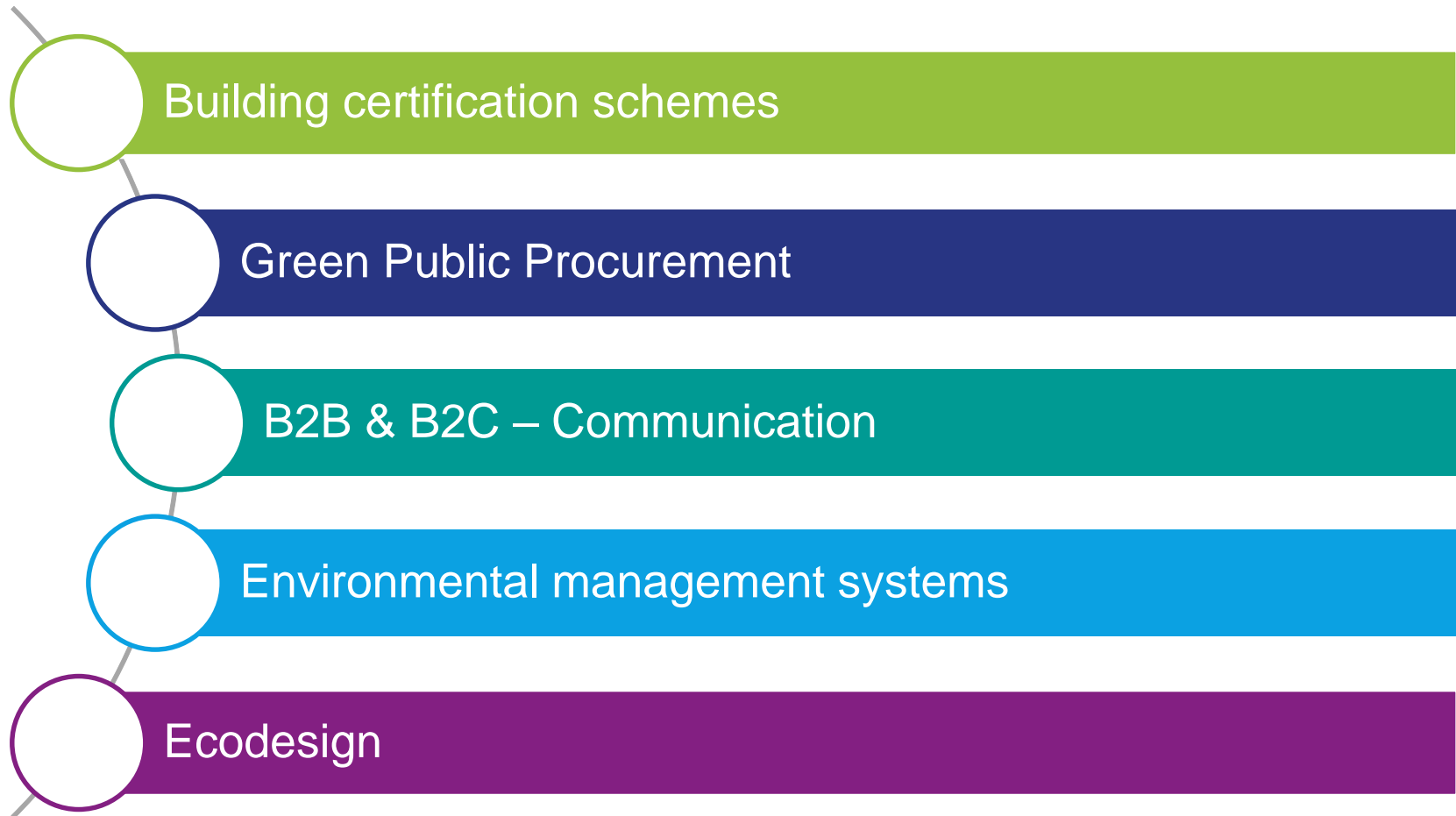
Based on a system and format from international collaborations (InData)



Independent verification assures credibility of the information

- Performed by an independent, approved expert or organisation
 - “Certification body” = approved organisation
 - “Individual verifier” = approved individual expert
- Control of documentation and conformity of the calculations with the product category rules and general programme instructions
- EPD Process Certification:
 - Internal verification of EPDs
 - Yearly control of EPD development process
 - Closely linked to the environmental management system





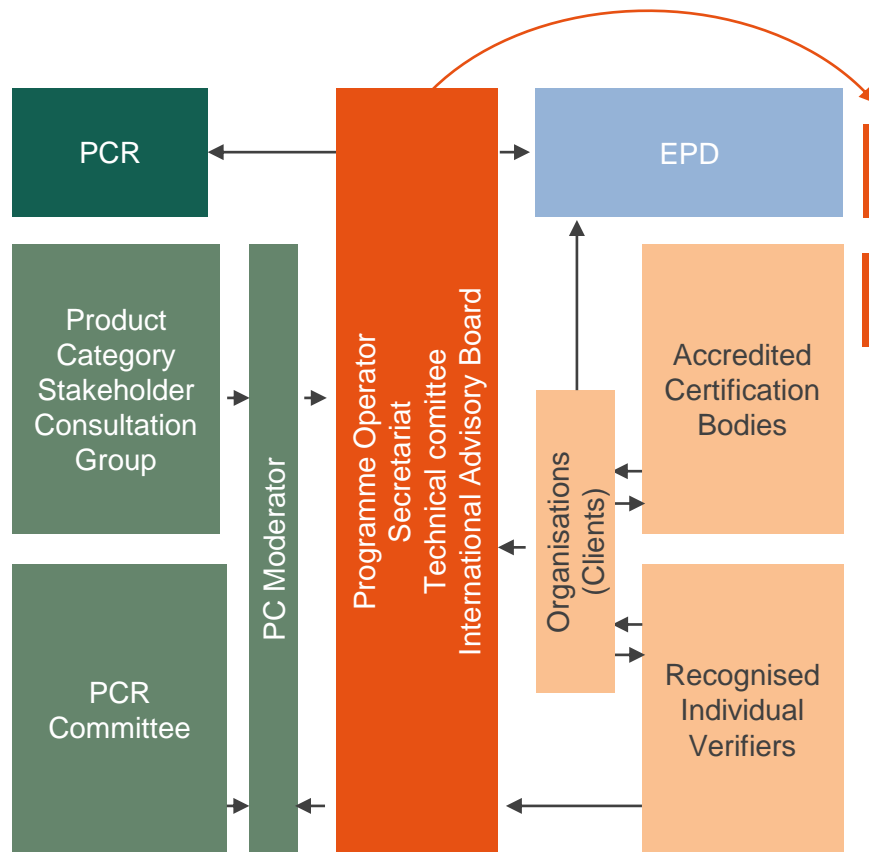


Framework of the International EPD® System

IES' organisational structure

And the organs' interplays.

IES' organisational structure



Programme Operator Organs & main responsibilities

Board of Directors

- Overall Programme responsibility
- Strategic and financial

Secretariat

- Overall management of EPD programme
- Manages Global Programme Instructions (GPI)
- Facilitate & manage PCR procedure
- Market to and support clients of IES
- Publish PCRs and EPDs

Intl. Advisory Board

- Independent advisors on IES development

Technical Committee

- PCR review panel for PCR approval acc. GPI
- Technical & LCA-oriented advise on framework development
- Support Secretariat in technical issues,
- Assess & appoint LCA/ PCR experts as individual verifiers
- Advise on monitoring quality of individual verifiers
- Conduct verification quality checks on **individual verifiers**

100%
Independent!

IES (quality) framework

Managed by the Secretariat.

Relatively static

IES programme management

LCA calculations for EPDs

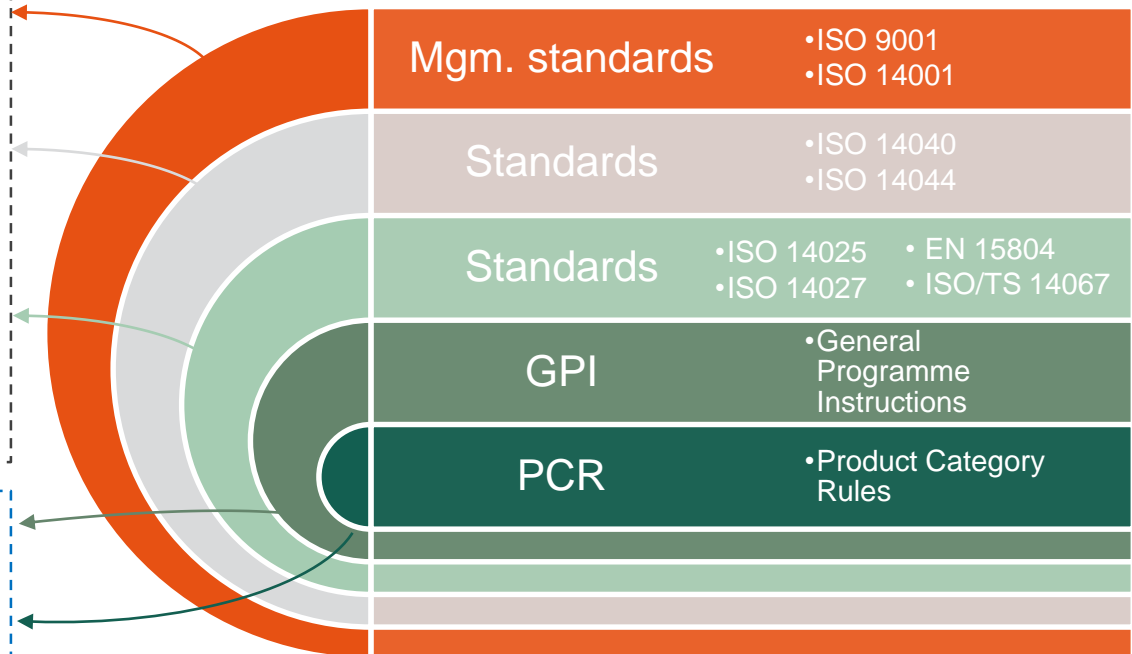
Foundation Program Operator work:

- ISO 14025 for EPDs in general
- ISO/TS 14027 PCR development
- EN 15804 for construction EPDs
- ISO/TS 14067 for climate impact

Standard for EPD development in IES

Specs. for EPD development in IES

On-going updates by IES



Which services does IES offer?

Certification and registration of type III EPDs

- Single EPDs;
- *EPD process certification*;
- *Pre-verified EPD tool*.

Unique “glocal” footprint covering:

- All markets;
- All goods/ services;
- All business sectors and their stakeholders.

Largest collection of “ready-to-use” PCRs on market.

Global, independent expert network for customer support throughout all *LCA, PCR and EPD development stages:

- Experienced PCR moderators;
- LCA/ EPD-consultancies (operating locally & globally);
- LCA/ EPD verification via bodies *and* individual verifiers.

Four steps to your EPD

(Step 0.)

Select or Develop a PCR

Step 1.

Conduct LCA according PCR

Step 2.

Get LCA into EPD Format

Step 3.

LCA/ EPD Verification

Step 4.

EPD Certification and Registration

Intl. EPD® System

Cost-efficient & scalable solutions for large volumes of EPDs

Pre-verified EPD tool

- Target group:
 - Industry associations.
- Purpose:
 - Simplification of data collection step bc. of pre-verified LCA model;
 - › Generic data pre-verified, *but*
 - › Primary data external verification;
 - › PCR's additional (qualitative) requirements not included
 - Comparable EPDs in a sector.
 - Use economy of scale for associates.

EPD process certification

- Target group:
 - Individual corporations.
 - Purpose:
 - Simplification of processes & routines.
 - Internalise EPD development steps:
 1. PCR identification;
 2. LCA;
 3. EPD-formatting;
 4. Independent verification.
- ➡ reg./publication stays with IES

Comparable EPDs through process simplification

One single, scalable solution lowering transaction cost

Framework of the International EPD® System



A **global** framework ensuring transparency, objectivity & credibility for product related environmental impact data.

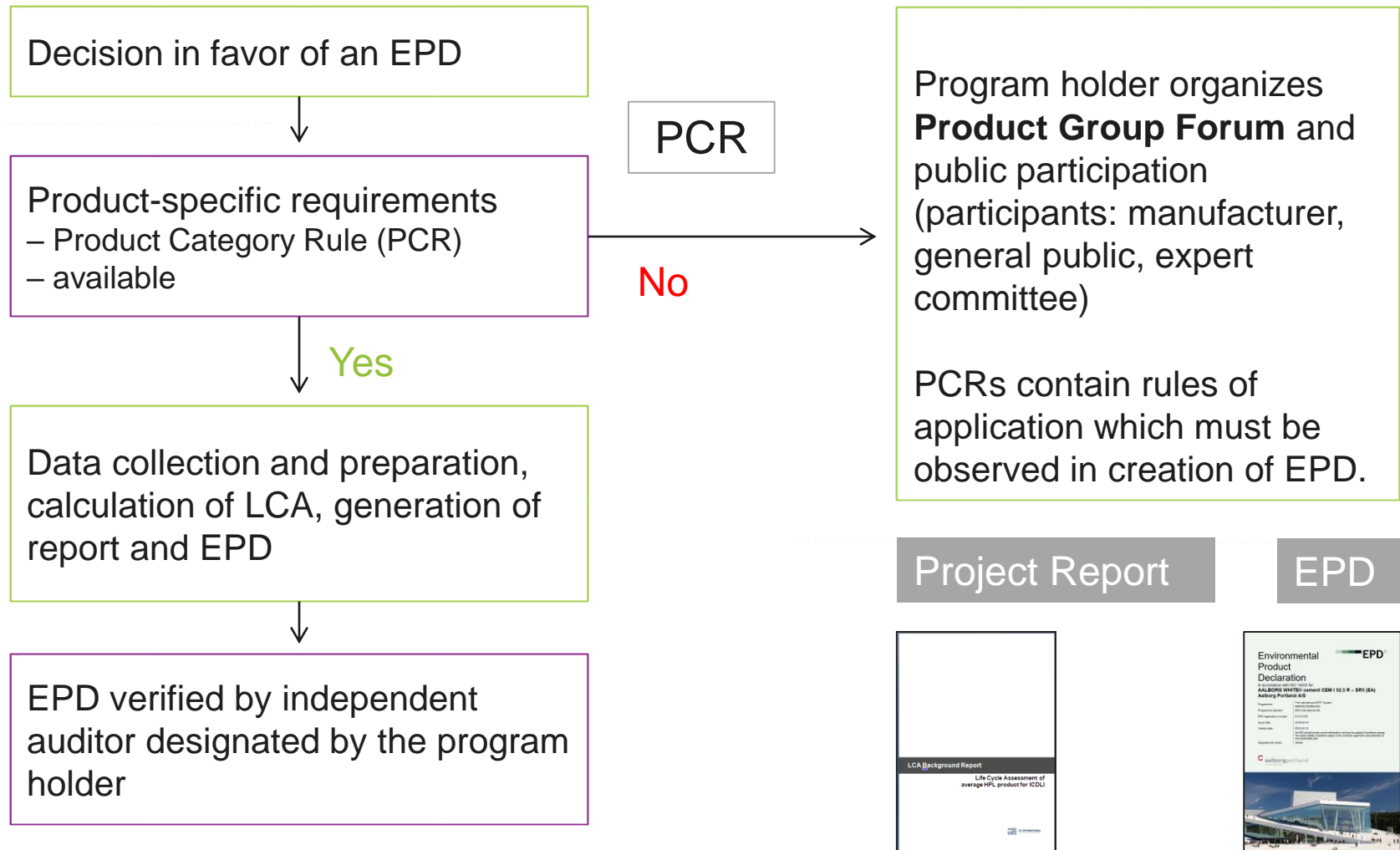
A framework to professionally manage standards, rules and (digital) instruments/tools for high-quality EPDs.

Cost-effective & scalable solutions for manufacturers publishing single a/o large volumes of EPDs.

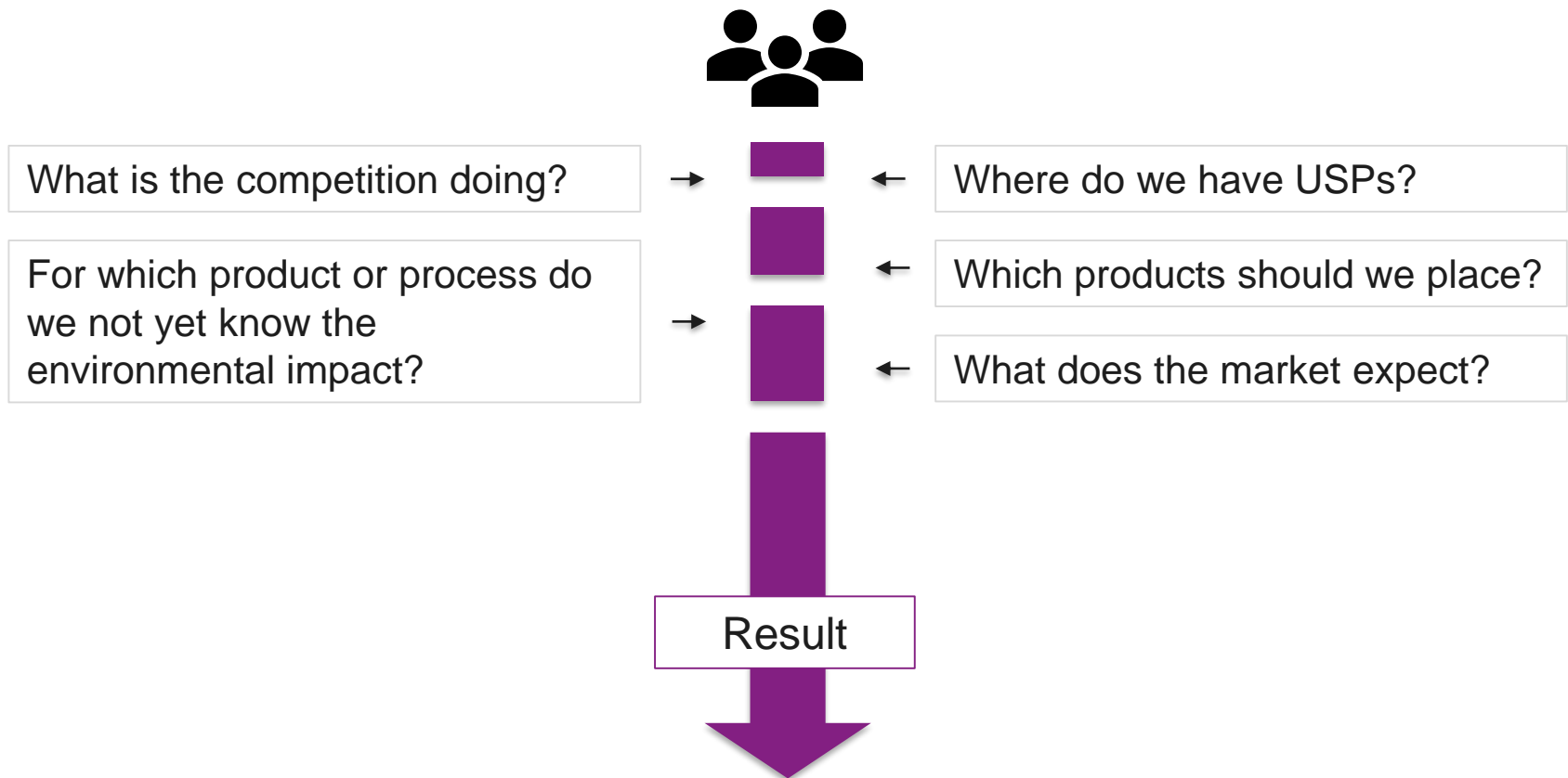
What's the course of an EPD project?

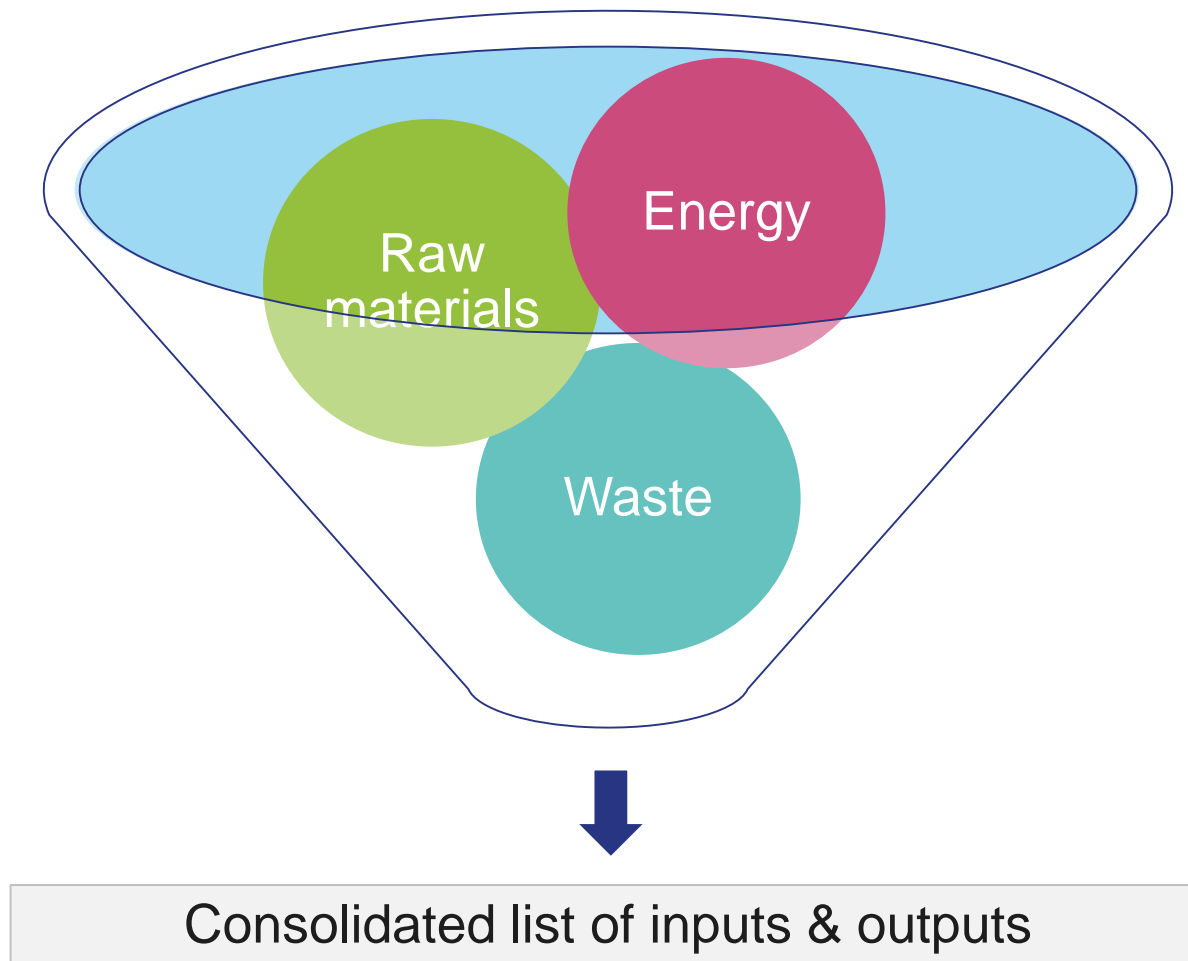


Course of an EPD project



Meeting with internal stakeholders





Calculate LCA and generate report



		Manufacturing
Parameter	Unit	A1 - A3
Global warming potential	[kg CO ₂ -eq.]	1874
Depletion potential of the stratospheric ozone layer	[kg CFC11-eq.]	7.45E-05
Acidification potential of land and water	[kg SO ₂ -eq.]	18.86
Eutrophication potential	[kg PO ₄ ³⁻ -eq.]	0.73
Formation potential of tropospheric ozone photochemical oxidants	[kg Ethen eq.]	0.70
Abiotic depletion potential for non fossil resources	[kg Sb eq.]	9.64E-03
Abiotic depletion potential for fossil resources	[MJ]	24198

LCA Background Report
Life Cycle Assessment of average HPL product for ICDLI
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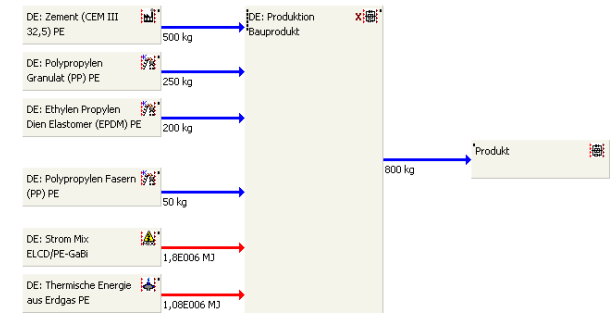
EPD Project – Results



EPD document and detailed LCA report



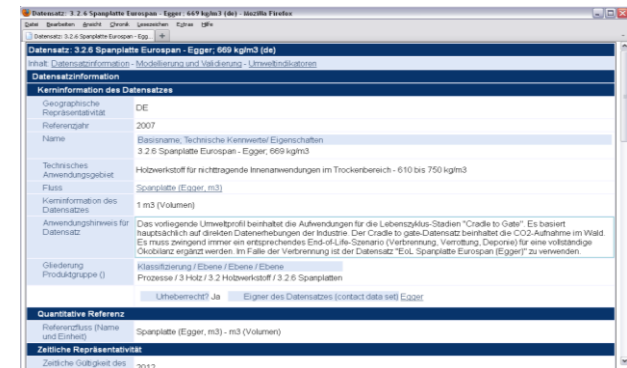
Intermediate analysis, detailed analysis (optional)



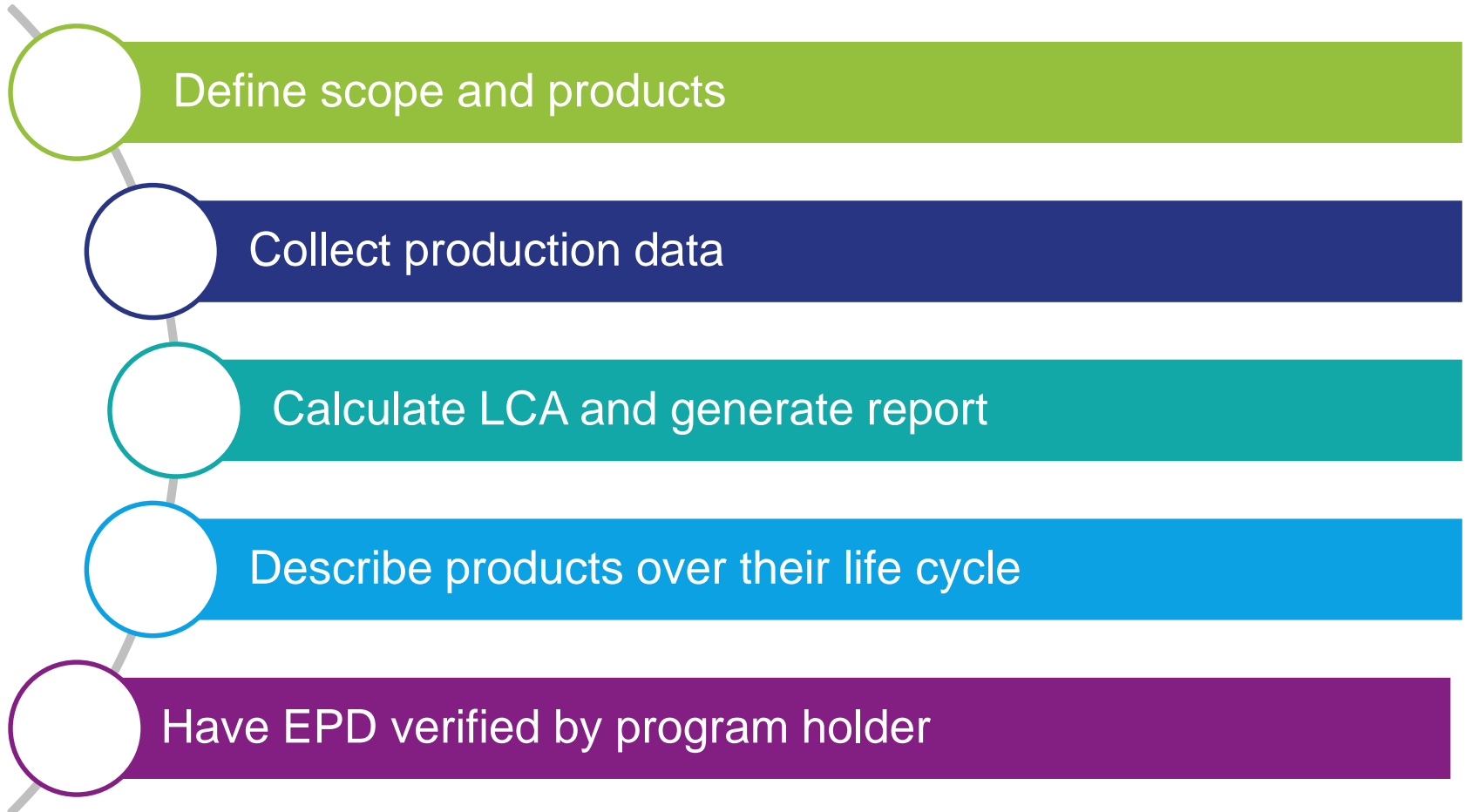
LCA model of product for further analyses (optional)



Electronic data record published in LCA database for architects, planners, etc.



What's the course of an EPD project?





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Ways to the EPD



EPD as service



EPD kit



EPD
automation



Object-specific
EPDs from the
EPD Factory

Single products,
special
products, pilot
EPDs for
“newcomers”

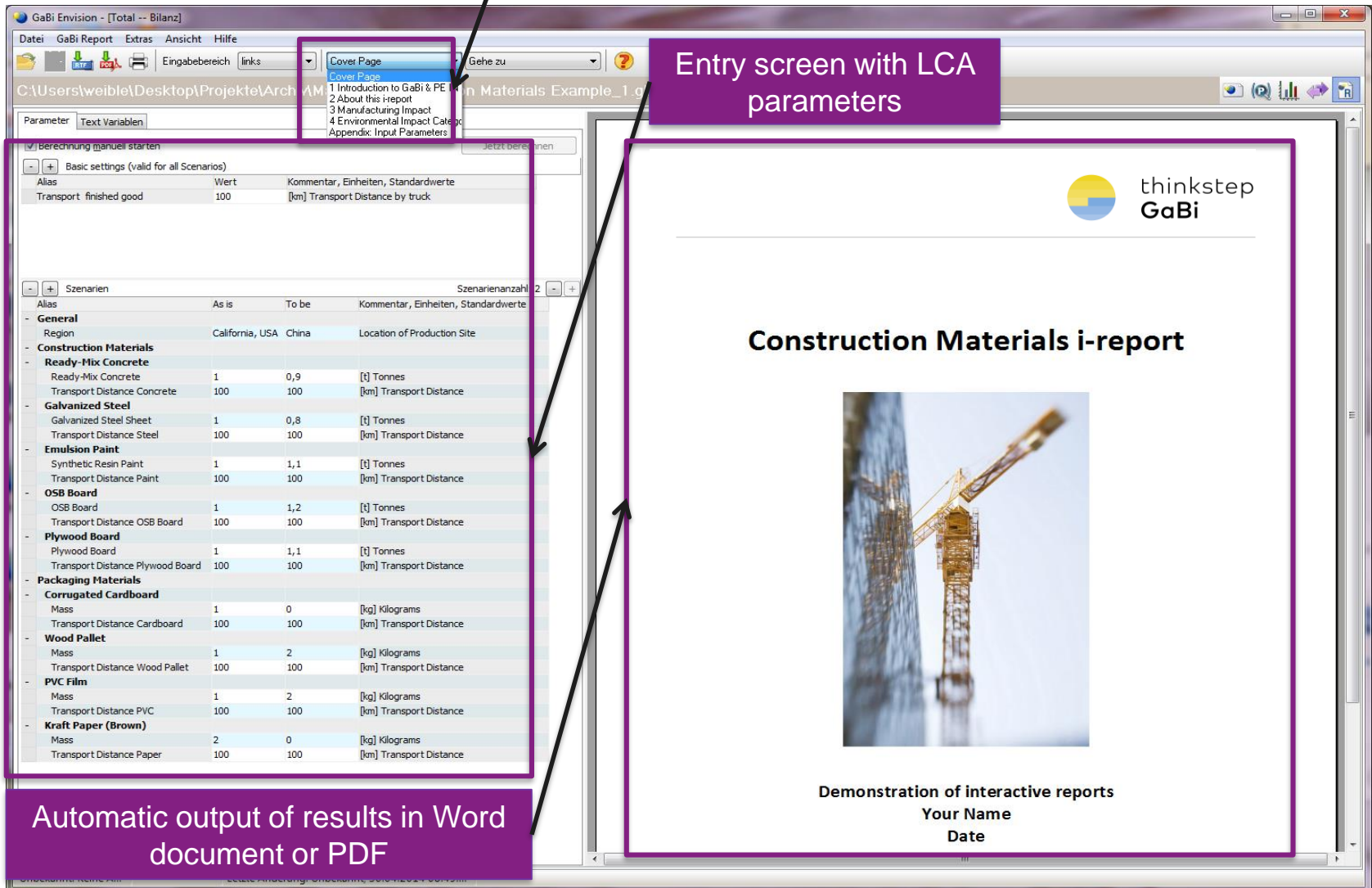
Small product
portfolios, tool-
based for EPD
experts

Large product
portfolios, as
service or
company’s own
solution

EPDs for
specific,
configured
product
solutions

Select different excerpts in the output document

Entry screen with LCA parameters



The screenshot shows the GaBi Envision software interface. The top menu bar includes 'Datei', 'GaBi Report', 'Extras', 'Ansicht', and 'Hilfe'. The main window displays the 'Entry screen with LCA parameters' for a project titled 'Construction Materials i-report'. The left sidebar shows a tree view of the report structure, including 'Cover Page', '1 Introduction to GaBi & PE', '2 About this i-report', '3 Manufacturing Impact', '4 Environmental Impact Category', and 'Appendix: Input Parameters'. The main area shows the 'Basic settings (valid for all Scenarios)' and a table of 'Szenarien' (Scenarios) with columns for 'Alias', 'As is', 'To be', and 'Kommentar, Einheiten, Standardwerte'. The table lists various materials and their transport distances, such as 'Ready-Mix Concrete', 'Galvanized Steel', 'Emulsion Paint', 'OSB Board', 'Plywood Board', 'Corrugated Cardboard', 'Wood Pallet', 'PVC Film', and 'Kraft Paper (Brown)'. The right side of the interface shows a preview of the output report, which includes the 'thinkstep GaBi' logo, the title 'Construction Materials i-report', a photograph of a construction crane, and the text 'Demonstration of interactive reports', 'Your Name', and 'Date'.

Automatic output of results in Word document or PDF

Diagram for analysis or comparison

Text blocks can be edited.

Comparison of LCIA Results, by Scenario

This section compares the results, in total, of each scenario. Each chart represents one major environmental impact category and will dynamically compare the results of the As is scenario and the To be scenario. If the results of the To be scenario are >10% higher than those from the As is scenario, then the cell will display a red background. If the results of the To be scenario are >10% lower than As is scenario, the cell will display a red background. The color-coded feature allows the user to quickly interpret results and understand which scenario has higher/lower environmental impacts.

- Chart 1 = Global Warming Potential
- Chart 2 = Acidification Potential
- Chart 3 = Eutrophication Potential
- Chart 4 = Photochemical Ozone Creation Potential

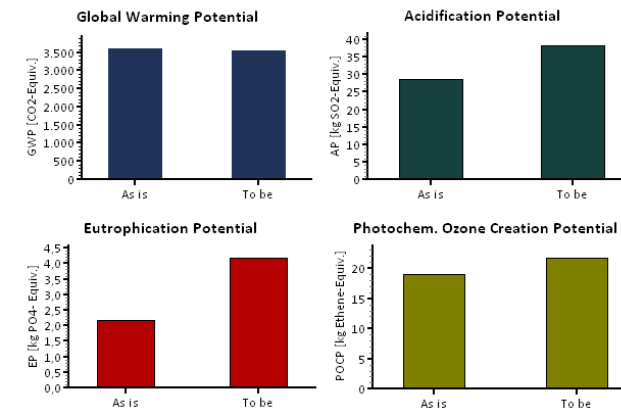
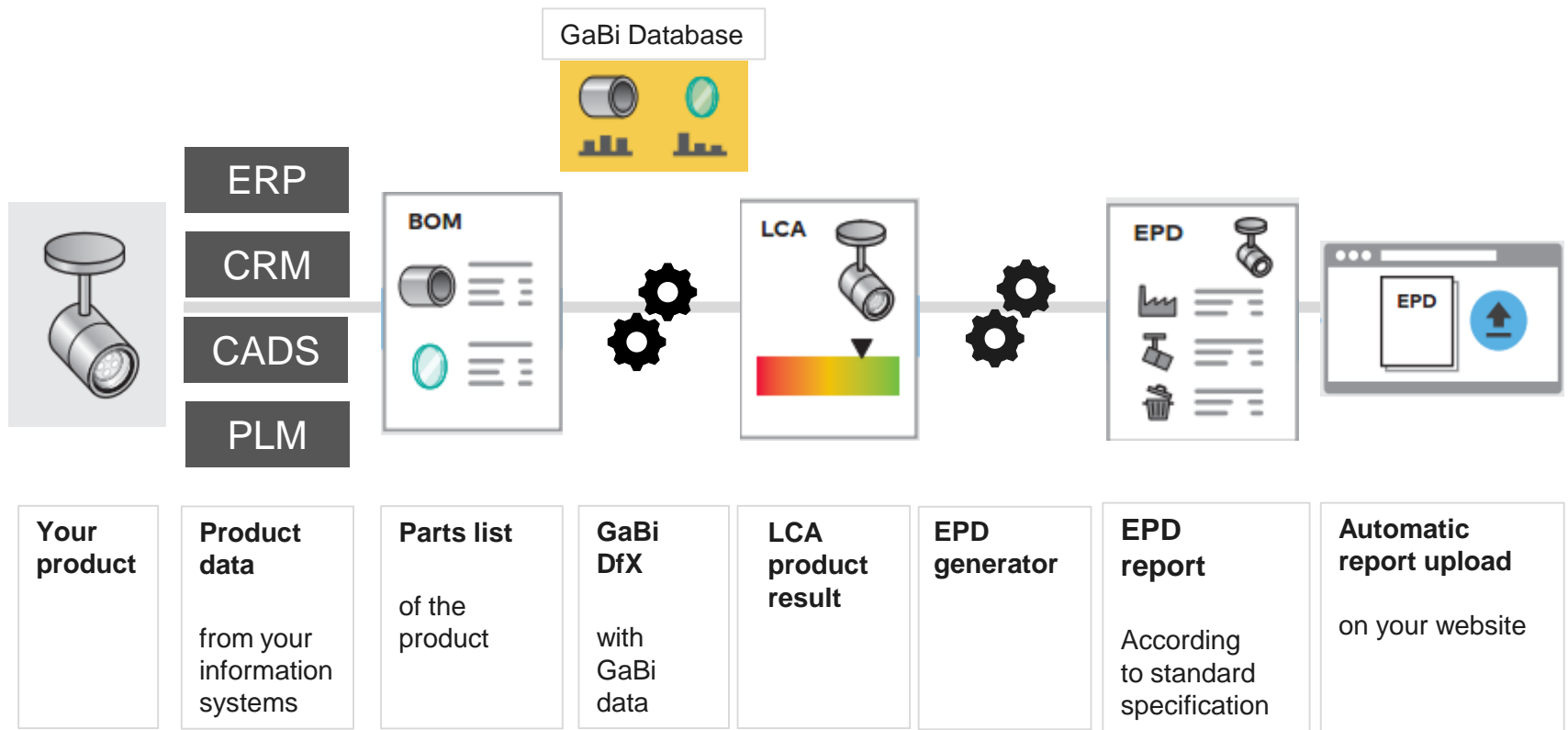


Table 7: Color-Coded Comparison of LCIA results

	As is	To be
AP [kg SO ₂ -Equiv.]	28,73	38,23
EP [kg Phosphate-Equiv.]	2,16	4,19
GWP [kg CO ₂ -Equiv.]	8235,08	8752,54
POCP [kg Ethene-Equiv.]	19,03	21,79

Results presented in table form

Automatic EPD-Creation with thinkstep GaBi





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Benefits of EPDs

EPDs...

deliver **communicable environmental information** about your products for marketing and corporate communication

support **decision-making process** with increased transparency and reliability, but do not assess products as good or bad

are **voluntary and standardized**, but provide necessary information for **CE marking**

have been required in some **building certification systems** and public tenders and therefore have become “must-have” for product manufacturer

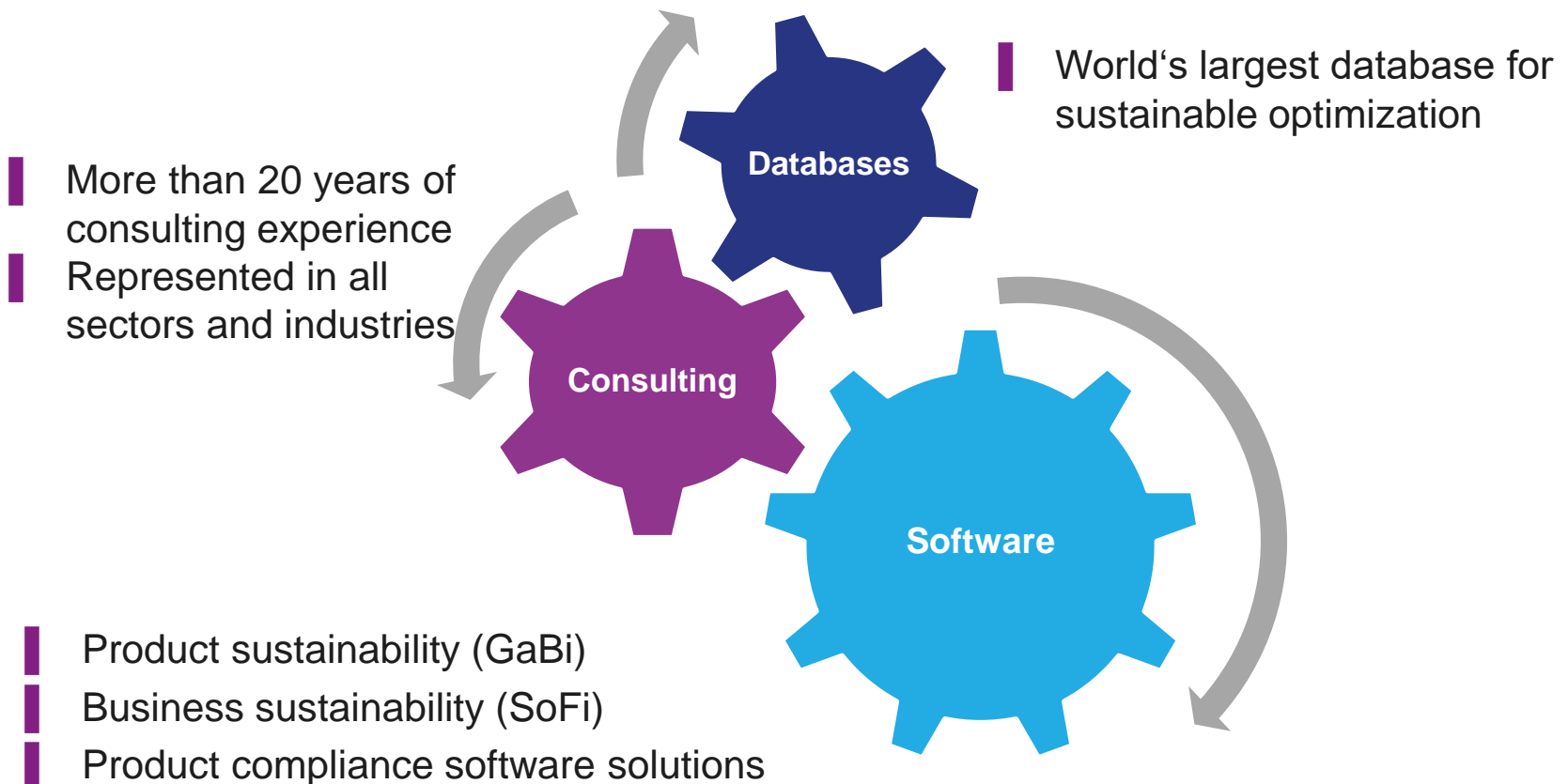
can be prepared by manufacturers themselves and the results used in **product development**



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About thinkstep & Environdec

We help companies to become more environmentally friendly by providing consulting services from experts and access to high-quality data and by making available user-friendly products and business software.



Founded in 1991, thinkstep now is among the leading sustainability consultancies in the world



3000 Customers worldwide

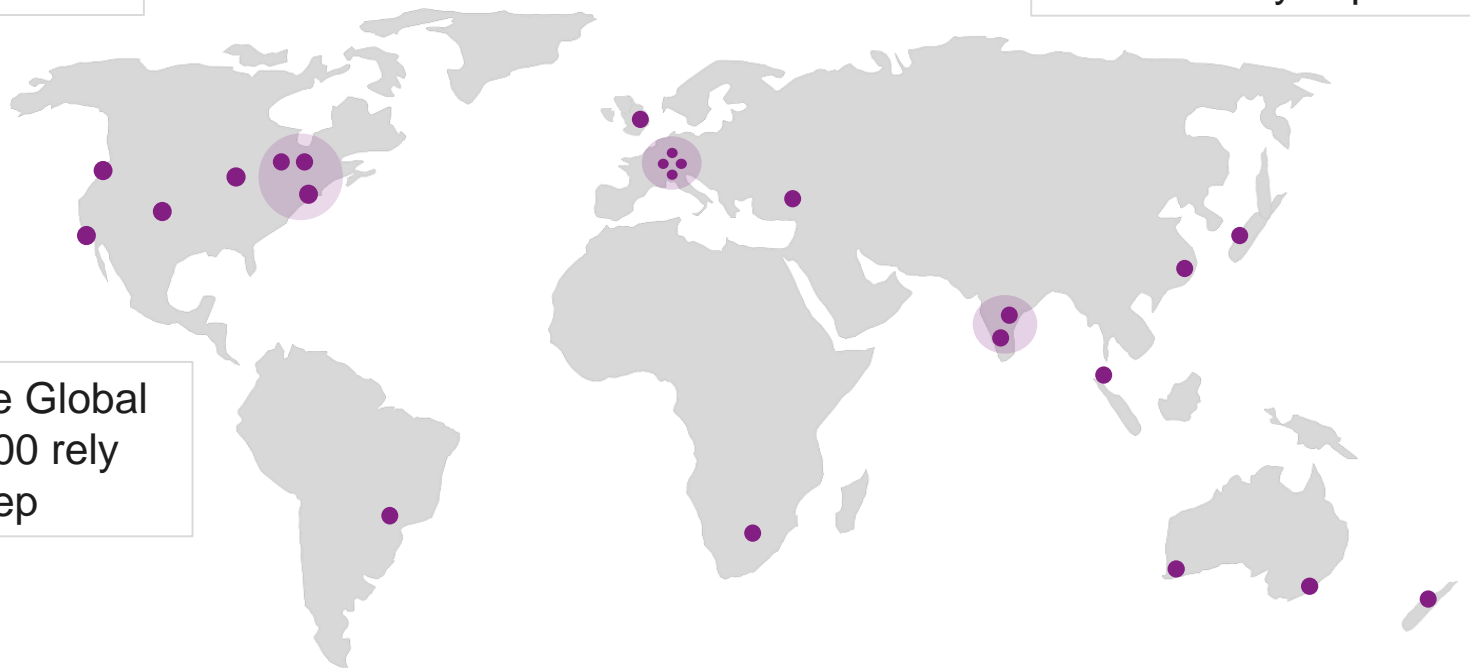
Global presence

160+ International sustainability experts

40% of the Global Fortune 500 rely on thinkstep

Almost **12.000 datasets**
To optimize products and processes sustainably

Data foundation to model complete value chains and products **20+** in sectors



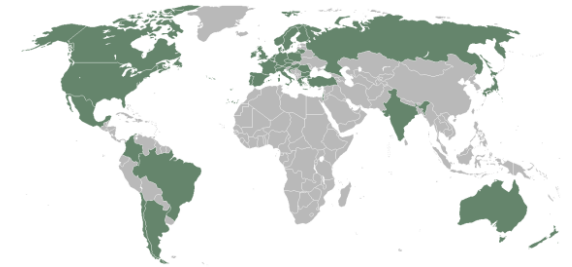
The International EPD® System



THE INTERNATIONAL EPD® SYSTEM

Our objective:

“To help and support organizations to communicate the environmental performance of their products (goods and services) in a credible and understandable way.”



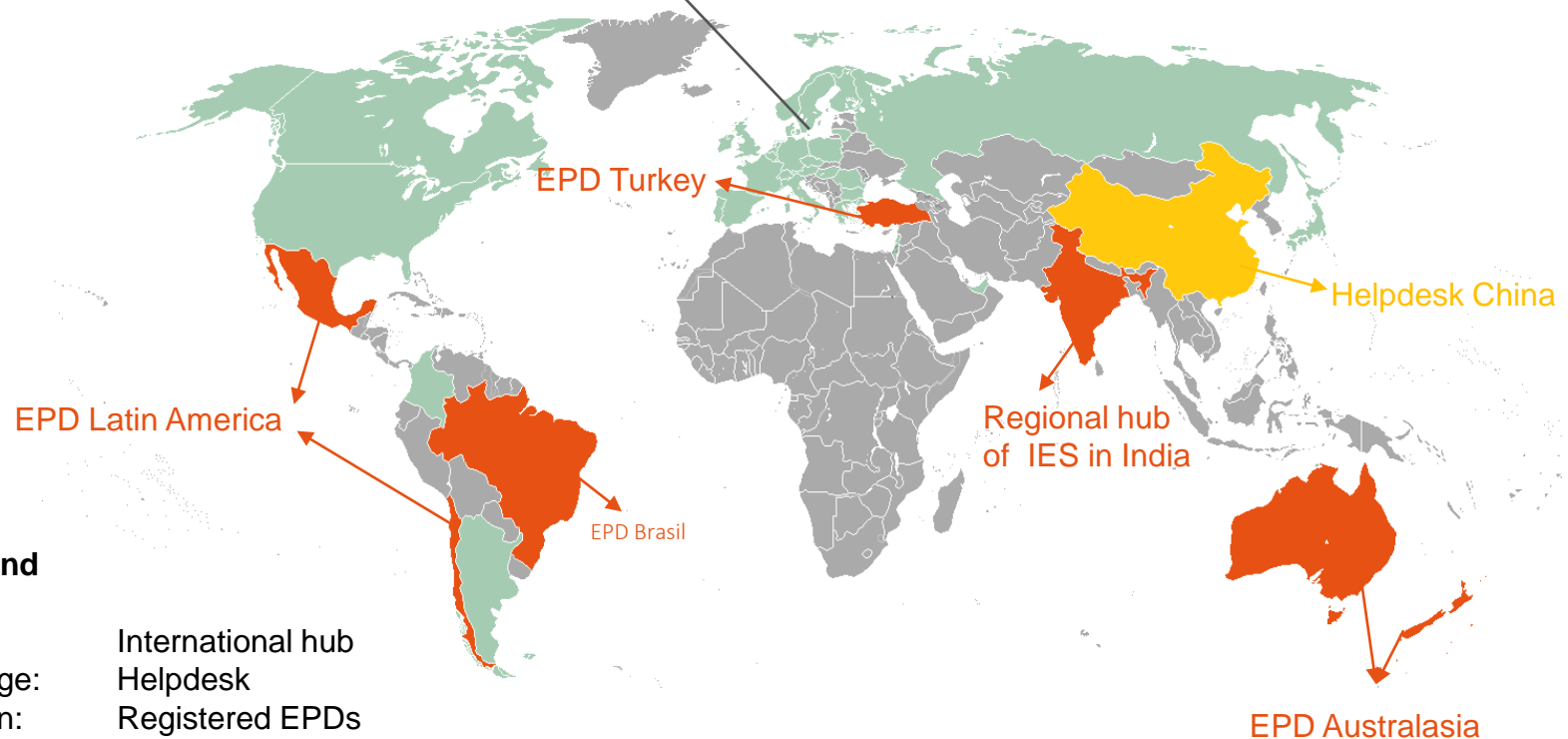
Broadly applicable:

- Organisations in any country
- All goods and services
- Global network of stakeholders

A globally aligned EPD programme with dedicated national hubs and helpdesks.



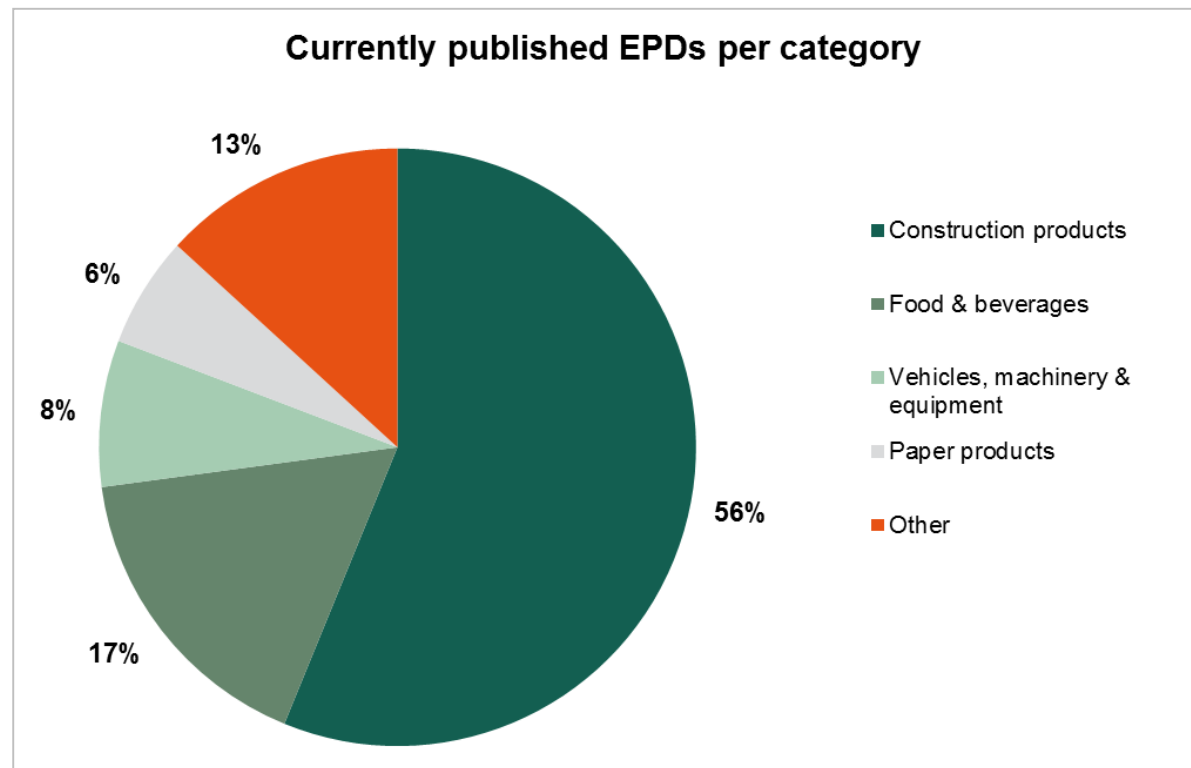
Program Operator IES
Board of Directors IES
Secretariat IES



EPDs from companies in 40 countries and 6 continents.

More than 840 published EPDs.

Top 5 countries
numbers of EPDs:



Regional programmes:

- 5 regional hubs

Mutual recognitions with established programme operators:

- Spanien – GlobalEPD (AENOR)
- Germany – Institut Bauen und Umwelt e.V. (IBU)
- Norwegen – The Norwegian EPD-Foundation (EPD Norge)



International collaboration platforms

- ECO Platform
- InData
- GLAD



Thank you
for your Attention!



thinkstep AG

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