THE EXPANDING **EPD** WORLD: A SOURCE AND SINK OF INFORMATION ABOUT ENVIRONMENTAL PERFORMANCE

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Content

- What is it
- What is the trend
- What you need
- What you get

EPD

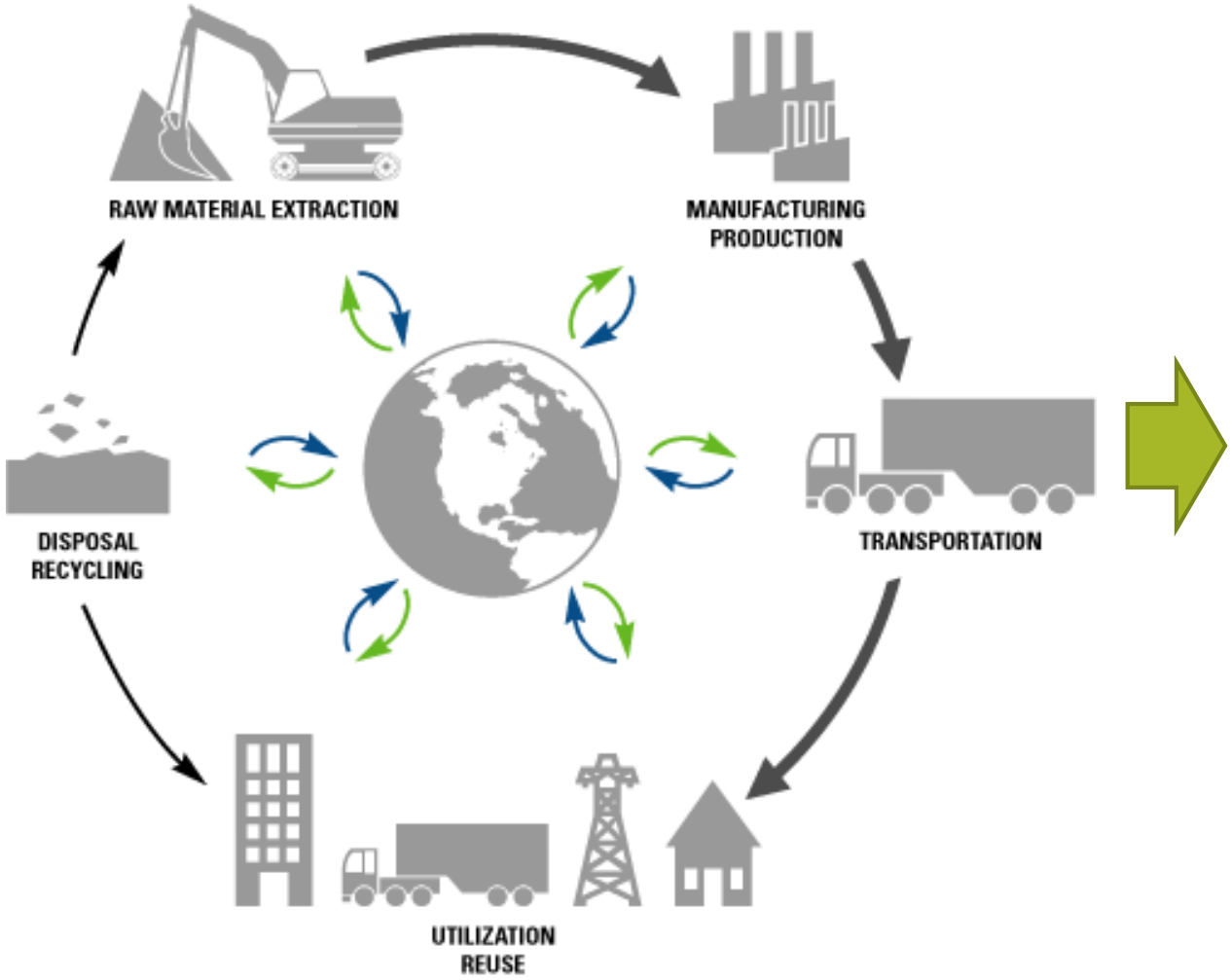
….with an eye on possible synergies with ETV

What is it?

- ISO 14025 - Type III. environmental declarations - many EPD program operators
- Product category rules (PCR), e.g.
  - EN 15804 – construction products
  - EN 50693 – electronic and electrical products
  - Many PCRs for different product categories
- Life Cycle Assessment – background report
- EPD document:
  - Company description
  - Product technical performance
  - Content declaration
  - LCA results
  - Additional environmental information

- Third-party verification
- Voluntary
- No predefined performance limits

Life Cycle Assessment – ISO 14040/44



	Life cycle 1	Life cycle 2	….
Resource depletion (kg Sb eq.)	0,04	0,03	…
Primary energy (MJ)	166	135	…
Climate change (kg CO_2 eq)	10,3	7,3	…
Acidification (kg SO_2 eq)	1,2	3,3	…
Eutrophication (kg PO_4 eq)	0,03	0,5	…
Hazardous waste (kg)	1,5	1,3	…
Non hazardous waste (kg)	88,5	55,4	…
…..			
.....			

EPD
example

ENVIRONMENTAL PRODUCT DECLARATION

GREENSTONE INDUSTRIAL CONSTRUCTION AGGREGATE

Source:
https://www.epditaly.it/epd/greenstone-recycled-construction-aggregate/

EPD example

ENVIRONMENTAL

THE PRODUCT

Greenstone is an industrial construction aggregate. Black slag arising from the Electric Arc Furnace process represents the core material of the aggregate. This residue is a ternary blend of oxides which is 100% inert thanks to a customized process patented in collaboration with Politecnico di Milano.

Once produced and transformed, the black slag becomes Greenstone; the product has several granulometries certified via 2+ system and according to UNI EN 13242.

The aggregate is sold to external companies to be used in road pavements, cement aggregates and bituminous conglomerates. The adoption of the Greenstone aggregate allows to avoid the depletion of inert natural materials such as gravel, with savings in terms of land use.

INFORMATION	DESCRIPTION
PRODUCT IDENTIFICATION	Greenstone recycled construction aggregate coming from black slag
PRODUCT FEATURES	**CE mark using 2+ scheme according to the following standards**: - GREENSTONE 0-90: UNI EN 13242 - GREENSTONE 0-120: UNI EN 13242 - GREENSTONE 0-200: UNI EN 13242 - GREENSTONE 20-120: UNI EN 13242
PRODUCT PROPERTIES (UNDER EN10080:2005)	**Granulometry [d/D]**: - GREENSTONE 0-90: 0/90 - GREENSTONE 0-120: 0/100 - GREENSTONE 0-200: 0/150 - GREENSTONE 20-120: 16/125
	Volumic mass [t/m³]: - GREENSTONE 0-90: 3.48 - GREENSTONE 0-120: 3.58 - GREENSTONE 0-200: 3.56 - GREENSTONE 20-120: 3.48
	Watr absorption [%]: - GREENSTONE 0-90: 1.90 - GREENSTONE 0-120: 1.90 - GREENSTONE 0-200: 1.30 - GREENSTONE 20-120: 1.60
	Chemical evaluation and release of substances within the thresholds included in DM

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EPD
example

ENVIRONMENTAL

THE PRODUCT

Greenstone is an industrial construction aggregate. Black

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UPSTREAM

- A1
  - Scrap pretreatment
  - Shearing
  - Shredding
  - Sorting
  - Raw material and Energy production

CORE

- A2+A3
  - Supplying transport
  - Billets production
  - Greenstone treatment
  - Internal handling
  - Ancillary materials and activities
  - Air emission
  - Water emission
  - Waste management

DOWNSTREAM

- A4 Distribution
- C1 De-construction demolition
- C2 Transport
- C3 Waste processing
- C4 Disposal
- D Reuse - Recovery Recycling potential

Source:
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EPD
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Greenstone is an industrial construction aggregate. Black

ENVIRONMENTAL PERFORMANCE

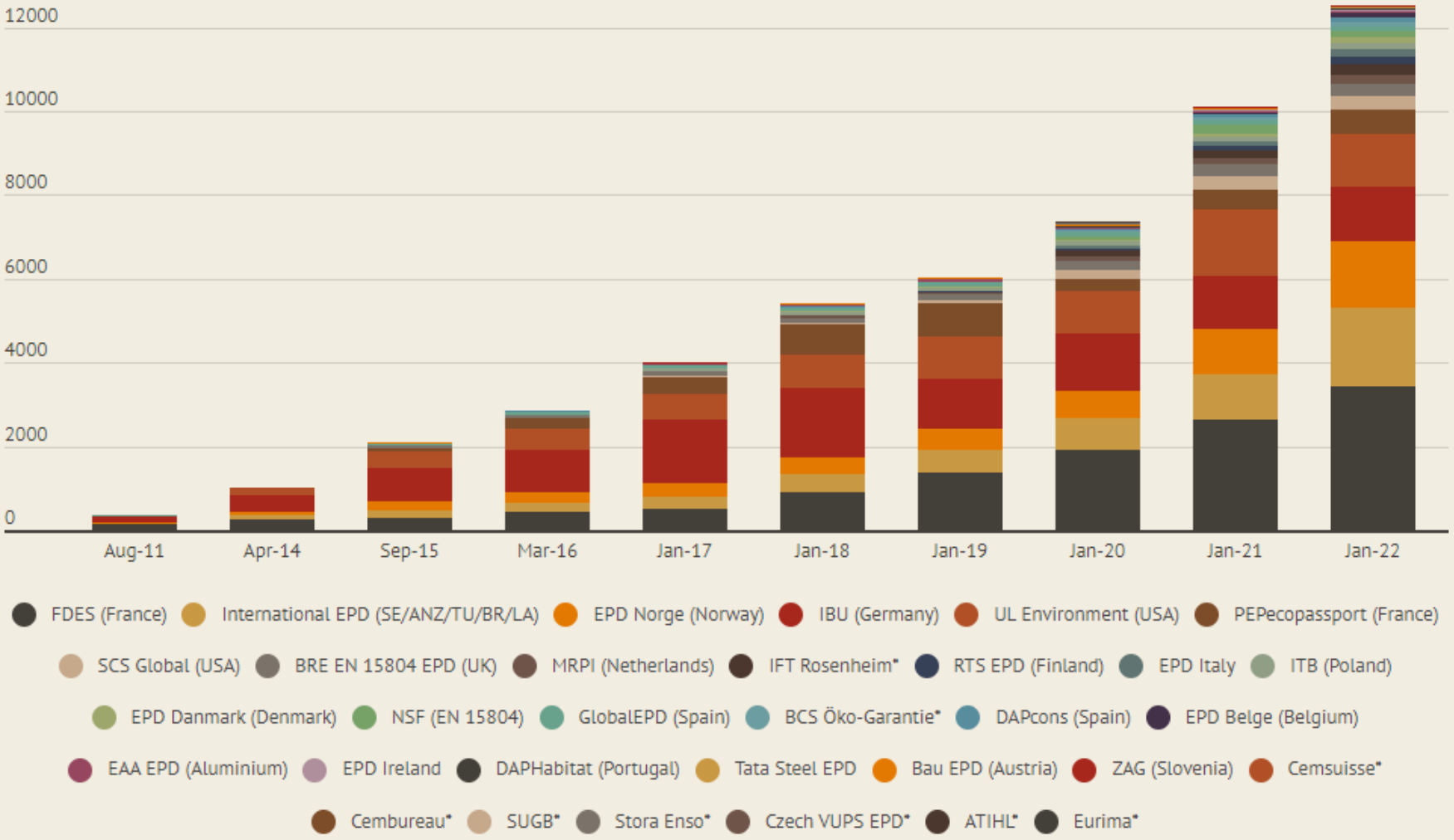
The detailed environmental performance (in terms of use of resources, pollutant emissions and waste generation) is presented for the three phases, Upstream, Core and Downstream and related sub-phases (A1-A2-A3-A4-C1-C2-C3-C4-D). The numbers reported in the following tables are the outcome of rounding. For this reason total results could slightly differ from the sum of contributions of the different phases.

TABLE OF MODULES

POTENTIAL ENVIRONMENTAL IMPACTS	UNITS / D.U.	UPSTREAM	CORE PROCESS		DOWNSTREAM					TOTAL	D
		A1	A2	A3	A4	C1	C2	C3	C4		
GWP	kg CO_2 eq	1,46E+01	6,04E+00	9,76E+00	2,75E+00	5,38E+01	3,44E+01	0,00E+00	2,52E+00	**1,24E+02**	0,00E+00
GWP,f	kg CO_2 eq	1,46E+01	6,04E+00	9,76E+00	2,75E+00	5,38E+01	3,44E+01	0,00E+00	2,52E+00	**1,24E+02**	0,00E+00
GWP,b	kg CO_2 eq	5,90E-03	2,65E-03	5,25E-03	1,49E-04	3,62E-03	1,86E-03	0,00E+00	3,34E-04	**1,98E-02**	0,00E+00
GWP,luluc	kg CO_2 eq	1,24E-03	6,23E-05	1,75E-03	2,10E-05	7,88E-04	2,63E-04	0,00E+00	6,21E-05	**4,18E-03**	0,00E+00
ODP	kg CFC11 eq	3,60E-06	1,40E-06	2,01E-07	6,44E-07	1,21E-05	8,05E-06	0,00E+00	5,26E-07	**2,65E-05**	0,00E+00
AP	mol H+ eq	6,23E-02	3,49E-02	8,89E-02	1,59E-02	5,81E-01	1,99E-01	0,00E+00	2,60E-02	**1,01E+00**	0,00E+00
EP,f	kg P eq	2,75E-04	7,80E-06	1,22E-04	1,51E-06	4,02E-05	1,89E-05	0,00E+00	9,10E-06	**4,75E-04**	0,00E+00
EP,m	kg N eq	1,11E-02	1,39E-02	3,99E-02	6,41E-03	2,60E-01	8,01E-02	0,00E+00	1,13E-02	**4,23E-01**	0,00E+00

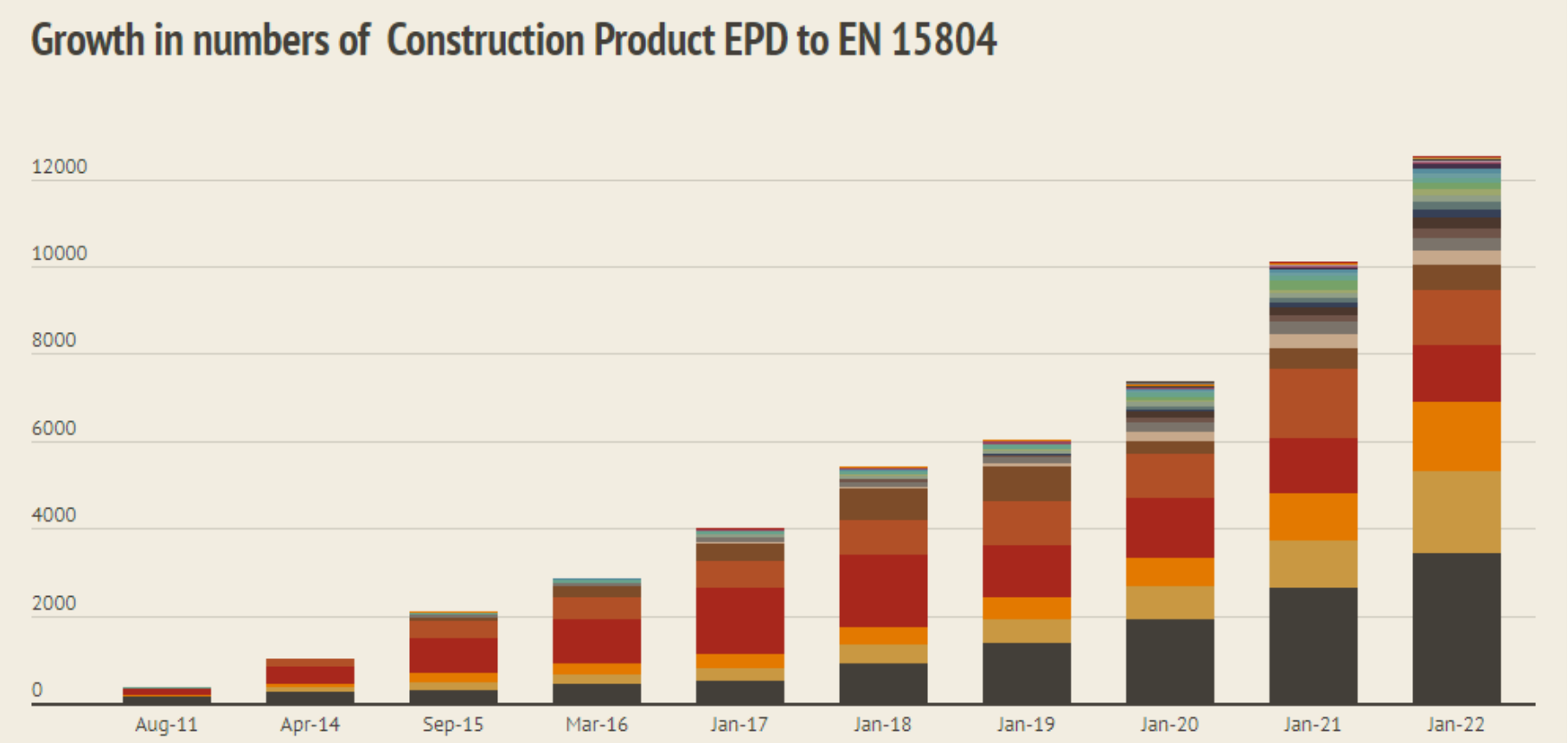
Source:
https://www.epditaly.it/epd/greenstone-recycled-construction-aggregate/

Growth in numbers of Construction Product EPD to EN 15804



* EPD Programmes not previously surveyed so no data provided before 2019.

Source: https://constructionlca.co.uk/



20-25 years ago:

Why LCA? Why EPD?

Last 10-15 years:

exponential interest

Present:

the „wave" is growing

Source: https://constructionlca.co.uk/

Electronic and electrical products

Dec 2021:

28 EPD

Nov 2022:

100 EPD

Driving forces

- Private procurement of large organizations - supply chain management
- Sustainable building certification schemes

- Public procurement
- EU policy
  - Circular Economy Action Plan – a main pillar of the EU Green Deal
  - Sustainable Products Initiative - Ecodesign for Sustainable Products Regulation (ESPR)

- B2B communication
- Need for data in the supply chain

Trends in requirements

Analyse and report
- The existence of the LCA / EPD is sufficient

Compare and improve
- Improvement has to be demonstrated vs a baseline

Achieve limits
- Rating or cap to define limits

From voluntary to mandatory…

What you need

- Data, data, data on technologies / manufacturing processes
  - Materials consumption
  - Energy consumptions
  - Waste
  - Emissions
- Core process
- Upstream
- Downstream
  - e.g. End of life is mandatory for construction products
- Improvement!

What you get

- Info about direct and indirect impacts
  - Verified mass balances
  - Hot spots
  - Problems unhidden
  - Improvement options

- Source of
  - product category rules
  - alternative products/technologies – benchmark
  - hot spots of product - where to improve

Common grounds and synergies

- Assessment of environmental performance
- Life cycle perspective
- Need to provide evidence on added value and improvement
- Benchmarking

- EPD is industry driven – existing market value
- ETV can foster environmental improvement in the EPD world

Thanks for your attention!

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