

Circular technologies in construction

Putting Science Into Standards



**Building information (reporting formats,
data management and storage)**

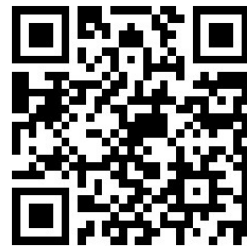
Building information (reporting formats, data management and storage)



Chair: Martha LEWIS, CEN/TC 350 SC 1



Rapporteur: Manfred FUCHS, EC JRC



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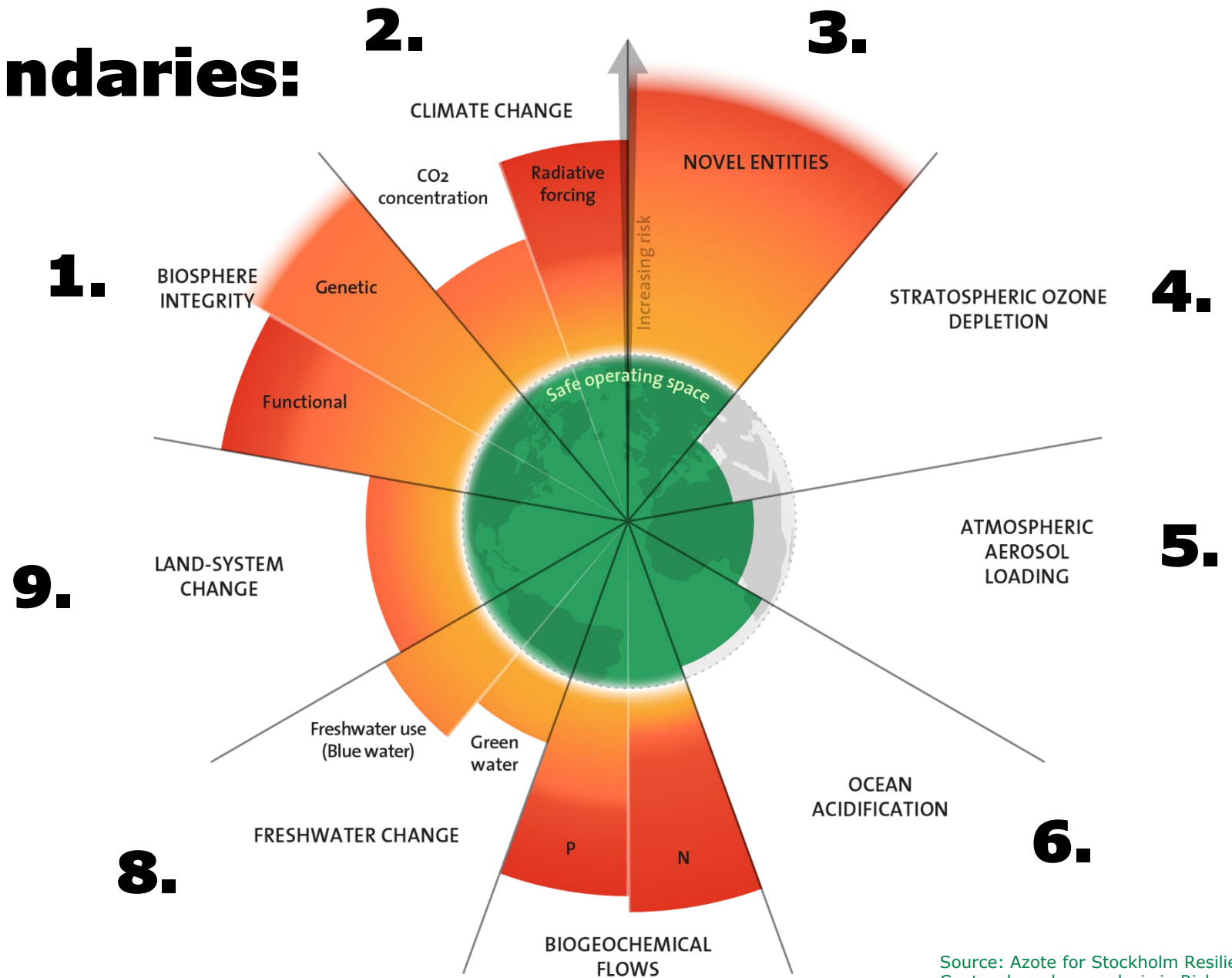
Select the **Building information** room

putting

SCIENCE into

standards

Planetary boundaries:



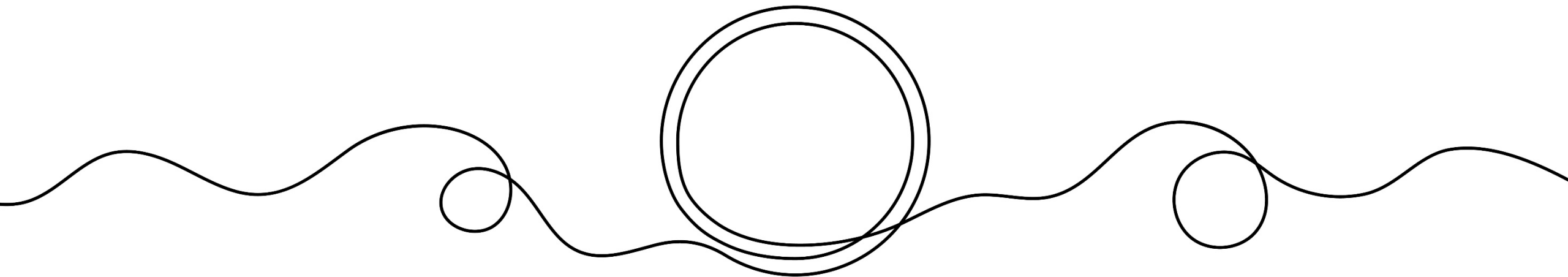
Source: Azote for Stockholm Resilience Centre, based on analysis in Richardson et al 2023

'Putting science into standards' workshop – Circular Technologies for construction industry

Denmark is only 4% circular

Denmark consumes **142.2 million tonnes of virgin materials**—metal ores, non-metallic minerals, biomass and fossil fuels—each year

Secondary materials in the total consumption—5.9 mil tonnes



Consumption per capita

DK: 24.5 tonnes of virgin materials per person per year

EU: 17.8 tonnes

Global: 11.9 tonnes

Estimated sustainable level: 8 tonnes



Which Danish sectors?

Construction 31%

Manufacturing 18%

Agrifood 15%

Combined these 3 sectors represent 64% of the material footprint and 56% of the carbon footprint



An aerial photograph showing a large-scale demolition project. The central area is a massive pile of construction waste, including wood, metal, and debris. Surrounding this pile are several large, curved structures with bright orange corrugated metal roofs. In the background, a grey asphalt parking lot contains several yellow excavators and other construction equipment. The overall scene depicts the end of a building's life cycle.

Construction waste in 2025:
1.1 billion tons every year

Photo by [Jarrett Mills](#) on [Unsplash](#)

How can the

construction

sector

improve its circular performance?

**How can the standardization
of digital product
passports improve
circular performance?**

**How do we guarantee that a component
can be reused, with
confidence**

**but also with the minimum required information, in order to save
time and costs, so that circular construction is a competitive and
plausible solution?**

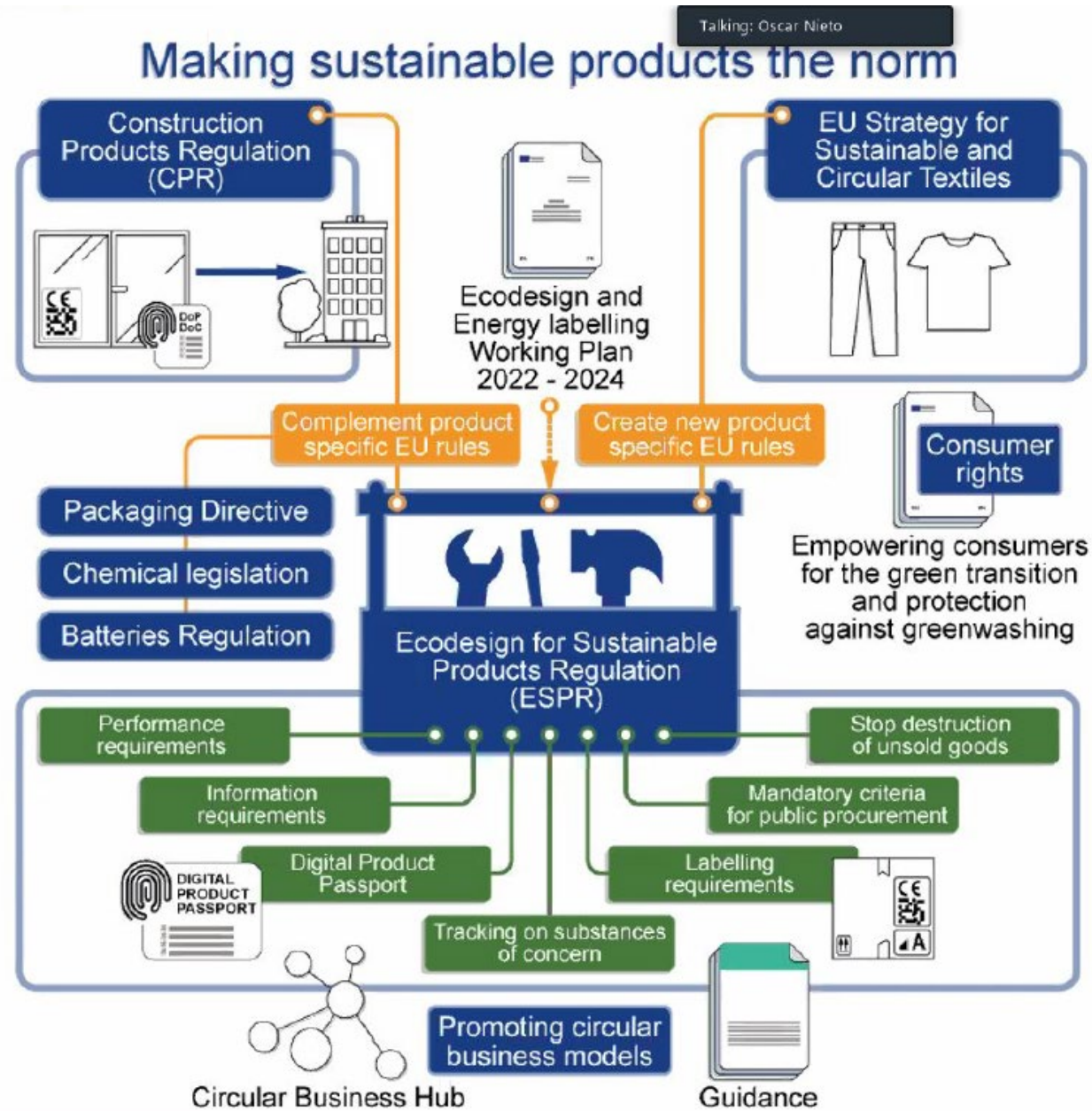
**What role does the BIM play in
circularity information
management
of both newly designed and existing buildings?**

putting science into

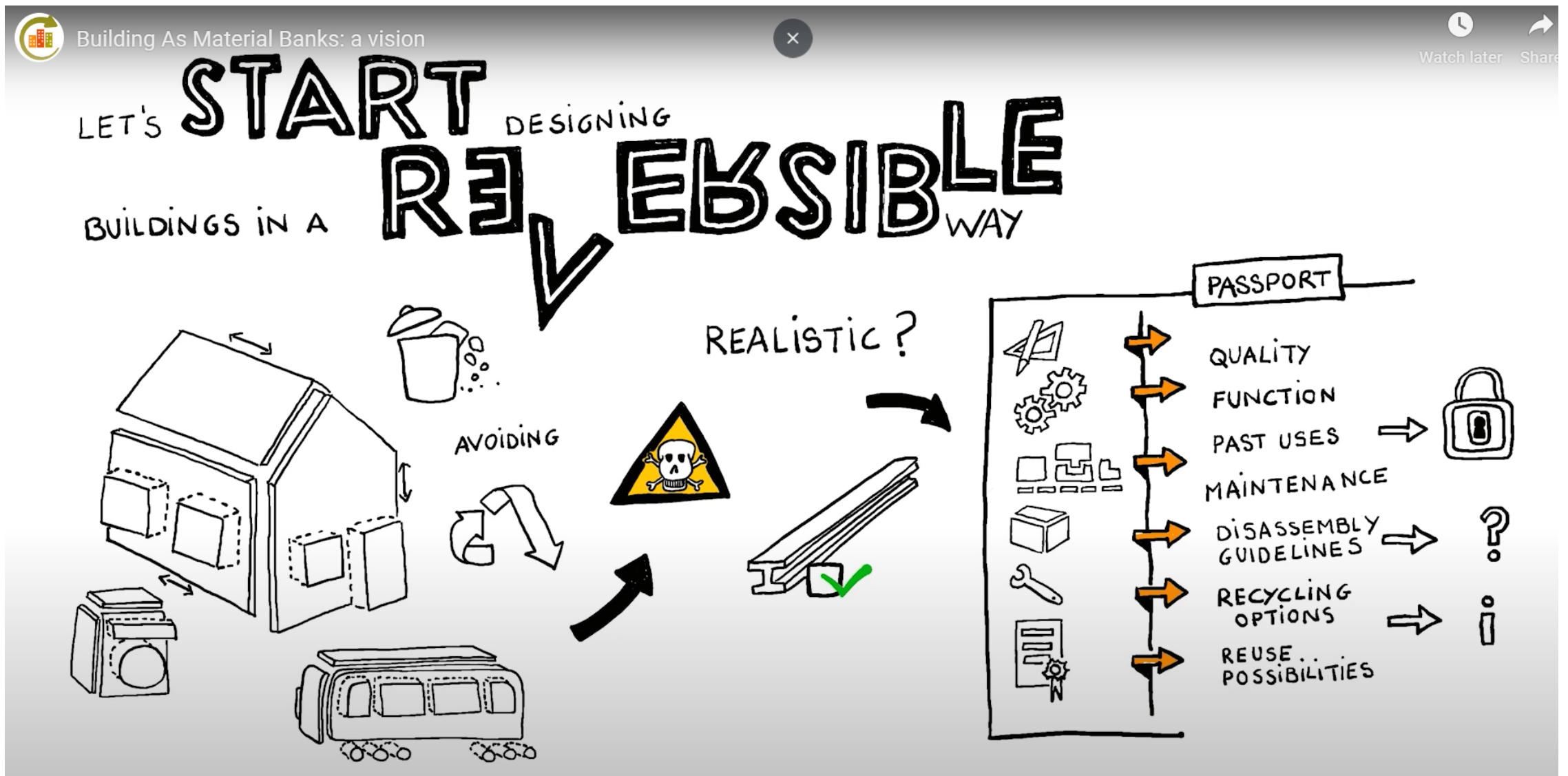
STANDARDS

EC Initiatives

Circular Economy Spring Package,
2022



BAMB – Material/Building Passport



DPP – Digital Product Passport

CEN/CLC/JTC 24 – clock ticking toward 31 December 2025: Data framework

Draft of the ESPR shortlists 12 product categories:

		WATER	AIR	SOIL	BIODIVERSITY	WASTE	CLIMATE CHANGE	ENERGY USE	HUMAN TOXICITY	MATERIAL EFFICIENCY	LIFETIME EXTENTION	STRATEGIC AUTONOMY
Score 43	TEXTILES and FOOTWEAR	5	2	4	4	5	5	5	3	5	5	1
Score 30	FURNITURE	1	3	3	3	4	3	3	2	3	5	1
Score 30	CERAMICS PRODUCTS	3	3	3	3	3	4	4	1	3	3	1
Score 30	TYRES	3	4	3	3	3	3	3	2	3	3	5
Score 28	DETERGENTS	4	2	1	4	3	3	3	2	3	3	1
Score 26	BED MATTRESSES	1	3	1	2	5	3	3	2	3	3	2
Score 24	LUBRICANTS	2	2	2	2	2	3	3	2	3	3	2
Score 24	PAINTS	3	3	2	3	3	2	2	2	3	1	3
Score 23	COSMETICS	4	2	1	4	3	2	1	2	3	1	1
Score 22	TOYS	1	1	1	1	3	2	2	3	3	5	1
Score 21	FISHING GEARS	4	1	1	4	3	2	1	1	3	1	1
Score 18	ABSORBENT HYGIENE PRODUCTS	2	1	2	2	4	2	2	1	1	1	1

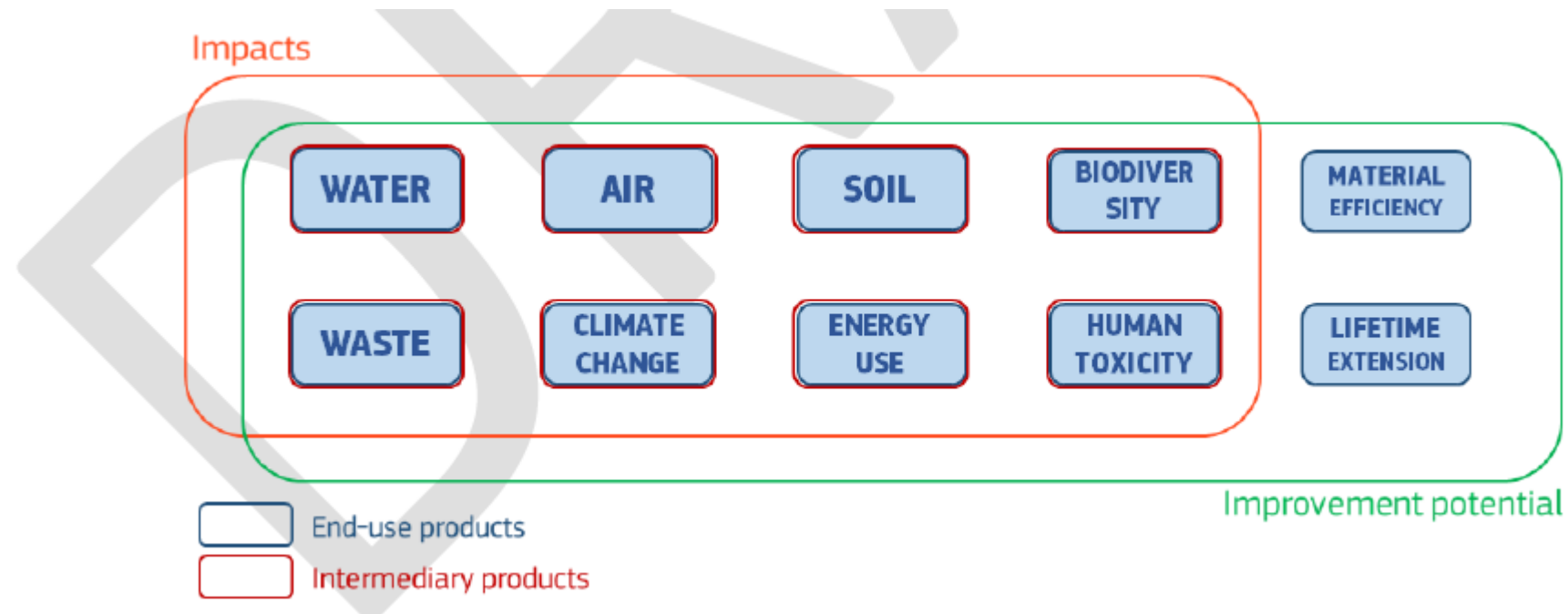
DPP – Digital Product Passport

Draft of the ESPR shortlists 7 intermediate product categories:

	WATER	AIR	SOIL	BIODIVERSITY	WASTE	CLIMATE CHANGE	ENERGY USE	HUMAN TOXICITY	STRATEGIC AUTONOMY
Score 31 IRON & STEEL	5	5	2	2	4	5	5	3	5
Score 27 NON-FERROUS METAL PRODUCTS	3	2	3	2	5	4	5	3	4
Score 26 ALUMINIUM	1	4	4	3	4	4	4	2	3
Score 25 CHEMICALS	3	3	3	3	3	4	4	2	5
Score 23 PLASTICS	3	3	2	2	3	4	4	2	3
Score 22 PULP & PAPER	3	2	3	3	2	4	4	1	2
Score 19 GLASS	3	2	2	3	1	3	4	1	2

DPP – Digital Product Passport

Environmental categories consider for assessment:



An overview of **EC data**
initiatives

Digital transition of construction – initiatives/studies

‘Support of the digitalisation of the built environment, public procurement and SMEs in construction’

- Preparing the ground for a construction **data space**
- Supporting the digitalisation of **building permit** systems
- Supporting adoption of **Building Information Modeling (BIM)**

+ several ongoing Horizon Europe projects on digital permits and logbooks

Technical study for the development and implementation of **Digital Building Logbooks** in the EU

ESPR: **Digital Product Passport (DPP)**

CPR: **Declaration of Performance (DoP)**

DATA GAP

Product contents

Chemical substance contents

Packaging

Operational information

Maintenance

Resource Potential



Construction – today

Safety Data Sheet

DoP & CE mark

Technical product documents

Environmental Product
Declarations

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Circular sustainable construction

Access to missing
sustainability parameters

Continual reassessment of
goals and achievements

Where do you identify data

gaps or gaps in the standards?

Gap analysis

SC-1 W G 2 report

5a Summary of Gap analysis – Section 6:

Circular data, data storage and maintenance and product/building passports

By Martha Lewis

1. Gap in EU Taxonomy: concept requirements exist / standards missing

Gaps are identified in the available DNSH technical criteria as well as in the consultation draft in regards to documentation on product level.

The 2023 hearing version of the Circularity requirements for EU Taxonomy call for digital tools that support preserving and extending service life and future adaptation and reuse; however, there are no existing standards to support implementation.

2. Gap in relation to EPD and to national and international EPD databases

EPDs / EN 15804:2012-A2:2019 do not include circularity indicators, recovery of resources or future resources

3. Gap in standards for:

- a) Product level data – material passports, product data sheets, Construction product regulation revision/ declaration of performance, EPDs
- b) Building level data - Building passport, Digital Building Logbook

4. Gap in standards linked to:

1. data quality, long-term reliability, comprehensiveness and exchange formats
2. the common standards, including semantic standards, data template standards and interoperability protocols
3. the data governance models, business models and strategies for running data spaces

5. Gaps relating to data ownership and sharing; data security and transparency

Support the goals of the EU's Digital Europe Programme and the EU Data strategy.

Dutch CB23 Guideline v2.0: chapter 4.5: Data-access (Open standards, traceable, reducing the information burden, interchangeability, object identification)

Dutch CB23 Guideline v2.0: chapter 5: Data Governance (legislation and regulations)

Response to the gaps in the

SC-1 W G 2 report?