



**DANISH
TECHNOLOGICAL
INSTITUTE**



Life Cycle Assessments and Environmental Product Declarations

**The Role of the Mass
Balance Approach**

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Agenda

- **Principles of Lifecycle Assessments (LCA's)**
- **LCA Methodological Considerations for Bioplastics**
- **Introduction to Environmental Product Declarations (EPDs)**
- **Mass Balance Approach in LCA**
- **The Role of Mass Balance Approach in EPD-development**
- **Regulatory and Market Implications**
- **Conclusions and Q&A**



Principles of Lifecycle Assessments (LCA's)



What is an LCA?

Internationally recognized method of calculation

Governed by international standards

Well-established across many industries

Mapping of lifecycle for a product or system

Documents the environmental performance and impacts

All inputs and outputs are included



When is an LCA the right choice for you?

- Meeting the demands and requirements of current and future clients
- Documenting the 'good' product as well as advantages compared to competitors
- Identifying hot-spots and potentials
- Optimizing and improving the product
- Choice of LCA-methodology is important



LCA Methodological Considerations for Bioplastics



Key Considerations Related to Bioplastics

Sourcing

Production

End-of-life

Data availability

Upstream uncertainties



Bioplastic Challenges: Cradle-to-Grave

Feedstock source

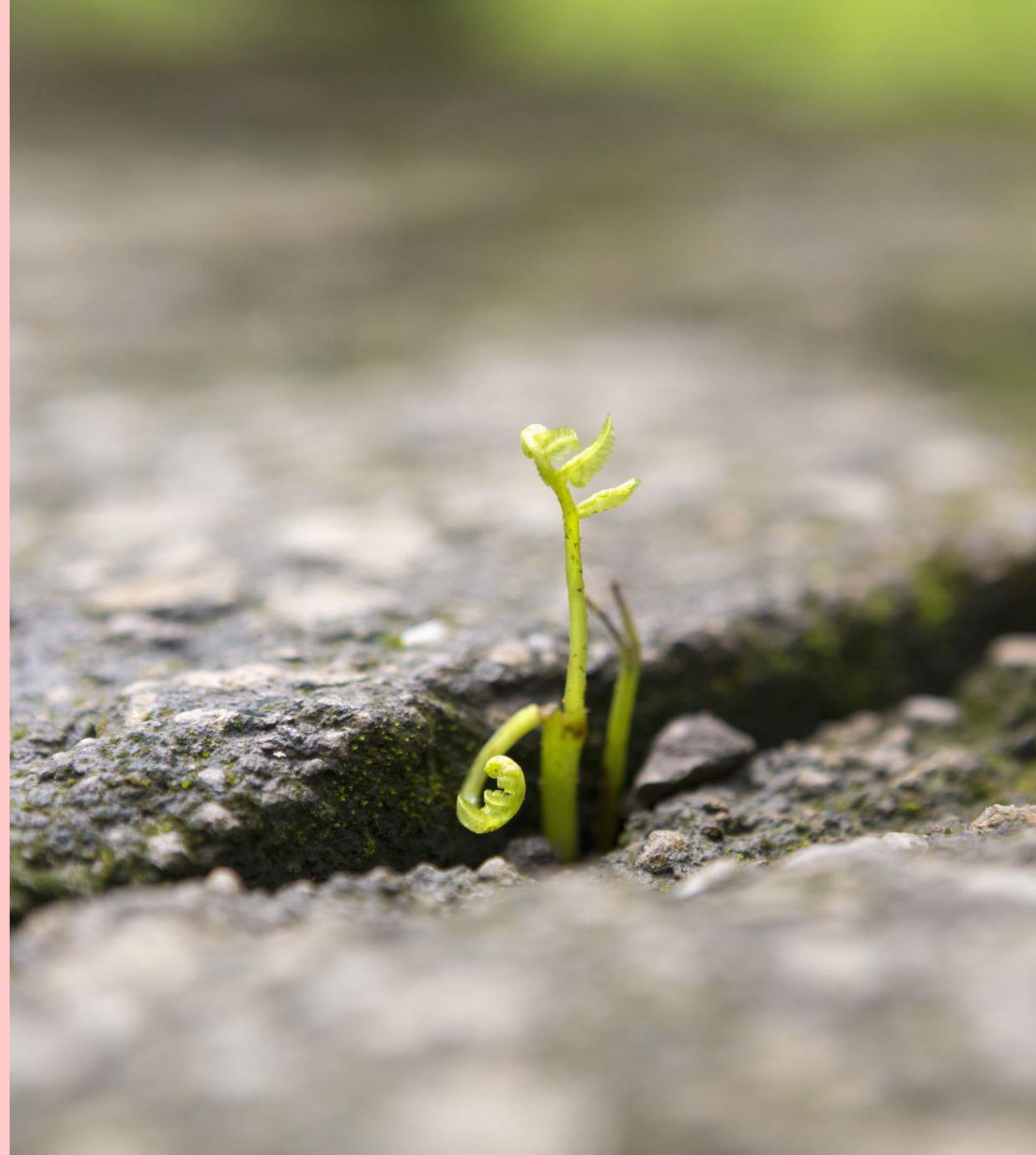
Energy use and type

Water, cultivation and production

Chemical use, polymerization

Land use, deforestation, biodiversity

Carbon, sequestering and offset



Introduction to Environmental Product Declarations (EPDs)



The Rules of an EPD

Standardized

Harmonized

Verified

Published

Established

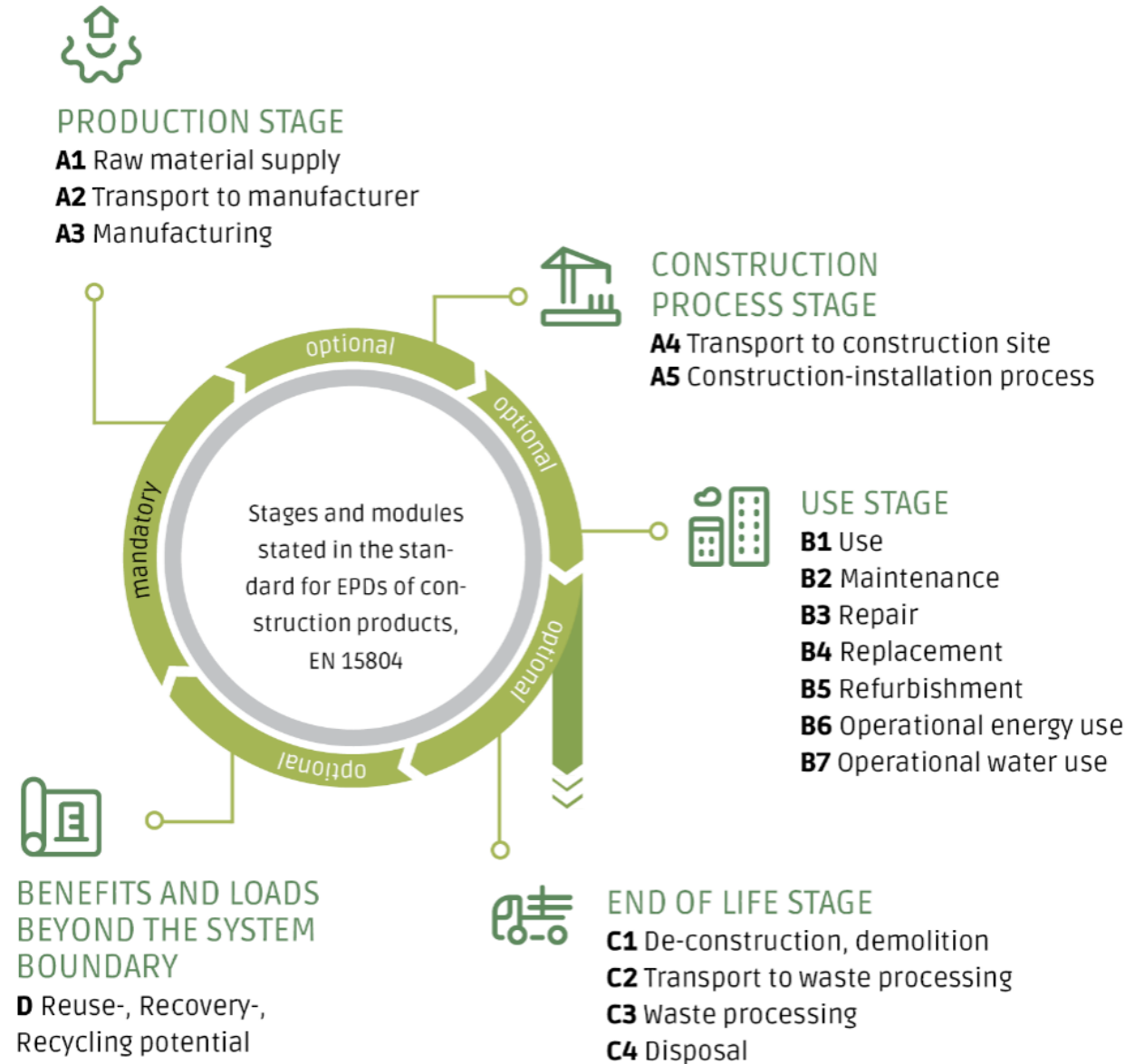


Figure 3. Life Cycle information modules, based on EN15804:2012+A1:2013

The Role of an EPD

Communication & Marketing

Positioning

Comparison

Benchmarking

Documentation



Mass Balance Approach



Chain of Custody Design

Principles

Requirements

Models

Responsibilities



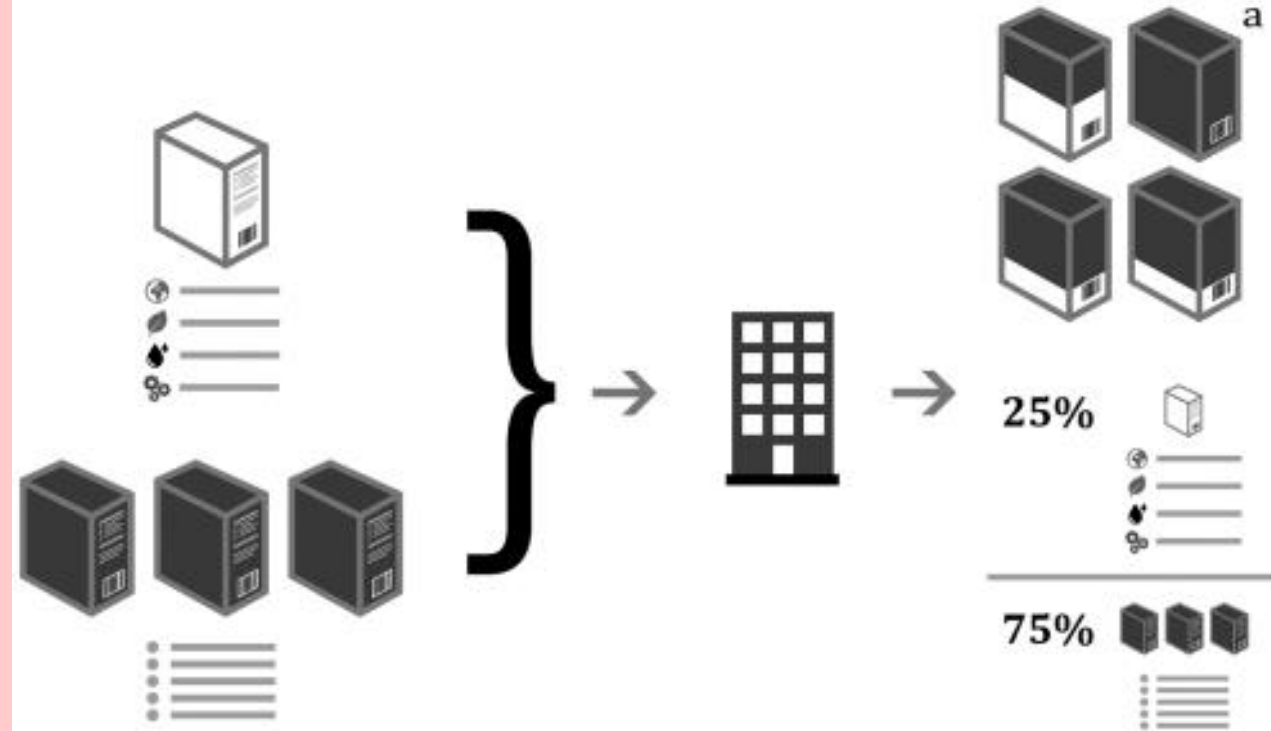
Mass Balance Implementaton

Main characteristics

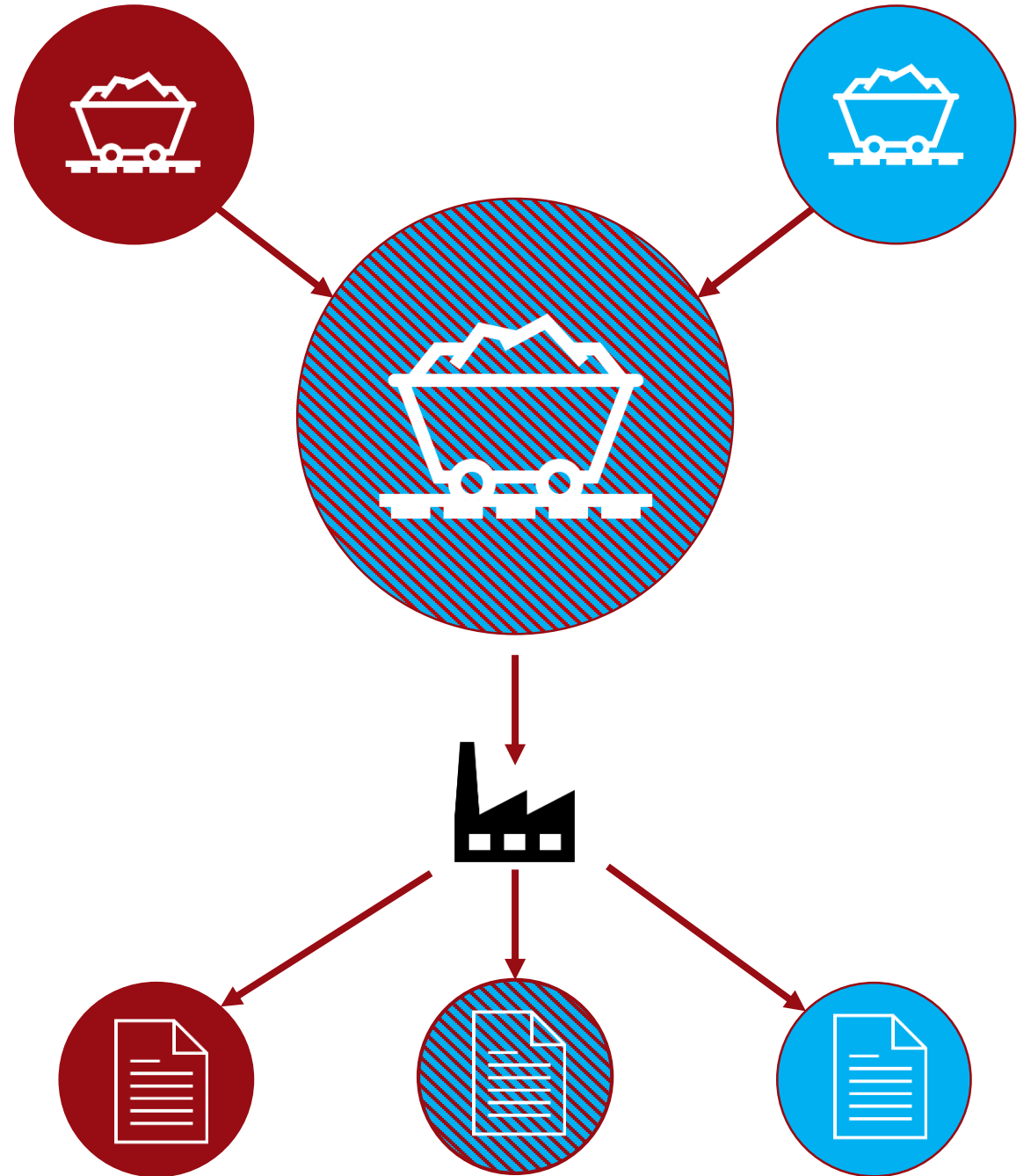
Rolling average percentage

Creditation

Reconciliation



Mass Balance Approach in LCA



Mass balance modelling calculations in LCA

Potentially beneficial for
documenting circular products

Mixing materials of alternative
sources with conventional

Application of Re-use and
Recycling in LCA



Challenges to the approach

Traceability

Credibility

Lack of regulation

Difficulty in verification



The Role of Mass Balance Approach in EPD- development





There is not yet consensus over the use of the MBA within Environmental Product Declarations and discussions are ongoing in both CEN TC350 WG3 and ECO Platform to decide this. However, until such a consensus is reached, **ECO Platform decided on 19 January 2023 that Mass Balance Approaches shall not be used in any ECO EPD.**

Regulation in motion

Previously accepted

Currently not permitted

Discussed at length

Not all EPD's are the same

Future prospects -> EU



Regulatory and Market Implications



Construction Products Regulation (CPR)

Declaration of Performance

CE Marking

Harmonised standards

Notified bodies

Review

Mass Balance approach?



European
Commission



CPR – When?

Decades-long process

Continuous implementation

Prioritized order

Fast-track is possible



Conclusions

- **The potential of Mass Balance Approach in LCA's is apparent**
- **Could assist in documenting circular practices**
- **Need for development of regulations and standards**
- **Currently in conflict with EPD's**





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