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SCREENING OF CUT-OFF AND ALLOCATION RULES IN ENVIRONMENTAL PRODUCT DECLARATIONS

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**SCREENING OF CUT-OFF AND ALLOCATION RULES IN
ENVIRONMENTAL PRODUCT DECLARATIONS**

- **Structure of the presentation:**
 - Introduction
 - Methods
 - Results
 - Conclusions



| MULTI-OBJECTIVE | | |
|-----------------|------|------|
| | VFB | STB |
| STB | WIC | STB |
| 1.25 | 21.4 | 23.5 |

Introduction

- Results from life cycle assessment (LCA) are used for the creation of environmental product declarations type III (EPDs).
- EPDs provide quantitative information about products and services and are framed with ISO 14025 standard.
- Within LCA four phases can be distinguished, where the first one is defining the goal and scope of assessment. In the first LCA phase, and first information in EPDs are cut-off and allocation rules within the examined system boundaries that closer describe how the LCA was performed.

Introduction

- The cut-off rule excludes irrelevant flows of material or energy from system boundaries. Usually, auxiliary flows and the ones with quantities smaller than 1% are excluded. This simplifies the LCA modeling and reduces the efforts of LCA practitioners.
- Allocation partitions the input or output flows of a process or a product system between the product system under study and one or more other product systems. The general recommendation is to avoid allocation whenever it is possible, but in the case of multi input-output processes, an allocation is needed. Allocation of environmental burden commonly can be performed from a mass, economy, and energy criteria.

Methods

- This research examines the use of cut-off and allocation rules in EPDs published by different EPD program operators and various organizations. The focus in this research is on products within the construction/building sector that is also the sector with the largest number of published EPDs in general.
- The criteria for the selection of analyzed EPDs included active EPDs (EPDs in a period of validation), EPDs on the English language, and EPDs that are online available.

Methods

- The starting point in search of EPD program operators is research by Minkov et al. (2015)* that identified 39 EPD program operators.
- Criteria for selection of EPD are:
 - Available online (free access) on product operator website,
 - EPDs from construction/building products,
 - EPDs in the English language,
 - active EPDs.
 - Definition (statement) of cut-off criteria and allocation rules in the EPD itself,
 - A random sample of 5 EPDs from each EPD program operator,



* Minkov, N., Schneider, L., Lehmann, A., Finkbeiner, M.: Type III Environmental Declaration Programmes and harmonization of product category rules: status quo and practical challenges, Journal of Cleaner Production, Vol. 94, pp 235-246, 2015

Methods

- The following questions will be answered for the selected EPDs:
 - Is the cut-off/allocation rule stated in a specific section of EPD?
 - Is there a reference to EN 15804 standard in the section describing the cut-off/allocation rule?
 - Does the section describing the cut-off rule refer to the specifically excluded life cycle stages (modules)?
 - Does the section describing the cut-off/allocation rule refer to the specific flows/processes that are excluded/allocated?
 - Is 1% percentage of excluded flow stated?
 - What kind of allocation principle was used (mass, energy, economic)?

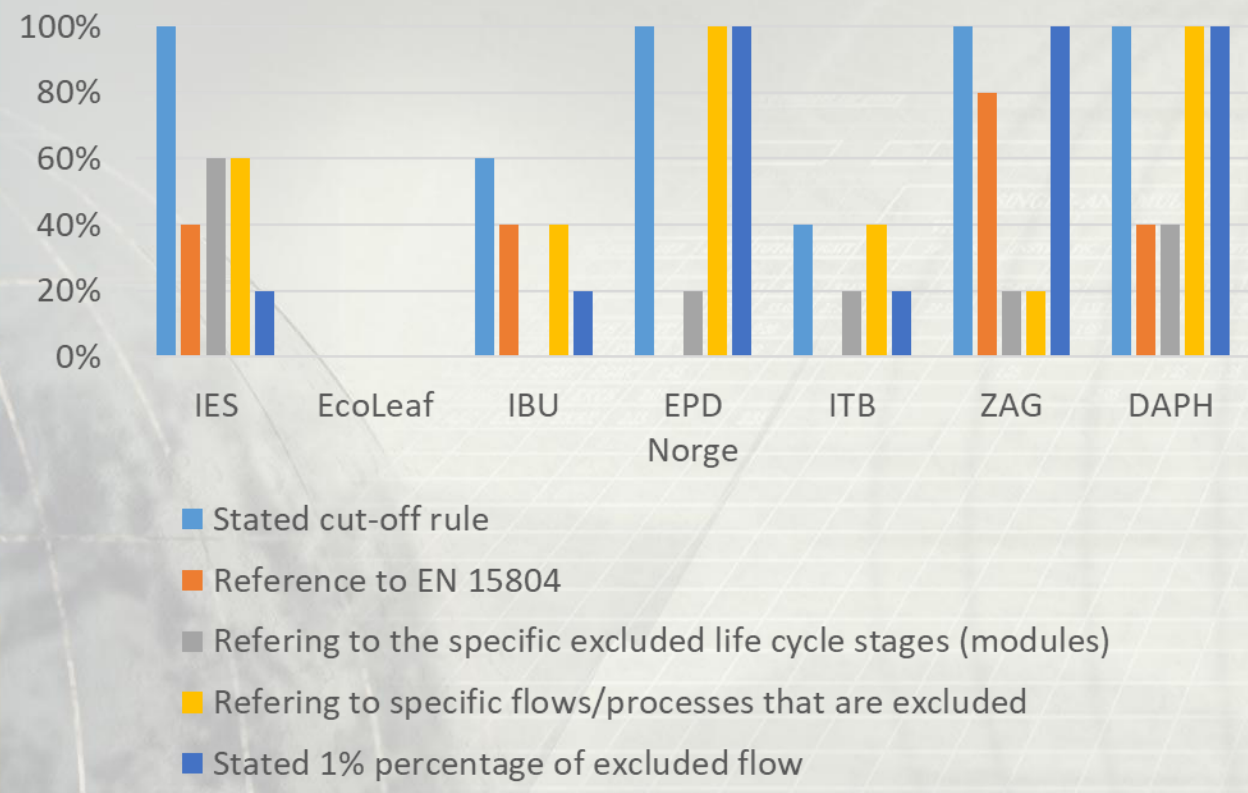
Results

- According to the previous selection criteria, in total 35 EPDs have been selected from 7 program operators, ie. five EPDs per program operator.

| Program operator full name | Program operator abbreviation | Country | Selected number EPDs |
|---|-------------------------------|----------|----------------------|
| The International EPD® System | IES | Sweden | 5 |
| EcoLeaf | EcoLeaf | Japan | 5 |
| Institut Bauen und Umwelt e.V. | IBU | Germany | 5 |
| The Norwegian EPD Foundation | EPD Norge | Norway | 5 |
| Instytut Techniki Budowlanej | ITB | Poland | 5 |
| Slovenian National Building and Civil Engineering Institute | ZAG | Slovenia | 5 |
| The DAPHabitat system | DAPH | Portugal | 5 |
| Total | | | 35 |

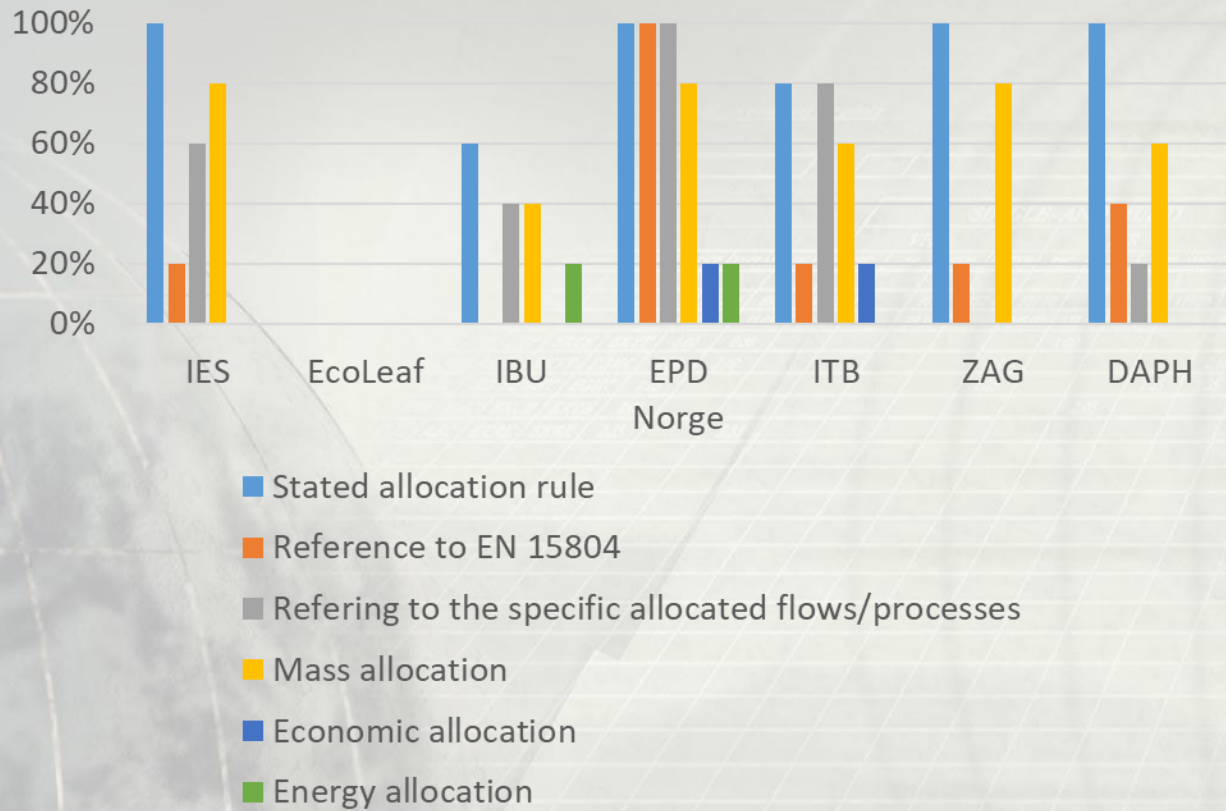
Results

Results for the cut-off rules



Results

Results for the allocation rules

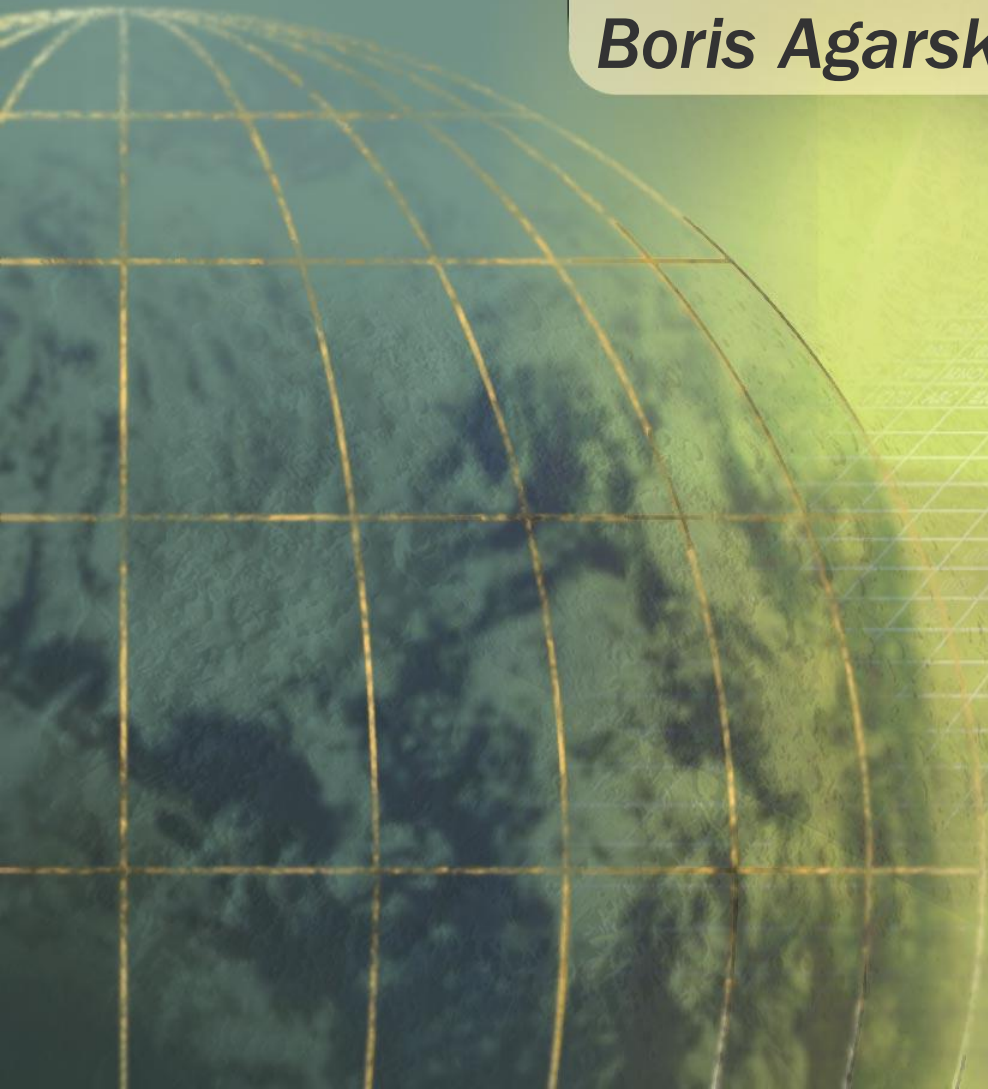


Conclusions

- Results confirm the findings of previous research in this field that large differences exist in practices of EPDs published by different program operators and that further harmonization is needed.
- Most EPDs present cut-off and allocation rules, but the results show a different way of presenting information in published EPDs and inconsistencies within the EPDs of the same product group (construction) and with ISO 14025 and EN 15804 standard.
- It has to be pointed out that only random five EPDs have been evaluated per program operator.
- Future research should analyze a larger sample of EPDs and program operators. Overall performance for each EPD program provider could be evaluated with multi-criteria decision making methods.

Thank you for your attention

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|------------------|--------|-------|-------|------|-----|-------|--------|--------|--------|--------|-------|--------|-------|-------|-----------|-----|-----|--|
| COUNTRY | REF | DST | TOTAL | NGHT | PIC | VFR | | | IFR | | | PIC | STB | TIC | STB | TIC | STB | |
| | | | | | | IF | STB | INSTR | IF | STB | INSTR | | | | | | | |
| USA | 158421 | 81.11 | 81421 | | | 28.8 | 327.45 | 359.25 | 72.22 | 118.22 | | | | | | | | |
| USA | 100331 | 55.85 | 21.45 | | | 29.50 | | 149.00 | 152.55 | 83.25 | | 545.00 | 83.25 | 21.45 | 29.50 | | | |
| USA | 100331 | 55.85 | 21.45 | | | | | 138 | | | | | | | | | | |
| USA | 100331 | 55.85 | 21.45 | | | | | 210 | | | | | | | 240 | | | |
| USA | 100331 | 55.85 | 21.45 | | | | | 125 | | | | 125 | 1.25 | | | | | |
| USA | 100331 | 55.85 | 21.45 | | | | | | | 205 | | | | 205 | | | | |
| USA | 100331 | 55.85 | 21.45 | | | | | | | | | | | | | | | |
| USA | 100331 | 55.85 | 21.45 | | | | | | | | | | | | | | | |
| USA | 100331 | 55.85 | 21.45 | | | | | | | | | | | | | | | |