



Project: Innovations in circular economy – environmental labels and declarations (ID: 21920002)

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# Environmental product declarations based on life cycle assessment

# Environmental Product Declaration (EPD)

- As previously mentioned in first chapter, EPDs, or type III environmental declarations, are defined with ISO 14025 standard, and contain quantitative environmental data using the previously defined parameters based on LCA.
- Information and data from EPD can be used for the following communication:
  1. Internal environmental management;
  2. Business-to-business;
  3. Business-to-consumer;
  4. Professional buyers.

# Environmental Product Declaration (EPD)

1. Internal environmental management – Use of EPD enables monitoring and improving performance of products. Present product can be evaluated through LCA and EPD can be created as a baseline. Production processes and product itself can gradually be improved through time and improvements can be monitored and measured;
2. Business-to-business – EPD provide relevant and reliable data for communication between the business companies. In order to present the environmental information required by the market, businesses companies in a supply chain can benefit from developing EPDs. With EPD connected companies in supply chain improve their management efficiency and obtain valid environmental information from their partners;



# Environmental Product Declaration (EPD)

3. Business-to-consumer – Product's packaging and marketing material can contain EPD to inform consumers. This way, the consumers are informed about the product and its environmental impact. Simple, fast and understandable information should be used for consumer products;
4. Professional buyers – EPD verifies that the product is systematically evaluated according to program operator and PCR. Information about the products quality, environmental impacts, and use of resources from the supplier can be checked in EPD according to professional purchaser requirements.

# Environmental Product Declaration (EPD)

- EPD have to provide transparent comparison of various product's environmental performances through the product's life cycle stages. In order to be fully comparative, EPD must have the same:
  1. Content and validity period,
  2. Definition of product category, goal and scope, as well as functional unit, system boundaries that cover same life cycle phases,
  3. Life cycle inventory with same procedures and data gathering methods,
  4. Characterization models (factors) and impact categories for assessment of environmental impacts,
  5. Additional environmental information (such as risk assessment, hazardous substances, etc.).

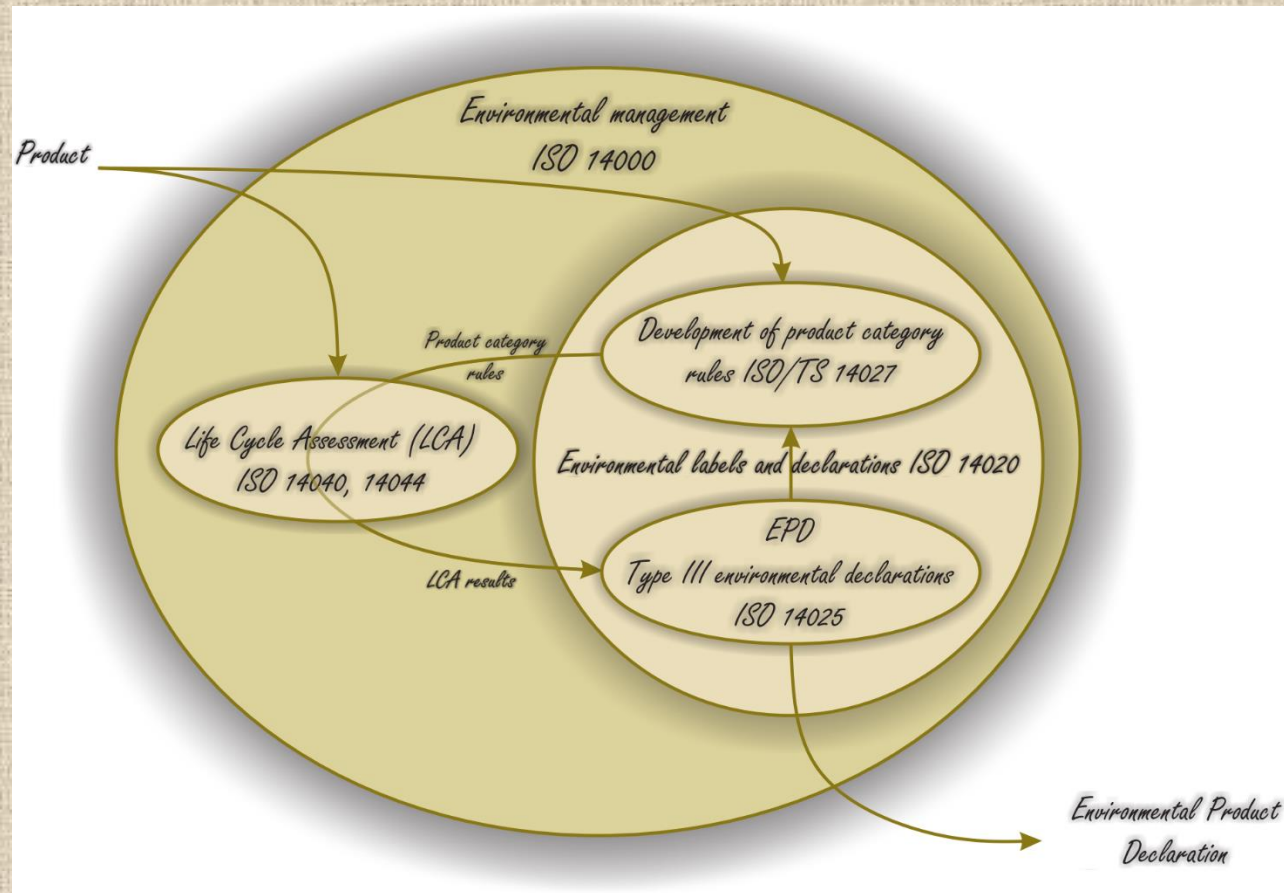
# Environmental Product Declaration (EPD)

- Product category rules (PCR) is set of specific rules, requests and instructions for development of EPD for one or more category products.
- PCR are guidelines that define how information should be collected for EPD and which calculations should be carried out.
- Program operator has to ensure that the product categories are defined with harmonized and transparent procedure. When PCR document is prepared, first the product category needs to be defined.
- Then, appropriate LCA is performed and finally basic goal for product category is defined, together with rules and instructions on how to gather and organize EPD data.



# Environmental Product Declaration (EPD)

- Relationship between the ISO standards, LCA, EPD and PCR is illustrated in figure



# Environmental Product Declaration (EPD)

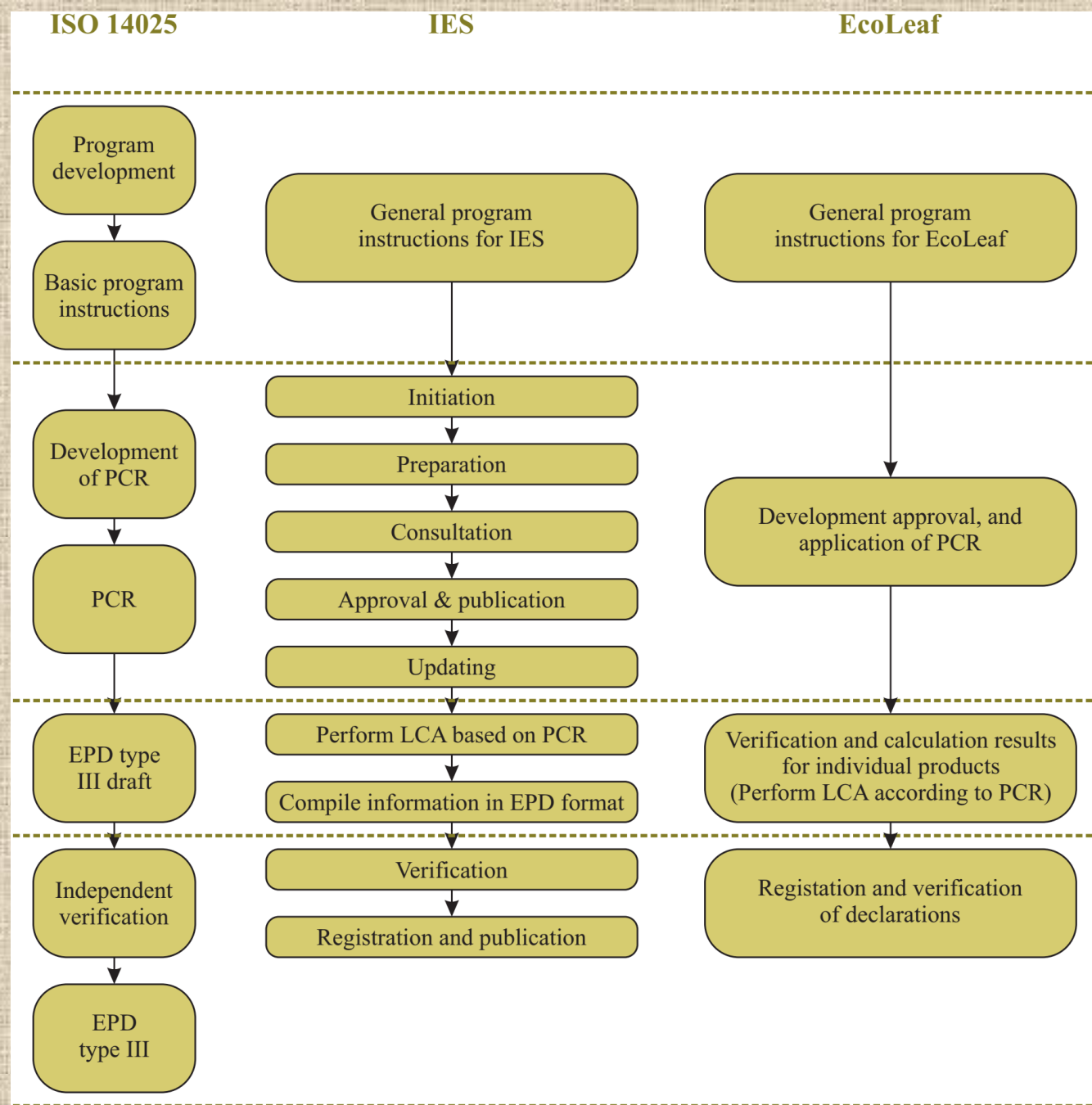
According to PCR, all EPD have to contain the following information:

- Identification of organization that is the owner of EPD,
- Date of issue and validity period,
- Program name, program operator information, PCR identification,
- Product description,
- Information and results from LCA and LCI,
- Additional environmental information,
- Statement that comparison with other EPD might not be possible.



# Environmental Product Declaration (EPD)

- Development and use of EPD program and declarations is voluntary. Figure shows basic steps in development of EPD program, PCR and EPD itself according to ISO 14025, IES and EcoLeaf program operators.



# Environmental Product Declaration (EPD)

- Within PCR development, IES procedure has the following phases:
- Initiation phase – includes definition of the product category, consideration of available PCRs, appointing a PCR moderator, search of cooperation with other parties to take part in the PCR Committee, planning the PCR development, and announcement of PCR development,
- Preparation phase – includes use of PCR Basic Module as guidelines and PCR template, specification of LCA-based content of the PCR document, selection of LCA-based parameters/indicators, selection of additional environmental information, and quality check before consultation,
- Consultation phase – includes the following elements: 1) constitute the PCR Stakeholder Consultation Group, 2) prepare the open consultation procedure, 3) invite stakeholders to take part in the open consultation, 4) collect comments during open consultation,
- The approval and publication of PCR documents – include the following elements: 1) preparation of final draft PCR, 2) PCR review, 3) publication of PCR, 4) announcement of publication. Finally, the last phase of PCR development is updating. A PCR is valid for a pre-determined period of time to ensure that it is updated at regular intervals.

# Environmental Product Declaration (EPD)

Steps to create an EPD according to IES are :

- Perform LCA based on PCR,
- Compile information in EPD form,
- Verification,
- Registration and publication.



# Environmental Product Declaration (EPD)

- Perform LCA based on PCR – this is mandatory step for all EPDs, and LCA should be consistent with ISO 14040 and ISO 14044, the general purpose of EPDs in the collection of data, and the methods and assumptions used according to the ISO standard 14025, and IES general program instructions and PCRs,
- Compile information in EPD form – EPD reporting form should contain accurate and verifiable data according to ISO 14020, while rating, judgements, or direct comparisons with other products should be excluded,

# Environmental Product Declaration (EPD)

- Verification – in IES there are two verifications that should be conducted and approved by an accredited certification body: EPD verification and EPD process certification. EPD verification verifies LCA data, additional environmental information, and other information, while EPD process certification is verification of an internal organisational process aimed to develop EPDs based on the general programme instructions and appropriate PCRs covered under the scope of certification,
- Registration and publication – when verification is finalised, EPD with other documentation can be submitted to IES secretariat. When complete documentation is received, EPD will obtain registration number and will be published at IES website. Published EPD is valid till its expiration date.

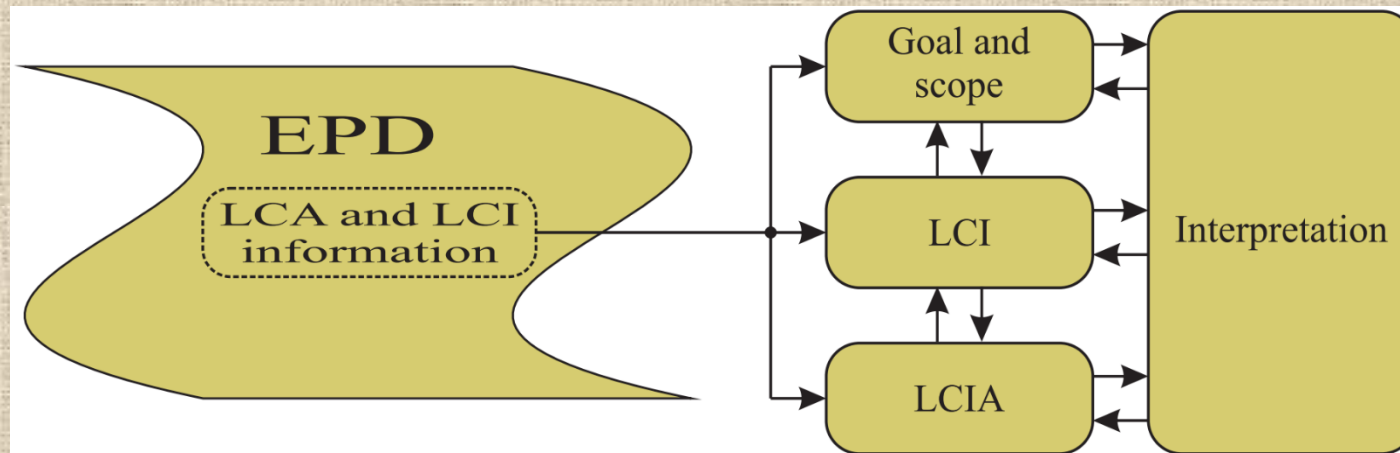
# Environmental Product Declaration (EPD) - Distribution of published EPDs and programme operators

- Although majority of program operators use ISO 14025 as a main guideline there are differences among them. Over 75% of the 39 EPD programs are fully compatible according to ISO.
- About 10% are not or partly conformant, because of the operation without published general program instructions, differences in the used terminology, the mandatory content for general program instructions or PCR is not followed, etc.
- Because of the insufficient publicly available information (or information not available in English) ISO conformance cannot be proven for the remaining 15% analysed EPD programs. The “building and construction” program operators hold a large share of the total sector.



# Environmental Product Declaration (EPD)

- Reverse use of EPD - In LCA cases where LCI data are unavailable or hard to obtain for unit processes that are not of great impact on the investigated product, it is possible to use EPD in order to describe background processes. The procedure where EPD and LCA are reversely used is not a common practice, but feasible in certain cases and LCA.

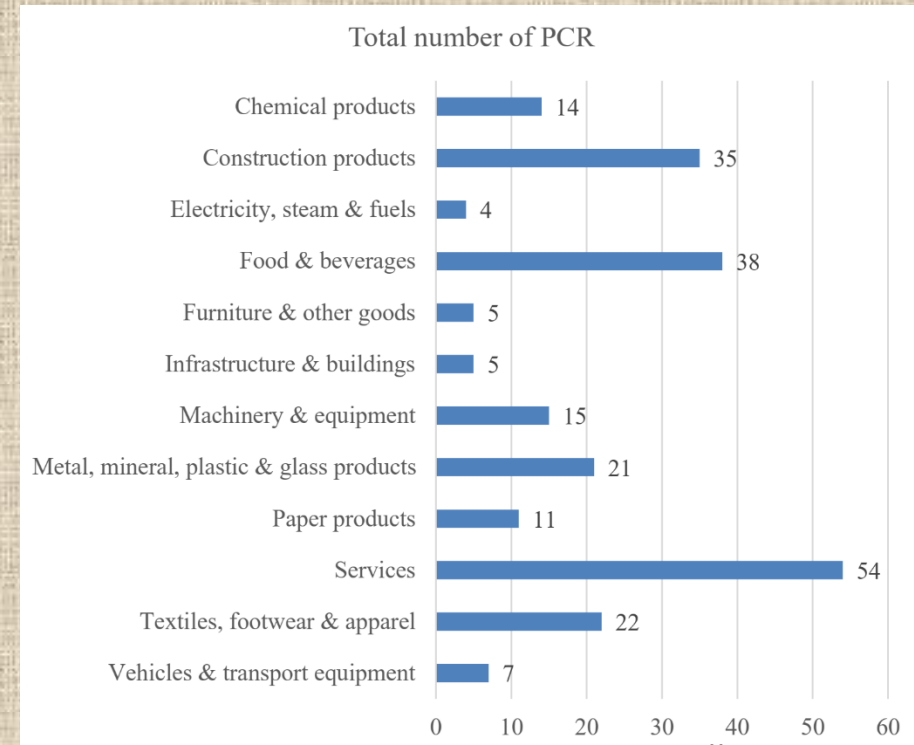
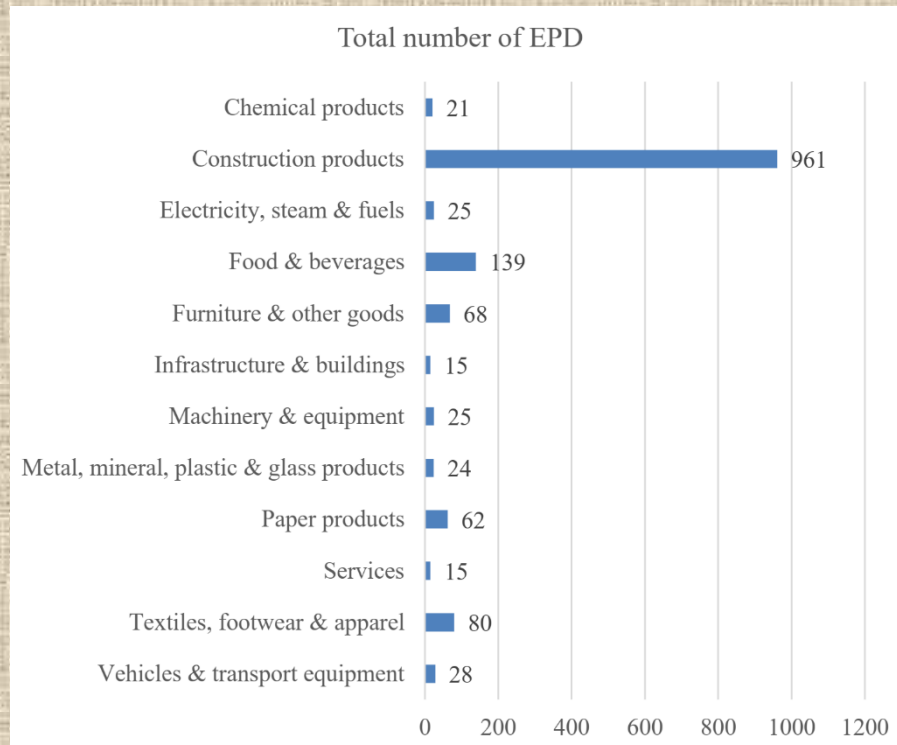


# Environmental Product Declaration (EPD)

- Single-issue EPDs refer to EPD that assess a product or a service through the single impact category on environment. Similar to conventional EPD, the single-issue EPD is not a mandatory certification system, but is a system that businesses may voluntarily participate.
- Benefits of single-issue EPD are similar to conventional EPD. Single-issue EPD often refer to carbon or water footprint.
- An example of program operator that provide single-issue EPD, EPD for carbon footprint of products (CFP):
  - IES single-issue EPD programme,
  - The EcoLeaf Environmental Labelling Program for CFP, and
  - Korean CFP.

# Environmental Product Declaration (EPD)

- The International EPD® System (IES) is a global programme for environmental declarations based on standards ISO 14025 and EN 15804. The IES was launched in 1999, and it presented the first international EPD programme.
- IES's online database in year 2020 contained more than 1400 EPDs for a wide range of product categories by organisations in 45 countries





# Environmental Product Declaration (EPD)

- The IES has a main objective to enable and support organisations in any country to communicate quantified environmental information on the life cycle of their products in a credible, comparable, and understandable way. This is done by:
  - Offering a voluntary programme for verified Type III environmental declarations according to ISO 14025, ISO 14040/14044, and other relevant standards or methodology guides,
  - Contributing to make standardised, verified, and life cycle-based environmental information a useful tool in different applications, e.g. by facilitating different applications and increasing digitalisation,
  - Seeking cooperation and harmonisation with other environmental declarations programmes and initiatives (national, regional, sectorial, etc.) to help organisations broaden the use of EPD on an international market.

# Environmental Product Declaration (EPD)

- In IES, the life cycle stages are grouped as follows:
  1. Upstream processes: includes raw material, acquisition and refinement as well as production of intermediate components,
  2. Core processes: manufacturing processes,
  3. Downstream processes including usage and end-of-life stages.