

The Digital Product Passport

Make it a game-changer for circular economy!

1 The potential of the Digital Product Passport (DPP)

The Digital Product Passport (DPP) is comparable to a comprehensive digital index card or a “digital CV” that the EU seeks to introduce for a wide range of products (excluding mainly food, feed, medical products, living plants and products of human origin). The specific information to be included in such a passport has yet to be defined in the European legislative process. It may, for example, cover specifications on production stages and economic actors, material composition, carbon footprint, technical parameters or detailed repair instructions. Hence, the DPP might enable an **extensive and reliable knowledge transfer along the entire value chain**.

Overall, the DPP has significant **potential to pave the way towards a more green, circular and socially just economy**. Whether this potential is realised, however, depends very much on the design of the product passports. We, therefore, call on the European Parliament, the European Commission and the Council, as well as on the German ministries involved, to use this potential and make the DPP a game-changer for the circular economy.

So what could be the **central benefit of the DPP**?

- We see the **key potential of the DPP in the facilitation of the transition to a circular economy**: If well designed and implemented, it can provide key information to repairers, refurbishers or recyclers to keep products and their components in the circle at their highest value. Thereby, business models of the circular economy may become more profitable. Innovative circular business models could be facilitated - for example in remanufacturing. Thus, the DPP can be a valuable instrument in **extending product lifecycles and may thereby contribute to reducing resource consumption**. In addition, through providing an information basis, it could optimise material and energy efficiency.
- From a **consumer rights perspective**, if the information is prepared appropriately, it can **provide information** on, e.g., a carbon footprint or the reparability or durability of products, on which consumers can base their consumption decisions.
- On the **administrative and monitoring level**, it may assist in **verifying a company’s effort to implement human rights and environmental due diligence** along a product’s value chain, and thus also impede greenwashing. If the passport’s set-up is accessible and easy to handle and contains summaries of information obligations, it may even reduce the bureaucratic work for businesses.

2 The role of the DPP in the Ecodesign for Sustainable Products Regulation

Various European legislations refer to a DPP or provide for its introduction. However, the main framework for the DPP will be set in the **Ecodesign for Sustainable Products Regulation (ESPR)**. The European Commission put forward a proposal for the Regulation in March 2022. The European Parliament's Committee on the Environment, Public Health and Food Safety (ENVI) is currently expected to vote on the file in June 2023. The Council's official position is also still pending. The ESPR will establish some horizontal requirements for the DPP, which would directly shape the implementation of the DPP. But according to the Commission proposal, any details – such as the specific information requirements to be inserted in the DPP or the actors who shall have access to the respective information – shall only be specified on a product group-specific basis within the framework of delegated acts to be developed by the European Commission (Art. 8 (2) of the Commission's Proposal).¹

3 Policy recommendations

In short, we argue the following: For the DPP to become a game-changer for circular economy and the reduction of resource consumption,

- 1) it must provide information to implement the hierarchy of the 10 'Rs' of a holistic circular economy,²
- 2) relevant information must be accessible to all respective actors along the value chain and
- 3) the DPP system itself must require as little energy and as few resources as possible.

And, to ensure these necessities can really bear fruit, the ESPR must **establish them horizontally** i.e., across all delegated acts. In this way, it can provide for delegated acts strong enough to make the DPP a game-changer for the circular economy.

3.1 Establish information obligations to facilitate the implementation of a holistic circular economy

- The obligation to disclose information in the DPP must apply to **all products that cannot easily be prepared for reuse or recycling**. Therefore, it is key that the definition of “substances of concern”, whose presence in a product make a DPP obligatory, as any substance that “negatively affects the reuse and recycling of materials in the product in which it is present” (**Art. 2 (28) c of the Commission's Proposal for an ESPR**) is kept in the regulation.

¹ Given that the ESPR has not been finalised yet and that the DPP is to be developed further through delegated acts, many framework conditions are not yet final. Therefore, the recommendations laid down in this policy brief represent initial ones that will be specified in more detail and revised depending on the political process in the upcoming months and years.

² The 10-R model is based on [Potting et al. 2017](#) and is a conceptualisation of the circular economy, where the priority is to use fewer resources, for example by consuming less, using more intensively or increasing resource efficiency (“Refuse”, “Rethink” and “Reduce”). Products should be used for as long as possible through reuse, repair or refurbishment, and materials should be used in their highest possible form (“Reuse”, “Repair”, “Refurbish”, “Remanufacture”, “Repurpose”, “Recycle” and “Recover”).

- The ESPR must set out **mandatory information requirements** that are to be disclosed in a **standardised** way. Therefore, the ESPR must explicitly exclude the possibility that information is only exemplarily. Furthermore, the following information requirements should apply to *all product groups* and thus be established as mandatory in the ESPR:
 - Repair instructions
 - A repair index
 - Information about spare parts availability
 - The material composition
 - The estimated product lifetime³
 - To make the product passport usable across sectors, the information must also be standardised across product groups
- Information requirements for hazardous substances are already established in the proposal. Beyond these requirements, further information requirements should be established on the composition of materials as this information is key to increasing recyclability. When thresholds are established (e.g., “95% of materials of a product must be disclosed”), a special regulation needs to be established for scarce metals and (critical) raw materials associated with high human rights and environmental risks.
- **Information requirements should focus not only on recycling but also on other circular economy processes such as repair, remanufacturing or partial replacement.** Otherwise, the DPP may contribute to disregarding the **circular economy hierarchy** by making recycling more economically attractive than other processes of the circular economy. Moreover, information requirements should **not only be based on the status quo of common circular business models but rather factor in innovative business models and users’ habits that might be facilitated** through the DPP and related legislative and transformative processes. Examples include the repurposing of used product components or increased practices of home repair and refurbishment.
- Electric and electronic equipment and especially ICT products have many common characteristics that strongly influence their circularity (examples: serialisation, non-recyclable material composites, limited modularity software-hardware dependency). And many business models – e.g., from telecommunication companies – are based on quick retirement of ICT products. Current regulations are not sufficient to ensure the circularity of these products. Furthermore, ICT products contribute constantly to a rise in the amount of e-waste and demand for energy. Fostering circularity and greenhouse gas neutrality of ICT products should be prioritised by the European Commission. Therefore, as envisioned in the Commission’s Proposal for the ESPR (Art. 5 (2)), **horizontal mandatory information requirements should be defined for ICT products.** In the absence of such horizontal provisions, the DPP’s core purpose of facilitating a more circular economy might be diluted through unambitious delegated acts that might be strongly influenced by producers’ lobby interests. Information requirements that should be mandatory for any ICT product should at least include:
 - Instructions on how to prolong the lifetime and reduce the energy-intensive use of products
 - Disassembly instructions
 - Printing plans of spare parts, especially for easily breakable, non-technical parts such as casings (for 3D printing and milling of parts)
 - (Technical) construction plans of a device
 - Measurement values and measuring points for electronic devices to guarantee that devices/parts function safely
 - Spare part prices and availability

³ The method to assess the durability of a product needs to be standardised by product group. An example of such a standard is the EN45552.

- Access to software for clearing error messages and making non-proprietary spare parts operable
 - Information on how to remove and replace the operating system to reduce software obsolescence and hardware/software dependencies, improving upcycability as well as longevity of hardware through alternative operating systems
 - Information on accessible interfaces (API) to allow interoperability and reusability throughout different technical ecosystems
 - Publication of drivers, tools and interfaces to enable the right to repair for any third parties from professional repair shops, to repair cafés, to end users
- **Informing consumers** on aspects such as repairability, durability or the carbon footprint of a product through the DPP could be another potential benefit of the DPP. However, the DPP should not be used to outsource responsibility for sustainable production to consumers. Instead, the ESPR must establish strong regulations for a product or service design that allows for better repairability, recyclability etc. and long lifetimes of products, in coherence with further legislative processes such as the Right to Repair. The **information disclosed to consumers should be prepared comprehensively and in a standardised way**, e.g., as a meaningful repair index or the carbon footprint covering the whole value chain or the estimated product lifetime. Too much non-standardised information for consumers would undermine the DPP's potential for informed purchasing decisions as it might overwhelm consumers. The DPP should be used to **compile information that is already required to be reported due to other European or national legislations**.
- This compilation could not only reduce the bureaucratic burden for companies but also make the enforcement of further legislations more effective. For instance, the DPP should include information on the value chain of a product to verify how a company conducts human rights and environmental due diligence in line with the Corporate Social Due Diligence Directive (to be established). A data-based DPP will not be able to reflect fully whether a company is sufficiently fulfilling its due diligence obligations as due diligence goes far beyond certificates or disclosing production locations through the DPP. However, it can support the verification of compliance with any due diligence obligations. In addition, further information requirements could be integrated into the DPP, for example, those arising from the Corporate Sustainability Reporting Directive or those that are needed to ensure compliance with international treaties such as the Kunming-Montreal Global Diversity Framework.

Thus, the ESPR must horizontally establish:

- ◆ The obligation to establish a DPP for all products containing substances of concern in line with Art. 2 (28) c of the Commission's proposal for the ESPR
- ◆ Additional horizontal and standardised obligatory information requirements that are needed to facilitate a holistic circular economy and that apply to all product groups
- ◆ A clear framework on how information must be prepared comprehensively and in a standardised way for consumers, such as a meaningful repair index⁴ or estimated product lifetime
- ◆ The usability of the DPP as a tool for verification of other legislation, such as the Corporate Social Due Diligence Directive

⁴ A meaningful repair index should at least consider the possibility of disassembling a product, the availability and prices of spare parts and common anti-repair practices such as part-pairing. In addition, product group specific aspects, such as the availability of repair software, need to be considered. For more information on the challenges and opportunities of the French repairability index, see the [assessment of the Right to Repair Europe Campaign](#).

3.2 Ensure relevant information is accessible to all actors along the value chain

- Information relevant for repair, refurbishment, recycling and further circular economy processes **needs to be available to all relevant actors along the value chain, including those operating independently of the manufacturers and other sectors that might repurpose product components.** This access is key to facilitating a decentralised circular economy and to preventing the transformation to a circular economy from contributing to an increasing concentration or even monopolisation of value creation in a few large companies.
- Not all information included in the DPP will be accessible to the public, but graduated access rights will be introduced depending on the type of information. This graded access is also necessary to ensure compliance of the DPP with current Intellectual Property Rights of companies. In the European Commission's proposal, this access is already taken into account, as Art. 8 (2) f stipulates that it must be defined which actors will have access to which type of information. In addition, Art. 10 lays down certain security requirements and regulations on the handling of the information contained in the product passport, by which confidentiality is to be ensured. Thereby, **the protection of, e.g., trade secrets and the need for information for the purposes of the circular economy are balanced so that no further restrictions should apply.** Calls that trade secrets need to be better protected should never lead to a dilution of mandatory information requirements. Instead, if necessary, the stricter restriction of authorised access rights to certain groups of people within companies working with the information should be the subject of negotiation, but not the information obligations themselves.
- In all cases, the ESPR should explicitly regulate that the granting of access rights to information and relevant authorisation should be designed as unbureaucratically as possible and **take into account the limited capacities of micro-enterprises.**
- **Information included in the DPP should be standardised** (e.g., through harmonised coding systems, harmonised input masks, harmonised methodology for collecting data) and machine-readable. Thereby, for instance, both self-repair and professional repair can be made significantly easier as the information needed could be obtained through a chat request. Similarly, automatised recycling processes can be facilitated. Standardised information across product groups is, furthermore, key to making the product passport easily usable along the entire value chain and thus also in companies working within multiple sectors and product groups (such as recycling plants). The standardisation, furthermore, needs to ensure a high quality and usability of the data.
- **A central registry should be established to allow relevant authorities or research institutes earmarked access to data generated via the DPPs.** This registry could facilitate the definition of future binding minimum standards with regard to product durability, circularity or energy efficiency.
- The **obligation to add lifecycle data** is valuable for certain product groups and should be established for those product groups where there would be a benefit in enhancing circularity and greenhouse gas neutrality and in reducing resource consumption. In sum, these benefits should exceed the additional energy and resources needed for the DDP system. Key benefits of item-based lifecycle data are, for example, that they enable refurbishment and remanufacturing activities. A key benefit of aggregated lifecycle data is, for instance, the possibility to identify optimisation potentials. The procedure to add any information should be accessible, easy to maintain and organised independently of the producers. In addition, the digital infrastructure should avoid perpetuating current practices that inhibit reparability or refurbishment, e.g., by only allowing original spare parts from producers to be used. These are key prerequisites to avoiding overload for micro-enterprises. As for all information requirements, the principle of data sufficiency should apply.

- **DPP information should also be accessible to economic actors and consumers along the value chain outside the EU** in line with the access restrictions that also apply for actors within the EU. In this way, the status quo that value creation after product sale is global can be taken into account. For example, reuse of ICT products in the Global South can be facilitated. In this way, using the DPP, environmental impacts can be reduced **globally instead of exclusively in the EU**.

Thus, the ESPR must horizontally establish:

- ◆ Access rights for relevant information to implement the 10 'Rs' of the circular economy for all respective actors along the product value chain - including those actors outside the EU
- ◆ The requirement that processes grant access rights to information and respective authorisation should be designed as unbureaucratic as possible, taking into account the low capacities of micro-enterprises
- ◆ A centralised system that compiles information in the DPP that is relevant for authorities or research institutes, providing for access options for these actors (after a comprehensive preliminary study, see below)
- ◆ Minimum requirements ensuring that any information arising during the lifecycle of a product can be easily added to the DPP
- ◆ The standardisation of information requirements across product groups and the machine-readability of that information

3.3 Ensuring the energy and resource sufficiency of the DPP system

- Currently, research and estimates on the **energy and resource use of the DPP system** (i.e., the digital infrastructure behind the DPP) are insufficient. Data storage, processing and transfer generate their own ecological footprints and human rights risks due to the resources necessary for the digital infrastructure (e.g., data carriers, data centres, telecommunication networks) and the required devices (e.g., data-reading devices). To enable a realistic assessment of the climate and environmental benefits of the DPP, **comprehensive preliminary studies** of the respective benefits of the DPP must be performed. Lessons learned must be drawn from accompanying research and evaluation of already launched/piloted DPPs. The analysis should also be conducted with regard to specific products among the product group. The respective findings should be reflected when developing the delegated acts. Based on these findings, the following specifications for the specific DPP for the respective product group should be defined:
 - Whether the potential of the DPP to facilitate a circular economy and resource reduction exceeds the energy and resource need of the DPP system itself
 - Whether the application of the DPP on an item basis to also include life-cycle data is crucial for circular economy practices
 - Whether a centralised register on the information included in the DPP of that product group should be introduced
 - Which type of data carrier is appropriate (also considering their inherent resource intensity)
- **Data sufficiency** must be adhered to when setting the information requirements in line with the principle "as many as needed, as few as possible".

- The ESPR needs to ensure that the **data carrier that can be read to access the information in the DPP is as resource-light as possible** and does not render non-electronic products into electronic ones.
- The **DPP system also needs to be compatible with small databases and information systems and open source solutions** to avoid an indirect discrimination.

Thus, the ESPR must horizontally establish:

- ◆ The requirement that the energy and resource intensity of the DPP system must be weighed up against the potential benefits of the DPP for each product group. The same applies to the specifications of the DPP system (for instance whether life-cycle data should be acquired or not or whether the DPP should be implemented on a model- or item-level)
- ◆ The principle of data sufficiency
- ◆ Requirements ensuring that the data carrier for the DPP is as resource-light as possible and does not fuel resource needs
- ◆ Non-discriminatory compatibility of the DPP system with other databases and information systems

3.4 Further recommendations

Not only is it crucial to make the information needed for a circular economy compulsory for all relevant actors and to design the DPP system as resource and energy efficient as possible. To make the DPP a success for the circular economy, it is also necessary to prioritise the product groups for which the DPP is initially introduced in a reasonable manner and to effectively enforce the specified information requirements.

- Prioritisation of product groups:
 - Art. 16 of the European Commission's proposal sets criteria for which products groups should be prioritised for the implementing acts and thus for the DPP. **Besides the climate and environmental impact, the resource intensity of products and human rights violations in value chains should also be considered for the prioritisation of product groups.** A [study by the European Commission's Joint Research Centre](#) does not include energy-related products. However, electronic and electric equipment, and especially ICT, should be among the product groups to be prioritised.
 - The **criterion of consideration laid down in Art. 16 (1) c should be clarified:** Depending on how it is interpreted, the article could currently stipulate that those product groups with a high environmental impact in the value chain within the EU are to be prioritised. This understanding perpetuates externalisation of environmental costs to countries of the Global South and creates an incentive for European industry to put the dirty and risky part of their production to other parts of the world. It should thus be revised. The environmental and human rights impact in the full value chain, including countries outside the EU, should be taken into account.
 - The ESPR needs to ensure **effective enforcement of information requirements** to be included in the DPP. An automated verification system should be established so that non-compliant DPPs prevent the product from being placed on the market after a certain compliance

period. To ensure fully that data have an adequate quality to be used for other actors along the value chain, actors along the value chain should be able to report any non-compliance directly. At best, an easily accessible reporting function should be integrated in the DPP.

The discussion on the DPP may still be in its early stages, but the relevant framework conditions are being set at this moment. We therefore advocate taking action now to make the DPP a game changer for the circular economy.

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