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The future of eco-design: necessary conditions for the success of the DPP

Executive summary

The political commitment to climate neutrality and the circular economy have sparked a global wave of new investment strategies, including in Europe. Industry is eager to play a major role in supporting the EU's transition to more sustainable, digital technologies. **Clear, consistent, and enabling regulations can attract new private green investments, such as in digital traceability solutions, while duplicative or excessive regulations will likely constitute a barrier.**

Industry is looking carefully at the EU's proposal for the Digital Product Passport (DPP) under the ESPR.[1] If well-designed, the DPP can be a crucial tool for climate neutrality and the circular economy in Europe. It can bring gains already in the short-term, by phasing out unnecessary paper-based documentation and streamlining compliance documentation, for example by consolidating mandatory compliance reporting into a common template. In the medium and long term, it can become an active tool for reinforcing circular economy practices, such as simplifying product repairs and recycling. This is significant when over **80%** of all product-related environmental impacts are determined during the design phase of a product.[2] To achieve this, the DPP's success is fully contingent on manufacturers embracing it globally. We must look at existing sectorial applications and avoid an EU-only solution that will not gain traction in industry.

This paper outlines pre-requisites and conditions for the roll-out of an impactful DPP in product group-specific Delegated Acts under the ESPR. These will cover a vast range of products. We believe the following essential elements are vital for the DPP's success:

- Model-level application for static data as a default, with voluntary application at item level for custom-made and complex modular products;
- A decentralised system;
- Robust protocols, privacy and security measures;
- Differentiated access rights and editing permissions;
- Standardisation for machine-readability and data quality.

[1] Proposal for a Regulation establishing a framework for setting ecodesign requirements for sustainable products and repealing Directive 2009/125/EC

[2] Joint Research Centre, Sustainable Product Policy

Building, not breaking, the bridge to sustainability

The development of the DPP will be a two-step process. First, the ESPR text will set out general requirements for the technical design and operation of the DPP, with support from European harmonised standards. Product group-specific DPPs will then be introduced in the Delegated Acts to supplement such requirements. Success will depend on regulatory consistency among all the various provisions, clear consideration of existing technical solutions and pilots at national and European level, as well as establishment of a flexible, technology-neutral framework for the DPP system architecture.

Benefits of the DPP

As an unprecedented tool, the most visible benefits from the DPP should lie in:

- ***electronically registering, processing and sharing product-related information amongst supply chain businesses.*** This is expected to increase transparency, both for supply chain businesses and the general public, and increase efficiencies in terms of information transfer;
- ***digitising labels and streamlining compliance documentation,*** by:
  - preferring e-labelling via a data carrier (e.g. QR code) over - and replace where possible - physical markings (on product, packaging and relevant data from inbox documentation);
  - consolidating mandatory compliance reporting into a common template for efficient market surveillance, while allowing companies to add voluntary certifications and company-specific DPP attributes in accessible formats for consumers and circular economy actors;
- ***informing business decisions on supply chain environmental sustainability***. That will help designers in generating more sustainable products that meet customer needs while reducing product environmental impact;
- ***allowing customers to make more informed decisions,*** by enabling access to credible information through the DPP. This will spur demand for more sustainable products;
- ***becoming a repository in support of compliance enforcement through full interoperability with EPREL and SCIP.*** This is key to avoid double reporting, including of chemical information reported under SCIP. Maintaining the SCIP database helps to inform users prior to purchasing a product , as well as waste operators to sort and make recycling plans based on the presence of Substances of Concern (SoCs) in the product. The ESPR must ensure sensitive business data required for enforcement is accessible only by market surveillance or custom authorities, and that robust cybersecurity is a priority in such enforcement databases;

- ***enhancing accessibility, by digitising product environmental information and easing out data access to individuals with disabilities.*** Customised means, such as digital visual and audio aids, could achieve that.

Risks from the DPP

As in any new instrument, there should also be awareness of the possible difficulties. The DPP can effectively address Annex III requirements under the ESPR, but potential challenges may emerge when the DPP is contemplated as a replacement of reporting duties in laws like REACH and CLP. For product categories under the DPP scope, frequently revisiting existing laws to remove reporting requirements can become complex. A measured and thoughtful approach is crucial, balancing gains and risks, and avoiding overloading the DPP too soon to prevent duplicative reporting or inaccurate product safety data.

Another risk in the DPP design is assuming that a product does not meet eco-design performance requirements just because its DPP information is displayed incorrectly. Incorrect information provision often stems from human errors, like misplaced decimal points in a recorded value, and does not imply a product fails eco-design obligations. Only market authorities can determine compliance through well-established enforcement activities, such as verification testing. Economic operators can easily rectify unintentional DPP errors upon notification from users, like market surveillance authorities, NGOs or consumers. There is precedent in EPREL, which has an integrated function for this specific purpose.

The building blocks of a successful DPP system

- ***Appropriate level of granularity***: **future product-specific Delegated Acts on the compulsory attributes in the DPP should apply at model or batch level by default, and cover only ‘’static’’ attributes**. However, for complex modular and custom-made products, the DPP system should allow for voluntary updates of ‘’dynamic’’ product attributes. These latter products already have a high level of circularity, and evolve throughout their long lifetime due to upgrades, repairs, and refurbishments;
    - **‘’Static’’ attributes** are product information required at the moment of placing on the market. They apply at model number-level, are the manufacturer responsibility and remain stable over the product lifetime. They serve mainly for purchasing decisions, not circular economy activities. Examples of static attributes include the model number, the reparability score, dismantling information, energy consumption and environmental footprint information including when new spare parts are integrated;

- Conversely, **''dynamic'' attributes** are modifiable product details that remanufacturers, refurbishers and repairers can change as they perform circular economy activities. Examples of these attributes are changes in critical raw material information or updates to the percentage of recycled content resulting from the integration of spare parts with differing specifications from the original part. Starting with voluntary updates of dynamic attributes, instead of compulsory updates, is necessary for various reasons. First, economic operators in the EU market cannot ensure accurate DPP updates by circular economy actors. At the same time, it would be too burdensome for circular economy actors and consumers to host DPP records and assume product liability for information requirements. Second, market surveillance authorities will likely struggle to verify compliance with timely updates to ''dynamic attributes'' by independent repairers, due to limited capabilities. Third, there would be a large energy usage implication from a jump in data storage needs. Fourth, economic operators will need a "learning period" to fully understand and build on the DPP potential;

- ***Decentralised system:*** this helps companies maintain control over their data and encourage them to invest in and use DPP data to support their own business cases. It is also unrealistic to build a centralised system with sufficient computing power to store all relevant data;
- ***Protocols, privacy and security measures:*** robust protocols are key to secure confidentiality, verification, and access rights management to prevent conflicting data duplication. There should also be due emphasis on consumer privacy risks. The DPP should exclude repair location data from repair datasets as that may reveal who owned the device previously. The DPP system should ensure supply chain parties do not duplicate or modify data without authorisation. Product information providers should always be able to retain ownership of their data and have control over it;
- ***Differentiated access rights:*** these rights should be need-to-know based, following the examples of EPREL and repair and maintenance information in the Ecodesign LOTs. They grant differentiated access to authorities and trained professionals respectively. The DPP system should centralise user interfaces and APIs to prevent multiple data access and upload solutions;
- ***Editing permissions:*** similar to access rights, the Commission should grant editing permissions on equally solid reasons. For instance, recyclers should not be granted editing permissions as, by definition, recycling ends the life of a DPP. Market surveillance authorities should not be able to edit the information in the DPP either, as their enforcement role is to flag non-compliance to economic operators, who can then address it;
- ***Timing of information:*** companies should upload DPP data on the relevant website or application at the time of placing of the product on the market, for ease of convenience;

- ***Standardisation:*** the DPP must rely on a short list of key requirements for the DPP system architecture. Standards should ensure consistency and interoperability, even if those for certain aspects like identification link and data model may differ from sector to sector. Deviations from standards can lead to manual efforts, which can be avoided by ensuring machine-readable standards are applied and data quality is guaranteed. Relevant values should comparable and allow summation. As relevant standards, we highlight:
  - ECLASS Semantic Dictionary
  - IEC 61406-1:2022 on ‘’Identification Link - Part 1: General requirements’’
  - IEC 61360 on “Standard data element types with associated classification scheme”
  - IEC 62832 on ‘’Digital factory framework“
  - ISO/IEC 15459 on ‘’Information technology — Automatic identification and data capture techniques — Unique identification’’.

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