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Eurosystem's exploration of the possibility of conducting a product environmental footprint study of electronic retail payments

The Eurosystem's retail payments strategy which was updated in November 2023, encompasses work on the environmental sustainability of payment transactions and infrastructures. In this context, the Eurosystem is investigating ways to facilitate a lower environmental footprint of pre- and post-payment processes and developed an initial set of best practices for electronic retail payments (in Annex I below). Additionally, the Eurosystem is exploring the feasibility of conducting a study on the environmental footprint of electronic retail payments per euro area citizen in a way that is comparable to the study carried out for euro banknotes, using the European Commission's Product Environmental Footprint (PEF) methodology.[1]

To facilitate the possibility of launching a Eurosystem-wide PEF study in the future, in 2024 **a screening step** that focused on two payment methods (i.e. card and instant payments) was carried out as a small-scale PEF study for two countries: Germany and the Netherlands. This screening step was carried out to:

- engage with a subgroup of relevant stakeholders to understand the availability of required data for card and instant payments, while adopting a full life cycle perspective; and to
- explore the assessment of the environmental impact associated with card and instant payments, with the aim of identifying specific stages, materials or processes within their life cycles that can be targeted for further reduction of the environmental footprint of electronic retail payments.

The system boundaries of the card payments' PEF screening encompassed the production, distribution, use, and end-of-life aspects of card payments (debit, credit, e-money) including the POS terminals and the

[1] The PEF methodology is a general method to measure and communicate the potential life cycle environmental impact of a product (Commission Recommendation (EU) 2021/2279 of 15 December 2021 on the use of the Environmental Footprint methods to measure and communicate the life cycle environmental performance of products and organisations repealing Commission Recommendation 2013/179/EU of 9 April 2013 on the use of common methods to measure and communicate the life cycle environmental performance of products and organisations). The PEF is a multi-criteria measure of the environmental performance of a good or service throughout its life cycle. PEF information is produced for the overarching purpose of seeking to reduce the environmental impacts of goods and services taking into account supply chain activities (from extraction of raw materials, through production and use, to final waste management).

use stage (energy use) of data centres[2]. The system boundaries for the instant payments' PEF screening included the use stage of data centres only. Due to the unavailability of data at the required level of granularity, certain factors of the payment chain – such as (i) telecommunications, (ii) the production, distribution and end-of-life aspects of data centres, (iii) paper receipts and (iv) end-user devices – were excluded, which is likely to have led to an underestimation of the overall PEF score.

The findings showed that the primary factors influencing the environmental footprint of card payments were the extraction of raw materials for POS terminals and the chip production of cards. For instant payments, the key contributor to their environmental footprint in the screening step was the energy consumption, as this was the only data available for the processing of instant payments.

The screening incorporated insights from at least one market participant for each of the two screening step countries for every step of the payment chain. Where data was unavailable, assumptions and estimations were applied. While these efforts demonstrated a commitment to provide accurate and well-reasoned estimates based on the best available information, the amount and level of granularity of data available at the market participants for the PEF study at this point in time left much to be desired.

On the basis of performing the screening step, the Eurosystem decided not to launch a Eurosystem-wide PEF study of electronic retail payments at this stage, given the unavailability of a sufficient amount of data at the level of granularity that is required to perform a PEF study. The Eurosystem will reconsider to launch a Eurosystem-wide PEF study of electronic retail payments at a later stage once sufficient data granularity is available.

The screening step did confirm, however, that the PEF methodology used is suitable for the purpose of establishing the environmental footprint of electronic retail payments (card and instant payments) in a way that is comparable to the Eurosystem's PEF study on banknotes. In addition, the screening step revealed several initiatives that stakeholders of the payment chain could take in order to contribute to reduce the environmental footprint of electronic retail payments. For card payments, these include reducing automatic paper receipts, reducing the energy use and time of POS terminals in standby mode when they could instead be switched off, and extending card lifespans as far as possible given

[2] Although the PEF methodology states that capital goods including infrastructure should be excluded unless there is evidence from previous studies that they are relevant, this study included POS terminals and data centres since i) earlier studies performed nationally have shown that data centres form the largest contributors to the environmental footprint of retail payments, ii) regarding electronic payments, not much would be left to consider if POS terminals were to be excluded from the PEF study of card payments and data centres from both card payments and SCT instant payments, and iii) data centres are specifically created to process large amounts of data, including data referring to electronic retail payments, their environmental footprint would ideally be considered.

security standards, and for instant payments promoting low-power computing devices. These initiatives could possibly complement or update the initial set of best practices in the field of electronic retail payments (see Annex I below). When proposing potential further environmental improvements (e.g. updating the best practices), the Eurosystem will carefully consider not to hinder access to safe, efficient and convenient means of payment by all Europeans, in its efforts to effect meaningful change in the pursuit of environmental sustainability in the field of electronic retail payments.

Annex I: Eurosystem's initial set of environmental best practices in the field of electronic retail payments[3]

In the context of its retail payments strategy, the Eurosystem developed the following practices as an initial set of environmental best practices to enhance sustainability in electronic retail payments. The best practices focused exclusively on digital means of payment and did not include cash. To establish these best practices, a survey was launched to collect existing environmental practices in electronic retail payments in the 27 countries of the EU, via the contribution of the national central banks. These practices were selected based on the following criteria: 1) they promote increased sustainability in electronic retail payments, 2) they are concrete and practical, and 3) they are already established practices in at least one of the EU countries.

- Use 100% renewable energy to power systems within the electronic retail payments industry;
- Minimise paper-based initiation of electronic retail payments, e.g. paper-based payment orders or cheques while ensuring paper-based retail payment instruments will remain available for those who struggle with digital services, notably persons with disabilities and older persons;
- Reduce (automatic) paper receipts and invoices while maintaining paper receipts and invoices upon request by the consumer to ensure financial inclusion of non-digital consumers;
- Recycle old payment cards;
- Payment cards made from more sustainable material than plastic, including possible digital cards; payment devices made from sustainable materials;
- Energy audits to regularly assess energy efficiency in the electronic retail payments industry and implement specific measures to improve energy efficiency based on these audits.

[3] See "Environmental Best Practices in Electronic Retail Payments" for the outcome of a stock-take conducted by the national central banks in the EU in the context of the Eurosystem's retail payments strategy to investigate inter alia ways to facilitate a lower environmental footprint of the pre/post electronic payment process.