

Environmental Best Practices in Electronic Retail Payments

Executive summary

In the context of its retail payments strategy, the Eurosystem has developed a set of environmental best practices for electronic retail payments. The best practices described in this document therefore focus exclusively on digital means of payment and do not cover cash. To establish these best practices, a survey was launched to collect existing environmental practices in electronic retail payments in the 27 ESCB countries, via the contribution of NCBs.

Based on the survey results, the following practices are proposed as the initial set of environmental best practices to enhance sustainability in electronic retail payments. 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 ESCB countries.

The proposed best practices take into account the need to ensure financial inclusion, which is also a goal of the Eurosystem's retail payments strategy. Actually, both are combined in a common goal entitled "supporting accessibility and a sustainable payments ecosystem".

Based on market stakeholder feedback, implementation monitoring and market developments the environmental best practices in electronic retail payments can be reviewed every two to three years. In addition to these best practices, the Eurosystem is exploring the possibility of conducting a study on the environmental footprint of electronic retail payments. This work (announced in the updated retail payments strategy) could also be the basis for new recommendations.

First set of environmental best practices in electronic retail payments:

- 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 (currently adopted by seven countries). Payment devices made from sustainable materials.
- Energy audits to regularly assess energy efficiency in the retail payments industry and implement specific measures to improve energy efficiency based on these audits.

1. Introduction

To advance on the road to sustainable finance and in the context of the Eurosystem retail payments strategy, further work was launched on amongst others establishing best practices in the field of retail payments. To this end, a survey at ESCB level was developed and launched to collect from the NCBs existing environmental practices in electronic retail payments (i) at the national level and (ii) at the level of the NCB in its catalyst role to then establish best practices in this area.

On the basis of the outcome of the survey this report aims to define a set of environmental best practices in electronic retail payments in the ESCB, therefore not including retail payments made with cash. Section 2 provides an overview of the existing practices at the national level while section 3 presents the existing practices at the level of NCBs in their catalyst role. Section 4 draws conclusions regarding the survey outcome and suggests a way forward.

2. National environmental practices in retail payments

This section explores environmental practices in electronic retail payments at the national level, highlighting the collaborative efforts of governments, regulatory bodies and financial institutions to drive environmental sustainability. It looks at strategies, initiatives, and regulatory frameworks to reduce the environmental footprint of electronic retail payments, foster renewable energy integration, and promote waste reduction. Additionally, it explores environmental practices by looking at international agreements, cross-sector collaboration, research and innovation, and reporting mechanisms aimed at advancing environmental sustainability.

2.1 Renewable Energy Integration and energy efficiency

Fifteen NCBs reported the presence of actions to incorporate renewable energy sources and ten on actions to enhance energy efficiency at the national level in general, not specifically targeting payments operations (BE, DE, EE, FR, GR, HR, IE, IT, MT, NL, PL, RO, SE, SI and SK). National practices reported, touched upon:

- devising programs to disincentivise the use of fossil fuels sources and incentivise the use of renewable ones:
 - subsidies or other fiscal benefits to promote the use of renewable energy (e.g., construction of PV (photovoltaic (solar power) systems) (AT, NL, DE).
 - CO₂-tax as an incentive to lower dependence on high emissions energy sources (DE).
 - programs to close all coal plants in 2030 and replace fossil fuels with renewable energy (DE).
 - environmental aid schemes to support measures in favour of environmental sustainability, e.g., production of energy from renewable sources, use of zero-emission vehicles (LU).
- setting targets and monitoring systems for the implementation of other initiatives fostering energy efficiency (NL). Specifically:
 - energy efficiency targets are set to save energy, to expand the availability and use of renewable energy.
 - energy audits and measures are implemented complementarily to encourage companies to regularly assess their energy efficiency. Based on these audits, specific measures to improve

energy efficiency are to be implemented.

- regular reports on the energy efficiency activities are drafted to ensure transparency and verify that the set goals are being achieved.

Seven countries (BE, CZ, FI, GR, HR, NL and SK) confirmed that their National Energy Strategy incorporates measures to fulfil the EU's climate commitments. These, however, reported no specific provisions outlined for retail payments in particular. Meanwhile, four countries (AT, HR, MT and SI) implemented initiatives that directly aim at energy efficiency in retail payments. For example, Austria's Energy Efficiency Act aims to enhance energy efficiency for a sustainable energy supply and climate protection, implementing measures to reduce consumption. Malta is actively transitioning IT applications to energy-efficient cloud platforms to lower electricity consumption. Additionally, three countries (BE, ES, MT) focus on optimising data centres through the initiatives of:

- taking part in the Climate Neutral Data Centre Pact (CNDCP), a European initiative aiming at the climate neutrality of European data centres by 2030 (BE).
- implementing measures to improve data centre's energy efficiency (ES and MT). These measures include the use of:
 - advanced cooling technologies such as liquid cooling and adiabatic¹ cooling systems
 - energy-efficient equipment such as server virtualization and the implementation of intelligent energy management systems using sophisticated sensors and algorithms.
 - opting for sustainable energy sources to cover part or all their energy needs.

2.2 Waste Reduction

Government action in encouraging a reduction of waste in the payment systems could help to facilitate a greater sustainability in retail payments, through national level initiatives aimed at reducing waste, generated by electronic retail payment operations, such as minimizing paper usage, reducing e-waste, or implementing recycling programs. NCBs reported the following practices regarding national level initiatives and strategies aimed at reducing waste generated by retail payment operations:

- recycle old payment cards (DE, ES and PT).
- promote initiatives that reduce the use of cheques and paper-based account statements, such as online banking and fees, or more general strategies to transform the economy, more indirectly fostering the minimisation of paper usage in relation to electronic payments (DE, ES, HU, MT, PL, PT and SE).
- end automatic receipt printing and allow customer to obtain a printed receipt only following an explicit request (FR, HU, MT, PL).

2.3 Regulatory Frameworks

Few NCBs (ES, HR, IT, SI and SK) reported that governments have set up regulatory frameworks and requirements to ensure that financial institutions adopt environmentally responsible practices in retail payments.

¹ Relating to or denoting a process or condition in which heat does not enter or leave the system concerned

Specifically, NCBs reported:

- A Royal Decree on waste electrical and electronic equipment, as a result of which the banking sector intends to eliminate plastic from the cards and manufacture them with biodegradable materials (ES).
- identify a set of '*supervisory expectations*' for the integration of climate and environmental risks into the corporate strategies, governance and control systems, risk management frameworks and disclosure requirements of supervised banking and financial intermediaries (IT).
- achieve the goals of sustainability set in the Recovery and Resilience Plan, under which reforms are dependent on EU funding (SI).
- comply with strict environmental impact standards based on EU legislation and recommendations (SK and HR).

2.4 International Agreements

Countries participating in international agreements or conventions related to environmental sustainability, such as the Paris Agreement, commit to reducing carbon emissions in all sectors, including finance. These agreements influence and interact with national practices, aligning the financial sector with global environmental goals. The EU and all its member states have signed and ratified the Paris Agreement. Hence all nineteen countries that replied to this part of the survey (AT, BE, BG, CZ, DE, ES, FI, FR, GR, HR, IT, LU, MT, NL, PL, PT, SE, SI and SK) are signatory to the Paris Agreement, with commitments to reduce carbon emissions in all sectors, including finance, but not specifically mentioning payments. Next to the Paris Agreement, NCBs (BE, NL) mentioned adopting the United Nations Sustainable Development Goals or the UN 2030 agenda and participating in The Emissions Trading System.² NCBs (AT, EE, SK,) also mentioned having committed to achieve climate neutrality by 2040, reduce emissions of greenhouse gases 55% compared to 1990, or the commitment to achieve a circular economy by 2030 (NL). LU mentioned the international climate finance strategy, but like the Paris Agreement this strategy does not specifically address payments.

2.5 Collaboration Across Sectors

Collaboration across multiple sectors, including government, industry, and environmental organizations, may contribute to increase environmental sustainability in payment processes at the national level. Few countries reported to have found ways to collaborate across sectors at the national level to facilitate a greater sustainability in payments. NCBs reported:

- The Green Finance Alliance within the Federal Ministry for Climate Protection, Environment, Energy, Mobility, Innovation and Technology (Department Green Finance and Sustainable Economy) in AT. The Green Finance Alliance defines five target dimensions for the core business of its members: 1) Portfolios are aligned with the 1.5-degree goal of the Paris Climate Agreement; 2) Carbon-neutral portfolios by 2050: Continuous reduction of greenhouse gas emissions attributable to the portfolios;

² The EU ETS is a cornerstone of the EU's policy to combat climate change and its key tool for reducing greenhouse gas emissions cost-effectively. It is the world's first major carbon market and remains the biggest one. Retrieved from: <https://climate.ec.europa.eu/eu-action/eu-emissions-trading-system>.

3) Green activities within the core business are expanded; 4) Climate risks are managed, and resilience is promoted; 5) Climate governance and mainstreaming are promoted. As a member of the Green Finance Alliance, companies from the domestic financial sector voluntarily commit themselves to gradually make their portfolios, investment and lending business, their insurance sector and their underwriting activities climate neutral. Payments are not specifically mentioned.

- Contributing to and/or participating in the Environmental, Social and Governance (ESG) Summit Europe (ES) and contributing to ESG initiatives (MT and SK)
- Discuss amongst payments stakeholders or organise conferences about ways to support and promote efficient (digital) means of payment. (SI)
- Collaboration with banking associations and the Ministry of Finance of Slovakia in sharing the best practices for environmental sustainability in retail payments, publishing information on what constitutes sustainable finance. More specifically with regard to payments. PT reported collaboration with diverse participants, including public administration representatives in the National Payment Systems Forum. The forum's efforts have led to the publication of the National Retail Payments Strategy 2025 in September 2023³, which outlines dedicated actions for resilience and sustainability.

2.6 Research and Innovation

Research and innovation at the national level could help to develop and adopt environmentally sustainable payment solutions. Examples of such research could include use of sustainable materials in payment cards and devices, development of efficient and environmentally friendly payment processing networks, implementation of carbon-neutral or carbon offsetting programs for payment operations.

Only six NCBs (AT, HR, NL, PT, SE, SK) reported national support for research and innovation aimed at developing and adopting environmentally sustainable payments solutions:

- fund research projects with the objective to measure the environmental impact of various environmentally sustainable payment solutions (AT and SE).
- use of sustainable materials in payment cards and devices (e.g. wood) (DE, SK).
- investigation of the relevance and awareness of the national finance sector for the transition to a low carbon economy and society (AT).
- map/identify research and innovative initiatives for environmentally sustainable payment solutions, which according to the national retail payments strategy will be supported once identified (PT).
- update the carbon footprint of electronic payments and draw up an action plan to reduce it.

2.7 Reporting and Monitoring

Some NCBs (AT, FR, PT, FI) referred to the Corporate Sustainability Reporting Directive⁴ introducing

³ The [National Strategy for Retail Payments 2025](#) lists 4 specific actions for improving sustainability in retail payments: (i) map existing legislation/regulations on the mandatory printing of paper receipts at POS terminals and automated teller machines (ATMs) and discuss subsequent actions, (ii) study the development of e-invoicing solutions, in particular for payments to or from public authorities, (iii) identify and facilitate payment card recycling processes, (iv) assess the possible removal of the obligation for banks to pay cheques of up to €150 where there are insufficient funds in the drawer's account, as imposed by Decree-Law No 454/91

⁴ Directive (EU) 2022/2464 of the European Parliament and of the Council of 14 December 2022 amending Regulation (EU) No 537/2014, Directive 2004/109/EC, Directive 2006/43/EC and Directive 2013/34/EU, as regards corporate sustainability reporting (Text with EEA relevance) <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32022L2464>

corporate sustainability reporting for all large and all listed companies in general, not specifically regarding retail payments. In one country (AT) there are additional national initiatives, like requiring companies to carry out energy audits or to set up a recognised management system.

2.8 Lessons Learned and Recommendations

NCBs (AT, MT, PT, SI) reported various lessons learned and recommendations to facilitate a greater sustainability in retail payments, including:

- supporting further research into striking the right balance between sustainability and innovation, also in order to support payment service providers to understand how sustainable improvements also contribute to productivity and efficiency next to reducing carbon emissions (SI).
- improving IT equipment encompassing strategies such as enhancing energy efficiency; engaging in stakeholder dialogues for collaborative development and evaluation; adopting virtualisation, green sourcing, and intelligent cooling solutions; developing innovative approaches to reduce CO2 consumption; and implementing various environmental protection measures, including low water consumption, biodiversity preservation, and minimising harmful substances like PVC (AT).
- early implementation of sustainable and environmentally friendly practices as the best and most efficient strategy in terms of effort, cost, and scalability (MT).
- evaluating the cooperation between the supply and demand side of payment services, including Public Administration in an attempt to replace paper-based payment orders (PT).

3. Environmental practices in retail payments – NCBs in their catalyst role

This chapter explores current NCB strategies, activities, and initiatives in the catalyst role aimed at inspiring environmental better practices in the field of retail payments.

3.1 Energy Efficiency

Not all the NCBs that participated in the survey actively promote the incorporation of energy-efficient practices in the industry. Out of the 20 NCBs (AT, BE, BG, CZ, DE, EE, FR, GR, HR, IE, IT, LU, MT, NL, PL, PT, RO, SE, SI and SK) that responded to this question in the survey, eight (DE, FR, HR, IE, MT, NL, PT, SI) indicated ongoing discussions within national payment committees about integrating energy-efficient practices throughout both pre- and post-processing stages of retail payments or plans to address it in the future.

Practices reported include:

- promote discussions and incorporate energy-efficient practices and technologies in both pre- and post-processing stages of retail payments in the national payment strategy involving representatives from the supply and demand sides of payment services or go even wider and set up a platform that facilitates discussions on shared sustainability interests and collaboration opportunities among policymakers, regulators, and the financial sector (FR, HR, IE, MT, NL, PT, SI).
- lead by example by running data centres on 100% renewable energy (DE) or by using green energy or self-generated energy to power systems within the industry (EE, NL).

- promote climate-conscious practices to include climate risk in their risk management and business continuity frameworks, fostering the dissemination of climate considerations in decision-making processes (IT).
- develop a good practice⁵ guide for financial market infrastructure with the Dutch Financial Market Infrastructure ecosystem. This guide aligns with internationally recognised principles and primarily addresses the processing of retail and wholesale payments, aiming to enhance risk management practices, consider the environmental footprint, and encourage innovation in products and services (NL).
- perform studies which focus on the sustainability aspects of retail payments.

3.2 Waste Reduction

The most mentioned action against waste reduction involves encouraging the transition from paper-based account statements to digital alternatives. Among the 19 NCBs (AT, BG, CZ, DE, EE, ES, FR, HR, IE, IT, LU, MT, NL, PL, PT, RO, SE, SI and SK) responding to this question of the survey, seven (FR, HR, IE, NL, PL, PT, SK) reported ongoing discussions within national payment committees regarding waste reduction in payments. Payment Service Providers (PSPs) are focused on promoting the utilization of electronic and mobile communication channels to further reduce paper usage.

Practices reported include:

- promote and discuss waste reduction practices and technologies in both pre- and post-processing stages of retail payments in the national payment strategy (FR, HR, IE, NL, PL, PL, PT and SK), for example by selling unusable hardware for recycling companies, which are chosen via public tender (LT).
- promote the end of automatic receipt printing (FR).
- minimize the use of paper-based payment orders or cheques (DE, MT, RO and SK).
- perform studies which focus on the sustainability aspects of retail payments (NL).

3.3 Eco-Friendly Payment Methods Promotion

In the promotion of environmentally friendly payment methods, the responses were notably consistent, emphasising the shift away from paper-based initiation of electronic payments such as paper-based payment orders or cheques. Nineteen countries (AT, BE, BG, CZ, DE, EE, ES, FR, HR, IE, LU, MT, NL, PL, PT, RO, SE, SI and SK) provided responses to this question of the survey.

Practices reported include:

- promote payment terminals on phone, non-plastic payment cards, recycled plastic payment cards, cards made from sustainable materials (e.g., wood), recycling programs for used payment cards available (DE, EE, PL, PT, RO, SI and SK).
- promote the reduction of the use of paper cheques, by actively promoting alternatives to cheques for professionals (targeting segments that tend to not commonly accept card payments such as non-

⁵ Requirements could be developed to determine what practices qualify as good practice.

profits, doctors, etc) (FR) or address these topics in the National Strategy for Retail Payments, listing regulations that would still promote or oblige the use of cheques, evaluate electronic alternatives to cheques, promote contactless card payments, direct debits and instant credit transfers through communication actions) (PL, PT).

- promote account-to-account (A2A) payments as one of the key pillars for the payment's roadmap (IE).
- promote the usage of eco-friendly payment methods, such as SEPA instant payments, through NBS' website or in the form of press releases, as well as through the education program for the young and adult population in the field of financial literacy (SK).

3.4 Sustainable Payment Infrastructure

In this survey, four NCBs (IT, NL, RO, and SK) out of 20 (AT, BE, BG, CZ, DE, EE, ES, FR, HR, IE, IT, LU, MT NL, PL, PT, RO, SE, SI and SK) replied that they encourage the industry towards sustainability in the payments infrastructure and four replied that this is something they will do in the future (FR, IE, PT and SI). It seems that discussions in various ways and at different levels are the most used ways for NCBs to act as catalyst in promoting a sustainable payment infrastructure.

The following means were used by those reporting:

- discussions on sustainability issues with the private sector in their regular meetings as well as the national payment committees to incorporate sustainable practices and technologies in both pre- and post-processing stages of retail payments in the national payment strategy (DE, NL, PT SI).
- measuring payment operators' sustainability performance by applying ESG standards. (IT)
- discussions on new eco-friendly product development during meetings or conferences with representatives of banking sector (PL).
- sharing information about PSP's eco-friendly products on their websites (PL).
- promoting the usage of sustainable materials for production of payment cards, and the usage of virtual cards and mobile payments (SK).
- recommendations to banks to provide instant payments to promote electronic payments (PT, SK, RO).

3.5 Stakeholder Engagement

Engaging stakeholders and employers to take part in the sustainable practises of retail payments could be an effective way to move towards a greater sustainability in retail payments. This could be implemented for example through collaboration with payment industry partners to set sustainability standards or by encouraging stakeholders to adopt sustainable payment practises through advocacy and partnerships. Of the 21 answers (AT, BE, BG, CZ, DE, EE, ES, FR, GR, HR, IE, IT, LU, MT NL, PL, PT, RO, SE, SI and SK) received only few countries (DE, EE, IT, NL, PT and SK) replied that measures are being taken by the NCBs to engage the stakeholders to sustainable retail practises. The following measures were reported:

- discussions on sustainability issues with the private sector in their regular meetings as well as the national payment committees (DE, EE, PT).
- developing a good practice guide for financial market infrastructure with the Dutch Financial Market

Infrastructure ecosystem. This guide aligns with internationally recognised principles and primarily addresses the processing of retail and wholesale payments, aiming to enhance risk management practices, consider the environmental footprint, and encourage innovation in products and services (NL).

- collaborating with payment industry partners to set sustainability standards (e.g. Pay-by-Square⁶ (QR payments) (SK).
- a round of interviews with the members of the boards of directors of a large sample of less significant institutions was conducted at national level to gather data on their level of awareness of environmental risks (IT).

3.6 Measurement and Reporting

According to the answers to the survey, the environmental impact of retail payments is hardly measured and reported by NCBs in their catalyst role. One NCB (IT) reported envisaging to strengthen sustainability reporting, with the identification of an integrated framework and the development of performance indicators. Another NCB (SE) reported that it performs studies which focus on the sustainability aspects of retail payments and then it communicates the result to stakeholders on the national retail payment market. Also, one NCB (NL) aims to reduce the environmental impact of payments in line with international targets such as the Paris Climate Agreement. It plans to update the carbon footprint of electronic payments and to draw up an action plan to reduce it.

4. Conclusion

The existing practices to increase sustainability in electronic retail payments collected through the survey constitute a first element to define a set of best practices at the ESCB level. The replies received highlight the repetition of some actions between the different categories of survey questions. Based on the replies received, the environmental engagement of NCBs in their catalyst role regarding retail payments is currently limited and the set of actions varies between NCBs. The significance of the activities and the role of NCBs to increase sustainability in retail payments could be increased in the future. The establishment of best practices at ESCB level may help to support this. As a result of the survey, the following practices are proposed as a first set of environmental best practices to increase sustainability in electronic retail payments. These practices were chosen, based on the following criteria: 1) the practice supports an increase of sustainability in retail payments, 2) the practice is concrete and practical, 3) the practice is mentioned as standing practice by at least one NCB.

The proposed best practices take into account the need to ensure financial inclusion, which is also a goal of the Eurosystem's retail payments strategy. Actually, both are combined in a common goal entitled "supporting accessibility and a sustainable payments ecosystem".

In time this list may change and develop to include new best practices, change existing ones or exclude those that are considered to no longer be best practices. The suggested best practices can be reassessed

⁶ PAY by square is an electronic format for several types of payment orders and can hold up to 5 bank accounts in IBAN and BIC format. PAY by square is compatible with SEPA. PAY by square has become the standard for encoding of payment information into QR codes in Slovakia. Clients no longer have to rewrite payment details from the [invoice](#), it is enough if they scan the QR code with their bank's mobile app. <https://bysquare.com/en/pay-by-square/>

after presenting it to market stakeholders (with ERPB as a prominent candidate, and preliminary discussions with other relevant stakeholders). Implementation progress could be monitored, and the entire set could be revisited after two/three years, taking into account experiences and developments during that period. In addition to these best practices, the Eurosystem is exploring the possibility of conducting a study on the environmental footprint of electronic retail payments. This work (announced in the updated retail payments strategy) could also be the basis for new recommendations.

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