The Lauder Institute
Wharton · Arts & Sciences
University of Pennsylvania

Politics & Policy Program

Policy Brief

May 2025

From Stability to Sustainability: Unlocking the Green Potential of the Digital Euro

Joselyn Salazar
Lauder Track: Europe, French

Executive Summary

The European Central Bank is developing the digital euro, an electronic form of payment available to everyone in the 20 Eurozone countries. Beyond its immediate financial benefits, it aligns with the European Union's strategic goals of promoting sustainability and a low-carbon future. The digital euro could serve as a vital tool in this transition, supporting green finance while ensuring that Europe's financial system remains competitive and resilient in the digital age. However, greenwashing, financial stability, and energy efficiency must be addressed to ensure its success.

The ECB's Commitment to Innovation and Sustainability

The European Central Bank (ECB) has been very vocal about its commitment to sustainable banking. In early 2024, ECB president Christine Lagarde confirmed, "A hotter climate and the degradation of natural capital are forcing change in our economy and financial system. We must understand and keep up with this change to continue to fulfill our mandate."[1] Since then, the central bank has taken concrete action, setting up the Climate Change Center as the official coordinating body to consolidate, direct, and execute the climate agenda internally and externally. This group, reporting directly to Lagarde, works on several cross-functional projects relating to financial market operations, risk, and European Union (EU) policy and financial regulation.[2]

Furthermore, the ECB has set up the Digital Euro team in its Frankfurt headquarters, composed of experts who are tackling the strategic, regulatory, and operational challenges that come with such an endeavor.

In interviews, members of their strategy team provided additional context on three key deliverables that the public can expect. First, they are dedicated to providing a **privacy-first, online payment solution** that fully addresses the concerns of the general public. According to a recent survey by independent market research firm Kantar Group,

1 European Central Bank. "ECB Steps up Climate Work with Focus on Green Transition, Climate and Nature-Related Risks." European Central Bank, 30 Jan. 2024, www.ecb.europa.eu/press/pr/date/2024/html/ecb.pr240130~afa3d90e07.en.html#:~:text=%E2%80%9CA%20hotter%20climate%20and%20the. Accessed 21 Sept. 2024.

2 Olmem, Andrew, and J. Paul Forrester. "European Central Bank Establishes Climate Change Centre." Mayerbrown.com, 2 Feb. 2021, www.mayerbrown.com/en/insights/blogs/2021/02/european-central-bank-establishes-climate-change-centre. Accessed 21 Sept. 2024.

"The public consider privacy and data protection to be two of the most important design elements of a digital euro."[3] Second, the ECB will produce a **digital rulebook** – "a single set of rules, standards and procedures to standardize digital euro payments across the Euro area." [4] This body of work would set up the framework to deal with future disputes and ensure agreement across the multiple countries that accept this form of payment. Third, the digital euro will offer an **offline digital euro** that will allow users to transact with this payment method, regardless of internet connection.

To succeed, this ambitious project will need "two main tracks to advance in parallel. It needs to be timing optimal and technically feasible," a senior strategist said. The digital euro is a must-win and goes beyond "just an ECB project, but a European project."

A project of this scale has been attempted by other central banking institutions, with limited success. According to a recent thought piece by Boston Consulting Group, "One key factor that stands to make the digital euro a success is the strong level of political will and capital already in place." [5] The EU's bureaucratic infrastructure, often seen as a burden to overcome, may be the single most important aspect to ensuring permanent adoption and buy-in. The coordination effort required spans public and private sectors—from governments to civil institutions to individual consumers—which are already within the operating scope of the EU regulatory bodies.

Despite this work, it has been challenging to quantify the net impact of this nascent "green" monetary policy. A recent analysis of the ECB's corporate bond portfolio found that the existing portfolio was unknowingly favoring "firms with more tangible assets, as well as riskier firms, especially those more exposed to climate risk." Melina Papoutsi, a senior economist at ECB, explained that this effect was largely driven by the fact that "riskier" firms require significant upfront capital expenditure. By extension, these same firms can collateralize more loans, thus facing a lower cost of capital. These capital-intensive firms are typically in heavy "brown" sectors such as oil and gas, mining, and manufacturing. The outcome of these findings has led to a robust dialogue with ECB policymakers as they think about the second- and third-order implications of their policies.

A New Pathway to Climate Neutrality?

As Europe pushes towards its climate-neutral goals, the digital euro presents a unique opportunity to integrate sustainability into the financial ecosystem. Following the clear pledge to deliver a robust "roadmap to further incorporate climate change considerations into its monetary policy framework."[6] the ECB has committed to finding solutions to the climate crisis, which the digital euro is well-positioned to address. While initially conceived to modernize payments and ensure financial stability, the digital euro is also a potential tool for advancing green finance and supporting Europe's sustainability goals. By allowing for precise tracking of transactions, the digital euro could help ensure that funds designated for sustainable investments are used effectively, reducing risks of greenwashing—a growing problem whereby companies misrepresent their environmental practices to attract capital.

While the digital euro holds promise, it also presents challenges. First, without robust oversight, there is a risk that the digital euro could inadvertently support unsustainable projects, undermining its purpose in promoting genuine green finance. Second, the ECB must find a way to balance its primary goal of financial stability with climate-related objectives. Prioritizing green investments while avoiding high-carbon sectors could disrupt market stability if managed too aggressively. Finally, the infrastructure required to support a digital currency could increase the ECB's carbon footprint unless carefully managed, as the energy demands of digital systems are significant.

A Roadmap for Sustainable Finance

The ECB's proposed digital euro aims to modernize the EU's financial infrastructure and expand digital payment options. Yet, beyond its transactional benefits, the digital euro could play a strategic role in advancing Europe's climate goals.

3 "Progress on the Preparation Phase of a Digital Euro - First Progress Report." European Central Bank, 24 June 2024, www.ecb.europa.eu/euro/digital_euro/progress/html/ecb.deprp202406.en.html, https://doi.org/10.2866/10580. Accessed 6 Aug. 2024.

4 European Central Bank - EuroSystem. The ECB Pledge on Climate Change Action. 2021.

5 Bauer, Patrick et al. "The Digital Euro Could Herald a New Era of Innovation." BCG, 2 July 2024, www.bcg.com/publications/2024/digital-euro-could-herald-new-era-of-innovation. Accessed 20 Sept. 2024.

6 European Central Bank - EuroSystem. The ECB Pledge on Climate Change Action. 2021.

Mitigate Greenwashing

One of the digital euro's most promising features is its capacity to **enhance transparency in green finance** by enabling more accurate tracking of funds and their environmental impact. Digitizing transactions within a central bank-controlled system could help ensure that funds earmarked for environmentally sustainable projects are properly allocated and used, preventing greenwashing. A recent study conducted by David Marques-Ibañez et al. illustrated that private banks that join voluntary green alliances, like the Net Zero Banking Alliance, "do not change their lending or loans pricing differentially compared to banks without climate commitments," and that "firm borrowers are no more likely to set climate targets after their lender sets a climate target."[7] Through the digital euro, regulators and investors could easily track the flow of funds related to green bonds or carbon credits, offering greater assurance that these financial products are genuinely contributing to environmental objectives. The digital euro could further enable central and commercial banks to develop specific financial instruments that promote green investments, such as lower interest rates for loans tied to environmentally sustainable projects. By ensuring transparency and accountability, the digital euro could drive capital toward projects that align with Europe's climate goals.

Foster Clean Energy and Digital Infrastructure

Another potential contribution of the digital euro is its ability to **reduce the carbon footprint** of financial transactions. Traditional systems that rely on physical cash incur environmental costs related to the production, transportation, and disposal of currency. Unlike energy-intensive cryptocurrencies such as bitcoin, which require vast computing resources for mining and transaction verification, the digital euro would be centrally managed, and therefore more energy-efficient. This efficiency could help mitigate the environmental impact of an increasingly digital economy, particularly as more consumers and businesses shift away from physical cash.

Support a Sustainable Financial Ecosystem

The digital euro could also promote **sustainable innovation** within Europe's financial ecosystem by providing a reliable digital platform for green fintech solutions. For example, green fintech applications could leverage the digital euro open-access API to develop innovative products that help consumers track the carbon footprint of their transactions, empowering individuals to make more sustainable financial decisions. Additionally, the digital euro could be the preferred partner for business models that prioritize resource efficiency and waste reduction, such as those in the circular economy. By simplifying peer-to-peer payments and supporting platforms for recycling, sharing, and reselling goods, the digital euro could enable a financial infrastructure that promotes sustainability on both the consumer and business levels.

Finally, considering ESG more broadly, the digital euro could promote financial inclusion by providing a secure, state-backed digital currency that ensures access to modern financial services, particularly for those in remote or underserved areas. Additionally, it enhances financial stability by mitigating risks like bank runs, offering individuals a safe digital alternative to private bank deposits, which can be crucial in times of crisis when confidence in commercial banks may wane. ECB economist Davide Porcellachia referenced his ongoing research in this area, explaining that the digital euro could be "a near-instantaneous method of controlling liquidity."

Policy Recommendations

While the digital euro offers significant opportunities for supporting green finance, several challenges must be addressed.

Greenwashing is the largest risk factor to consider. For the digital euro to be an effective tool in promoting sustainability, its **governance and regulatory frameworks must ensure that environmental claims tied to its use are backed by real outcomes.** This could be mitigated through explicit codification in the digital rulebook, ensuring that environmental key performance indicators (KPIs) are embedded into the oversight of financial instruments and transactions facilitated through the digital euro. To ensure the digital euro remains aligned with Europe's evolving sustainability priorities, the ECB should commit to ongoing monitoring and adaptation based on real-world impact. Regular assessments, informed by robust data analytics, will allow the ECB to adjust policies as needed and address emerging challenges in green

7 Sastry, Parinitha, et al. "Business as Usual: Bank Climate Commitments, Lending, and Engagement." SSRN Electronic Journal, 1 Jan. 2024, papers.ssrn.com/sol3/papers.cfm?abstract_id=4772562, https://doi.org/10.2139/ssrn.4772562. Accessed 21 Sept. 2024.

finance. This proactive approach, combined with open communication with stakeholders across the finance and environmental sectors, will be essential to maintaining the digital euro's relevance and effectiveness in Europe's journey towards sustainability.

Similarly, while the digital euro offers a lower-carbon alternative to physical cash, it introduces a new environmental challenge: the energy demand of a digital currency infrastructure. Maintaining the servers, data centers, and network systems needed to process digital euro transactions at scale could significantly increase energy consumption. To prevent the digital euro from contributing to the EU's carbon footprint, the **ECB must design this infrastructure to operate on renewable energy and implement efficiency standards for data processing.** Without proactive measures, the energy-intensive nature of digital systems may offset the digital euro's potential green benefits.

Balancing financial stability and sustainability is another significant challenge. The ECB's primary mandate is price stability, but as climate-related financial risks become more pronounced, the ECB must consider how to navigate the intersection of sustainability and financial policy. Discouraging investment in high-emission sectors, such as fossil fuels, could create instability in financial markets, particularly if these sectors represent a significant share of bank lending portfolios. **Financial institutions could be encouraged to slowly reduce their exposure to high-carbon industries, minimizing market disruptions while shifting capital towards greener sectors.** Additionally, the ECB could i**ncentivize banks to adopt sustainable finance practices** by offering benefits, such as lower collateral requirements for green financial instruments, allowing financial institutions to integrate sustainability in a way that aligns with broader stability objectives. This delicate equilibrium will require some thoughtful adjustment, as the ECB must avoid favoring specific sectors too overtly while still encouraging the shift toward a greener economy.

While the digital euro has the potential to reduce the environmental footprint of financial transactions, the infrastructure required to support a CBDC is not without its energy demands. The data centers, payment processors, and network systems necessary to support a digital currency are likely to consume significant amounts of energy if not carefully managed. Therefore, to align the digital euro with broader sustainability goals, the ECB must ensure that the infrastructure behind it is powered by renewable energy sources.

Bibliography

Bauer, Patrick et al. "The Digital Euro Could Herald a New Era of Innovation." BCG, 2 July 2024, www.bcg.com/publications/2024/digital-euro-could-herald-new-era-of-innovation. Accessed 20 Sept. 2024.

European Central Bank. "ECB Steps up Climate Work with Focus on Green Transition, Climate and Nature-Related Risks." European Central Bank, 30 Jan. 2024, www.ecb.europa.eu/press/pr/date/2024/html/ecb.pr240130~afa3d90e07.en.html#:~:text=%E2%80%9CA%20hotter%20climate%20and%20the. Accessed 21 Sept. 2024.

European Central Bank - EuroSystem. The ECB Pledge on Climate Change Action. 2021.

Olmem, Andrew, and J. Paul Forrester. "European Central Bank Establishes Climate Change Centre." Mayerbrown.com, 2 Feb. 2021, www.mayerbrown.com/en/insights/blogs/2021/02/european-central-bank-establishes-climate-change-centre. Accessed 21 Sept. 2024.

"Progress on the Preparation Phase of a Digital Euro - First Progress Report." European Central Bank, 24 June 2024, www.ecb.europa.eu/euro/digital_euro/progress/html/ecb.deprp202406.en.html, https://doi.org/10.2866/10580. Accessed 6 Aug. 2024.

Sastry, Parinitha, et al. "Business as Usual: Bank Climate Commitments, Lending, and Engagement." SSRN Electronic Journal, 1 Jan. 2024, papers.ssrn.com/sol3/papers.cfm?abstract_id=4772562, https://doi.org/10.2139/ssrn.4772562. Accessed 21 Sept. 2024.