

# How **Green** can your access to **Cash Strategy** be?



# Executive Summary

Like other major institutions, banks have put themselves at the forefront of delivering **net zero targets** by [2050](#).

They see their role as both de-carbonising their own often-massive operations and stimulating change in the wider economy by how they finance environmental progress for their customers.

However, everyone knows achieving net zero targets is tough and banks have a long way to go. An [Accenture study](#) found while most of the world's biggest banks are committed to net zero targets, only

12% of banks are currently on track to reduce emissions from with their own businesses. This is significant when many banks like the UK's Lloyds Bank have a 2030 target for net zero for internal operations.

Banks do acknowledge there is more to do. In this paper we set out how a **net zero cash management strategy** can be something that banks and ATM operators can execute on to achieve their net zero goals. Also significantly, it is an area in which banks and ATM operators have more direct control on progressing net zero reduction results than, for example, digital currency and online banking services.



# What is the carbon footprint of modern cash?

The environmental impact of physical cash from its manufacture to disposal has been heavily researched in the last five to six years.

Perhaps the most significant [study is the European Central Bank Product Environmental FootPrint study of Euro Banknotes](#) published in December 2023. The study tracked the potential environmental impact of all activities in a **full life cycle** for euro **banknotes**, beginning at acquiring the raw materials to minting the currency and then how it distributed and circulated across the euro zone of 20 countries and finally the impact of taking the old notes out of circulation and their secure disposal by euro area national central banks (NCBs).

It is because of the size of the study and that it draws on data from 2004, that its results on the environmental impact of physical currency is so insightful. In fact, the ECB reckons the environmental footprint of a person's yearly use of euro banknotes is equivalent to driving 8 km by car.

What is significant about this finding is when it is compared to other environmental impacts. For example, the annual environmental impact of an EU

citizen in 2019 is two journeys around the world or a 79,575 km car trip. Another earlier study by **the Dutch National Bank** made an even more striking comparison when it found that the each cash transaction generates less than 5kg of CO2 compare to the 200g of CO2 emitted to make a 40g bar of milk chocolate.

In many ways, physical cash is inherently environmentally friendly. For example, it is highly recyclable. New notes are incredibly durable and can remain in the money supply for years without needing to be replaced. Many bank notes are made from **cotton by-products** and banks like the ECB now use only 100% sustainable cotton and have banned the disposal of banknote waste in landfill. Mints that manufacture notes are also looking at the use of more renewable energy and other sustainable production processes that use less water



# Physical cash and its processing would seem to have a lighter environmental impact.

## But how does it rate against digital currency and transactions?

Typically, older economic processes tend to be less environmentally friendly and have larger carbon footprints. Therefore, it would seem natural to assume digital banking and transactions should be greener, given it does not require the same physical infrastructure – bank branches, cash in transit services, mints.

Yet, **digital transactions** do come with an environmental impact that is beginning to be better understood. Digital services like online or contactless payments depend on substantial hardware, software and considerable energy consumption for payment **data processing, data management** and **communications** whether at the point of sale, on the internet or paying using mobiles.

The rise in digital banking and the greater use of more energy-hungry technologies like AI will mean a significantly increased need for data centre capacity. Indeed, the growth in digital services including banking is contributing to a doubling in global **data centre energy** consumption according to the [International Energy Agency](#).

Data centres used for digital banking and transactions also put **considerable strain on natural resources** like water, which is used for cooling. A [report by ING Bank](#) said that between 2015 and 2021 water consumption from data centres rose from 738 million

litres to more than 840 million litres. In some countries, the drain on water resources to enable digital services is even more significant. The USA has about a quarter of the world's data centres and a medium- sized data centre there needs around 300,000 gallons of water a day, which is equivalent to the water consumption of 100,000 homes.





# How can banks make their services more sustainable?

With their net zero targets for 2050 or earlier, banks need to look at where they can reduce their environmental impact with real purpose and energy.

Digital banking services and enabling digital payments is clearly an essential service but there are challenges to how a bank can reduce the environmental impact of data centres and infrastructure run by third parties.

While they tackle this, banks can make faster and more substantial progress towards their green targets through how they run their access to cash channels and infrastructure. This is because these are more directly in a bank's control and any environmental improvement is building on the inherent environmentally positive characteristics of physical money itself.

There are two major areas where banks can drive carbon footprint reductions in their access to cash operations.

## **1. Review and renew their ATM and access to cash infrastructure to be greener.**

The ECB estimated that 37% of the environmental impact of euro banknotes is attributable to the electricity consumption of ATMs. So, taking steps to improve the energy efficiency of a large ATM fleet can deliver actual results. This does require banks to invest in new machines that consume less energy and come

with smart energy management features such as low energy LED lighting, ambient light sensing, and more efficient modules with smarter power supplies and electronics.

## **2. Overhaul Cash in Transit operations to be kinder to the environment.**

Second to ATM power consumption as a big contributor to the carbon footprint of physical cash is distribution of cash to bank branches and ATMs. So, finding ways to make distribution more environmentally efficient is key. This is about how both distribution is done physically with a focus on how money delivery trucks consume less fuel or run on net zero fuels like electricity or green hydrogen; and how the carbon footprint of physical cash can be reduced when smarter cash management systems are used to optimize cash deliveries, reducing any emissions associated with the supply of cash to ATMs.

So, what are the specific developments in greening access to cash services to be expected in the coming years?

## **Banks and ATM operators using more AI, Machine Learning and Automation for Hitting Net Zero goals.**

Using **predictive analytics**, **AI**, and **machine learning** for **real-time monitoring** of current cash withdrawals and deposits leads to a **more sustainable cash management strategy** as this can

predict demand with more accuracy. AI can analyse the overall network of ATMs to determine the ideal locations, services, and cash levels for each ATM, optimizing the entire [network's cash management strategy](#).

AI can help determine optimal pricing strategies for ATM services, taking into account factors like transaction volume, location, and time of day to maximize profitability.

Using AI to optimise **cash transportation routes** and frequencies can help **reduce carbon emissions** and thus contribute to a **bank's ESG reporting and targets**.

Many banks still rely on manual processes or basic mathematical functions for cash management. With **Auriga's Cash Management software**, banks can [automate](#) these processes, **enable real-time monitoring** and a **more efficient intervention planning**. Including reducing waste related to unnecessary order management costs by 25 percent. This not only reduces errors, but also streamlines operations.

### **Working with Cash in Transit Leaders on Green-Led Optimisation.**

The application of greater levels of automation to enhance cash distribution is playing an increasingly significant role at many CITs and banks.

The use of advanced route-planning algorithms is [optimizing the transportation of cash](#) between centres and ATMs/retailers, supporting more efficient, more dependable, and greener cash logistics.

**Cash-in-transit** are investing in telematics and routing optimisation to reduce fossil fuel usage and are trialling or deploying electric or hybrid vehicles. Some CIT firms are also introducing lighter vehicles that consume less fuel and be up to 22% more fuel efficient. Less transport emissions enabled by using network forecasting to right-size and correctly locate the sorting infrastructure along with multi-bank cash centres.

Advancing environmental targets is not just about routing and fuel usage optimisation. For example, CIT firms are looking at how they cut down on their single use plastic usage. There has been considerable progress on using recyclable money sacks and when plastic is used it is recyclable polyethylene.

### **Roll Out of Modern ATMs.**

New ATMs are more energy efficient so banks who renew their fleets can progress their environmental goals directly. In fact, the ECB says that improvements in the energy efficiency of ATMs contributed to a 35% decrease in ATMs environmental footprint between 2004 and 2019.

**New recyclable ATMs** can combine with CIT optimisation initiatives to reduce environmental impacts. They create a closed loop cycle in which bank customer deposits can be used to replenish ATMs. The opportunity of **in-branch recycling** can further **reduce CIT stops** when cassettes are interchanged between systems in one location. Based on concrete cash flow data of a retail bank, a reduction of 75% in cash replenishments can be realised using cash recycling technology. When ATMs with recycling technology replace standard cash-out ATMs and deposit solutions for cash-in transactions, CIT visits can fall by 156 per year. Based on average emissions of CIT visits, 1,700 kg CO2 can be saved per ATM per year.

### **Reimagine ATM fleets and their management.**

The greening of access to cash infrastructure does seem to require some upfront investment in new **ATM network management strategies**, which some banks may question. [ATM pooling](#) whereby several banks collaborate on running and improving their self-service network can accelerate how banks transform their ATM fleets to make them both **more environmentally friendly and customer centric**.

The overall carbon footprint of running a large, geographically dispersed network of **ATMs, ASSTs and other devices** can be reduced by using state of the art cash management solutions and ATM pooling initiatives. Sharing ATMs also enables banks to make investments in newer more energy efficient ATMs.

ATM pooling creates elevated levels of **optimisation and efficiency** for the infrastructure as a whole. Even though this will reduce the physical footprint of the machines, they will be based in areas of higher usage. Consequently, there will no longer be an oversupply of ATMs in one area, which in turn **reduces energy consumption and carbon emission**, thanks to a **lower number of cash-in- transit journeys** needed for cash replenishment.



# How Auriga Helps Banks Green Their Access to Cash Channels

**Auriga's WWS Cash Management software** is an integrated solution to optimise all cash management processes with significant cost and environmental impact reductions.

This software is fully **multivendor** and **multichannel** and can be used to manage all cashpoints inside and outside branches (cash dispensers, multifunction ATMs, recycling ATMs, ASDs or TARMs, branch windows with TCR, shopping centres), with positive results for the whole cash trail.

Key to optimizing cash management is the quality of its **predictive analysis** to recommend the right cash orders for delivery for the right locations at the right time to **minimize the cost of cash** operations to deliver the **best customer experience**.

The predictive analytics optimizes **CIT management**. The Cash Predictive feature assesses the daily data available from the management console of the ATMs and, based on historical and seasonal cash use, "instructs" the appropriate replenishment activities in detail. Once the proposed order is approved by the designated CIT, the order can be finally authorized (or modified). If authorized, the order is incorporated into an operational packet for the CIT Company, the Cash Centre and Cash Depots. Optimised CIT management is key to reduce carbon emissions associated with

transport when needing to restock cash in ATMs, and lowers the number of unused machines.

**Auriga's ATM as a Service (ATMaS) strategy** is designed to improve customer experience, security, and uptime to free up a financial institution's resources and to minimise operating costs. It outsources the entire **end-to-end management** of the ATM fleet to Auriga from sourcing, distribution, and operation to installation, maintenance, security, compliance, and cash management.

This service solution enables ambitious ATM pooling projects that can modernise ATM fleets and estate and accelerate migration of more transactions to the ATM; all with a renewed agility that will allow for quicker implementation of innovations in the future. This makes the roll out of **future upgrades** including more environmentally friendly ATM functionalities and cash management and new services quicker and more effectively.

Auriga is supporting one of Europe's major ATM pooling initiatives **Batopin**, which is supported by major Belgian banks Belfius, BNP Paribas Fortis, ING and KBC. Batopin will ensure 95% of Belgians have access to a modern ATM service within five kilometres of their home or business.



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