

# CURRENCY NEWS™

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## Inside this edition

Belgium Inaugurates New State-of-the-Art Cash Centre	1
Global Uncertainty Increases – What Does This Mean for Cash?	2
News in Brief	3
Glory Sales Fall Back After New Issue Surge	4
Continuity Plus Confidence for De La Rue as it Moves to Private Ownership	4
Central Banks and Cash Round-Up	5
GUARDIAN™ ENVIRO – the Next Step in Sustainability for Central Banks	7
From Money to Medals in Indonesia	8
Cash is a Handshake	9
People in the News	10
Honouring the Leaders in Cash	10
Q&T's POLYSECURE® SHIELD Embeds OVDs into Polymer	11
Watermarks for Polymer in New Boa Sorte House Note	11
Rio Delivers a Stunning Display for HSP LatAm	12
Cash Sustainability with a Latin American Twist	13
Best in Banknotes Recognised in HSP Latin America Awards	14
Note and Coin News	15
New Themes Sought for Bank of England Notes	15
In Other News	15
Events	16

## Belgium Inaugurates New State-of-the-Art Cash Centre

The National Bank of Belgium (NBB) has officially inaugurated its new cash centre – an environment-friendly facility from where all cash logistics for Belgium will be coordinated.



A new dawn for the National Bank of Belgium's cash centre in Zellik (© Bart Van Paepegem).

Cash-related activities have, until now, been carried out at the NBB's headquarters in the centre of Brussels – which date back to the 1960s, are outdated, labour-intensive and difficult to modernise, with ageing fixtures, multiple floors, several vaults and no automation.

The new 10,000m<sup>2</sup> purpose-built complex in Zellik, on a greenfield site on the outskirts of Brussels, meets state-of-the-art security standards and allows cash logistics activities to be streamlined and largely automated. For example, staffing needs have been reduced by a third. Moving cash activities from the busy city centre to the outskirts near the motorway will also facilitate the transport of cash.

The decision to invest in the new €100 million facility was taken in 2017. The foundation stone was laid in May 2022. Substantial efforts have been made to ensure that the construction is sustainable and environmentally friendly. Thanks to 2,300m<sup>2</sup> of solar

panels, a geothermal heating and cooling system and a green zone, the centre is practically carbon neutral.

The old cash centre in Brussels will be closed, making room for the renovation of the NBB's head offices, work on which will start next year.

Around 600 million banknotes, valued at around €24 billion, are processed by the NBB each year. On average, a banknote in circulation in Belgium returns to the NBB just under once a year. Of these, around 11% are destroyed and replaced by new notes. In addition, the cash centre sorts and distributes euro coins on behalf of the Belgian Treasury.

At the end of April 2025, 1.2 billion euro banknotes had been issued by the NBB (versus 30.2 billion in the whole euro area), along with 4.2 billion coins (out of a total of 151.7 billion euro coins). In 2024, the NBB removed just over 14,000 counterfeit notes from circulation.

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# Global Uncertainty Increases – What Does This Mean for Cash?

■ By Nikki Strickland, Global Marketing and Strategy Director, De La Rue

As of early 2025, the Economic Policy Uncertainty Index has reached its highest levels this century, signalling a period of significant macroeconomic volatility<sup>1</sup>. Similarly, the World Uncertainty Index (WUI) has nearly tripled, increasing from approximately 16,043 in Q1 2024 to around 48,146 in Q1 2025. This significant surge in uncertainty is global, affecting all regions.



## Drivers of uncertainty

The immediate drivers of uncertainty include ongoing global trade tensions, the wars in Ukraine and the Middle East, domestic policy shifts, rising debt levels, persistent inflation, and volatility in energy and commodity prices. Over the longer-term, challenges such as climate change and the fragmentation of supply chains are amplifying the sense of unpredictability.

Historically, periods of economic uncertainty have led to an increase in the demand for cash<sup>2</sup>. For example, during the global financial crisis of 2008 and the COVID-19 pandemic, demand for banknotes surged as people sought secure, tangible forms of value amidst financial instability.

## Demand for banknotes in times of crisis

Economic uncertainty typically triggers a shift in the types of banknotes in circulation. During times of payment disruptions, there is often an increased demand for smaller denominations, as individuals and businesses seek to manage day-to-day expenses. The recent power outages in Spain and Portugal led to queues at the ATMs and retail transactions can become 'cash-only' during times of cybersecurity attacks or payment systems failure.

Conversely, during major financial crises, demand for higher-value denominations rises as people seek to store larger amounts of wealth in physical form or want some cash 'just in case'. Some central banks recommend that people hold cash at home. Furthermore, several countries have taken significant steps to protect access to cash.

## The role of cash in financial inclusion and empowerment

In addition to serving as a store of value, cash plays a crucial role in financial inclusion. As inflation rises and more people experience economic insecurity, cash becomes an essential budgeting tool. Trends like 'cash stuffing' (or cash envelope budgeting) have gained traction, particularly as people seek greater control over their spending in the face of rising costs. In the UK, for instance, cash transactions rose by 10% in January 2025, marking the third consecutive year of growth<sup>3</sup>.

Central banks and international organisations such as the World Bank, OECD, IMF, and the UN have highlighted the challenges posed by growing poverty and economic exclusion, which are exacerbated by inflation. For many, particularly in low-income or vulnerable groups, cash remains a lifeline to financial inclusion. While digital payment systems are growing globally, they often fail to reach those most in need, further entrenching the digital divide.

## Inflation and banknote demand

The effects of inflation on the value of currency can lead to a mismatch between the denominations of banknotes in circulation and the rising cost of goods and services. When inflation outpaces the value of lower-denomination notes, central banks may need to introduce higher-value denominations to ensure that consumers can make transactions without needing an impractical number of banknotes.

Introducing new high-value denominations, however, requires careful planning and time. Central banks must balance the need for quick solutions with the long-term logistics of printing, distributing, and ensuring the security of, new notes.

## Currency and projected banknote circulation trends

In recent years, the volume of banknotes in circulation has grown at an average compound annual growth rate (CAGR) of 5%. This growth indicates that, each year, the additional number of banknotes needed to keep pace with demand is roughly equivalent to the total number of banknotes printed by commercial security printers annually.

Given the current global economic climate, rising uncertainty could further increase the demand for banknotes. However, other factors, such as the shift towards digital payments, will also influence future demand.

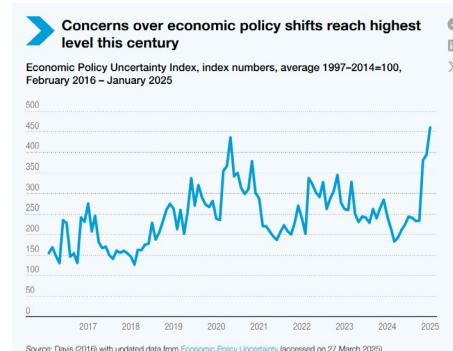
According to the WorldPay 2025 Report, while cash use has stabilised in markets with traditionally low or medium cash usage post-COVID, it remains central to the payments mix in many regions. For instance, approximately 40% of mobile money transactions are cash-in/cash-out transactions, a crucial segment that is not always reflected in conventional payment reports.

## Implications for central banks

The fundamentally important role of cash in the global payments ecosystem requires central banks to monitor cash demand trends and plan ahead for potential surges in demand.

In light of the rising uncertainty and the critical role that cash plays in both economic stability and financial inclusion, central banks should collaborate closely with their suppliers and service providers.

Tools such as DLR Analytics™ can help central banks model future scenarios whilst providing a standardised approach to enable central banks to more easily learn from experiences of others.



<sup>1</sup> <https://unctad.org/publication/trade-and-development-foresights-2025-under-pressure-uncertainty-reshapes-global>

<sup>2</sup> Cash demand in times of crisis, Gerhard Rösl and Franz Seitz, Journal of Payments Strategy & Systems, 16 (2), 107–119 (2022)

<sup>3</sup> <https://www.bbc.com/news/articles/cew50nnz902o>



# News in Brief

## ■ Hueck Folien and IQS Strengthen Ties for Security Features

Hueck Folien and IQ Structures, two leaders in banknote security features, have announced a strengthened partnership that builds on the success of their Nanovista™ venture, following what they describe as an overwhelmingly positive market response to their joint efforts.



Martin Bergsmann, CEO of Hueck Folien (left) and Tomáš Těthal, Chairman of the Board of IQ Structures (right) celebrating the new partnership between the two companies.

The two companies launched Nanovista last year as the brand for a portfolio of high security features, the first of which was Nanoswitch™ – a combination of nano-fabricated optical elements and partial ColorSwitch™, which was unveiled at last year's Banknote Conference (see CN May 2024).

Under the new agreement and in addition to the exclusive collaboration for Nanoswitch, IQ Structures' security features for the banknote sector will now be exclusively marketed together with Hueck Folien.

According to the two companies, this enhanced cooperation marks a significant milestone in the field of banknote security, combining the cutting-edge nano-origination technologies of IQ Structures with the wide range of foil-based high quality security features for banknotes of Hueck Folien.

## ■ RCM Ranks as Corporate Citizen Again

The Royal Canadian Mint (RCM) has again been ranked among Corporate Knights' Best 50 Corporate Citizens in Canada. The ranking is based on 24 quantitative key performance indicators relating to resource management, employee management, financial management, clean revenue, clean investment and supplier performance.

This year, the eighth time for RCM, it improved its ranking to fifth overall in this national corporate responsibility award. It is also placed first among metal products manufacturers and second in both the Materials sector and the Metals & Mining industry.

Separately, RCM has now published its 2024 annual report. Results were ahead of the financial target for the year, albeit lower than 2023. Consolidated revenue dropped by 40% to \$1.28 billion, impacted by the continued softness in global bullion demand that began in the second half of 2023. Profit, however, increased by 8% to C\$18 million.

Weakness in the Precious Metals business was partially offset by higher foreign circulation volumes, with revenues increasing by 76%, and lower operating costs.

Total revenue from the Circulation business increased by 18% to \$136 million, mostly attributed to the aforementioned boost in foreign circulating coinage. Revenue from Canadian circulation decreased slightly, attributed largely to lower program fees. This was partially offset by a higher volume of coins required to replenish inventories due to a decrease in deposits with financial institutions.

## ■ Cash Exchange Between Croatia and Montenegro

The governors of the Croatian National Bank (HNB) and the Central Bank of Montenegro have signed a Memorandum of Understanding for the exchange of euro cash, including fit and unfit banknotes and coins, between the two countries.

Their economies are tightly linked and although Croatia is a member of the eurozone and Montenegro is not (although hoping to be in the future), the latter unilaterally adopted the euro as its currency in 2002. However, it cannot officially procure or produce its own banknotes and coins, and the agreement will enable the Montenegrin central bank to swap damaged euro banknotes for undamaged ones from its Croatian counterpart, among other activities.

The exchange will operate as a 'cash for cash' system, meaning there will be no payments to accounts, with clearly defined technical, security, and logistical conditions in place.

'The signing of today's agreement enhances the operational connection between our institutions and ensures high standards in cash handling. I believe that its implementation will contribute to the stability and transparency of cash operations in the region', the HNB Governor Boris Vujčić said on the signing of the MOU.

## ■ Bulgaria Clears Final Hurdle for Euro Adoption

The European Commission and European Central Bank have both approved Bulgaria's adoption of the euro in 2026, leading to it becoming the 21st EU member state to join the euro area.

Following this confirmation, the Bulgarian National Bank can now proceed with finalising preparations and minting the new euro coins, although production will not actually begin until it is voted on by the next meeting of EU finance ministers, slated for 8 July. EU officials say, however, the vote is a done deal, and the euro will be introduced in Bulgaria on 1 January 2026.

## ■ Loomis Buys Burroughs

CIT and cash management company Loomis has acquired 100% of payment service company Burroughs for US\$72 million on a cash and debt free basis, plus a potential earn-out of up to \$38 million.

Burroughs delivers comprehensive lifecycle management services across a wide range of device types in the US and Canada, including digital and on-site first- and second-line maintenance services for ATMs, smart safes, and kiosks. These services include payment and transaction automation, unattended self-service technology, remote monitoring, predictive maintenance, and other connected technologies. The company is OEM-agnostic, ensuring that its solutions and services are adaptable to various device types.

Burroughs is based in Michigan with a workforce of c. 600 employees and revenues of \$107 million in 2024.

According to Loomis, the acquisition is in line with its strategy to broaden its ATM and automated solutions by acquiring new capabilities. The business will be reported within Loomis' US segment and the management team will remain with the company in their current positions.

## ■ Brinks Invests in ATMs

Meanwhile, rival CIT and cash services provider Brinks has announced a strategic investment into Munich-based KAL ATM Software, which specialises in solutions for bank ATMs, self-service kiosks and bank branch networks, and whose software works with all ATM manufacturers.

The rationale for the investment is to support Brinks' AMS (ATM Managed Services) offering, which is designed to give customers the freedom to choose the best-fit hardware and software for their needs, recognising that the vast majority of financial institution ATM fleets have multiple makes and models.

## Glory Sales Fall Back After New Issue Surge

In April last year, Glory – providers of cash management and automation systems – launched its 2026 Medium Term Management Plan, a three year business transformation project designed to help drive customers' own digital transformation with best-in-class products and software platforms.

Glory's annual results for fiscal year 2024, one year into this plan, showed that demand for self-service products to improve labour-saving and operational efficiency remained steady due to soaring labour costs and workforce shortages in Japan and overseas. But the overall performance was muted compared with a stellar 2023, when sales in Japan of hardware and software were turbocharged by preparations for the introduction of Japan's new banknote series, which took place last July.

Net sales totalled ¥369 billion, a decline of 0.9% compared with the previous year.

Sales in the company's overseas markets were strong – up by 12.8% in the US, 13.2% in Europe, and 17.3% in Asia. Overall, sales in this segment were ¥210 billion, an increase of 13.4%. Operating income was up 31% to ¥8.4 billion.

Sales in the domestic market – spread across Financial, Amusement, and Retail and Transportation – were all down (by 30% to ¥54.4 billion, 1.6% to ¥27.7 billion, and 6.7% to ¥69.8 billion, respectively). This was mainly due to the aforementioned post-issue slowdown in hardware replacements and systems modifications.

Operating income was ¥35.1 billion, down by 1.2% compared with the previous year. Ordinary income was also lower, down by 41% to ¥28.4 billion. Similarly, net income attributable to owners of the parent of ¥16 billion was 45.7% lower than in fiscal year. Net income as percentage of sales fell from 13.7% to 9.5%.

Using Japanese GAAP accounting, the company is forecasting sales to be 7.9% lower in the current fiscal year, operating income 38.9% lower, ordinary income 31.4% lower, and net income attributable to the owners 37.7% lower.

## Continuity Plus Confidence for De La Rue as it Moves to Private Ownership

As Currency News™ went to press, we learnt that the sale of De La Rue PLC to Atlas Holdings for £263 million – announced in April – has now completed. De La Rue will delist from the London Stock Exchange and re-register as a Private Limited Company.



De La Rue confirmed it was otherwise 'business as usual' – continuation of its commitments, operations and strategy, with the confidence that comes from a strong balance sheet, experienced leaders and a supportive long-term owner.

Atlas Holdings is an industrial holdings company which specialises in international manufacturing and distribution businesses. It has investments in 27 businesses generating combined revenues of \$18 billion, and employs 57,000 people.

'They have invested in us because they believe we are a great company with a strong reputation and significant potential', said De La Rue's Ruth Euling, adding that Atlas Holdings has a track record of being long-term owners and investors in the companies they acquire.

De La Rue is the world's largest commercial printer of banknotes, with manufacturing sites in Sri Lanka, Malta and the UK. It is a trusted partner to many central banks, with 55% of all currency issuing authorities/central banks choosing De La Rue. It has also designed over 60% of all commercially printed banknotes that have entered circulation since 2020.

The company has made significant investments to transform the business since 2020. £150 million has been invested in a second polymer substrate manufacturing line, the conversion of

the Malta printworks into a Banknote Manufacturing Supersite (the grand opening of which is scheduled this November), removing legacy issues and creating proprietary manufacturing machines for novel security features. However, like all entities in this industry, De La Rue has had to navigate COVID-19 and the recent major industry downturn.

Looking ahead, De La Rue told Currency News that robust governance, transparent communication and operational discipline (factors required from a publicly listed company) align with its principles and will remain going forward. However it concedes that the downside of being a publicly listed company is needing to prioritise the short-term objectives of shareholders over the long-term objectives of the business. This wasn't aligned with the future-looking and more strategic aspirations of the business.

This sale, plus the divestment of the Authentication business earlier in the year to Crane NXT, which significantly strengthened De La Rue's balance sheet, has opened up a new and positive chapter for the company.

'It is an exciting time to be part of De La Rue and great to be fully focusing on Currency going forward' said Ruth, adding that the company enters the next phase of De La Rue with a strong base to grow its position as a banknote industry leader.



# Central Banks and Cash Round-Up

For June, our summary of newly-published central bank annual and other reports takes a look at Canada, Chile, Costa Rica, and India.

## ■ Bank of Canada (BOC)

As part of its broader currency mandate – one of the BOC's five core responsibilities – the institution focused on enhancing the security of existing notes, preparing for the next generation of designs, and researching future payment trends.

As of 31 December 2024, over 3 billion notes were in circulation, with public trust remaining high. Banknotes in circulation by value increased by 2% during the year to just under \$121.3 billion (versus \$119.4 billion at the end of 2023).

**Counterfeiting:** Canada maintained a very low counterfeiting rate in 2024, just 9 parts per million (ppm), well below the Bank's threshold of 30 ppm. This success reflects ongoing public education and close collaboration with law enforcement partners, including the Royal Canadian Mounted Police and the Canada Border Services Agency.

To help Canadians identify genuine bank notes, the Bank conducted outreach with retailers, gaming operators, and the general public. More than 95% of Canadians reported confidence in the banknotes they use daily. It also continued researching next-generation security features to deter counterfeiters.



Bank staff pose with representatives from the Canada Border Services Agency, winners of the Bank of Canada's 2024 Law Enforcement Award of Excellence for Counterfeit Deterrence (an award established in collaboration with the Canadian Association of Chiefs of Police).

**New \$20:** one of the most visible projects underway is the design of a new \$20 polymer banknote, expected to be unveiled in early 2027. This upcoming note will feature a vertical orientation, a green colour palette, and enhanced security features, marking a significant leap in currency design. The face of the note will showcase His Majesty King Charles III, while the reverse will depict the Canadian National Vimy Memorial in France. The design process was informed by input from historical and cultural advisors, including members of the Indigenous Advisory Circle.

**Cash and digital payments:** the BOC is closely monitoring how Canadians access and use cash. In 2024, it conducted research on:

- Cash availability and acceptance
- Consumer payment preferences, including digital options
- Demand for Canadian banknotes among international travellers
- Mobile and digital payment systems.

It also completed a major study on the potential effects of introducing a digital Canadian dollar. The aim of this study was not to replace physical currency but to understand the potential impacts and benefits of a digital currency in the evolving payments landscape.

**Looking ahead:** key priorities for 2025 include:

- Finalising the design of the \$20 banknote
- Launching the design of the next \$5 banknote, which will feature Terry Fox
- Advancing the development of new anti-counterfeit features
- Collaborating with law enforcement to safeguard note integrity
- Monitoring access to cash and the resilience of the distribution network.

## ■ Banco Central de Chile (BCCh)

**Cash in circulation:** Chile has five banknote denominations – CLP 1,000, 2,000, 5,000, 10,000 and 20,000 – as well as four coin denominations – CLP 10, 50, 100 and 500. Cash usage represents 31% of all transactions.

Banknotes in circulation in 2024 totalled US\$14.3 billion, with over 90% represented by the two highest denominations, the CLP 20,000 and CLP 10,000 notes. Respectively, they had 57.9% and 34.11% of the total value in circulation from banknotes.

On the coin side, the distribution was similar in the higher denominations, with the CLP 500 and 100 coins representing 47.88% and 31.5%, respectively, of the total value in circulation; the CLP 10 coin was in third place with 11.56%. The total value of coins in circulation was US\$584.3 million.

ATMs continue to be the main source of cash for individuals (72%), followed by neighbourhood banks (41%). Moreover, in a recent study conducted by BCCh, a significant majority of respondents (70%) believe that they would be affected if cash were not accepted as a mode of payment and this same group stated that they do not plan to stop using it in the near future.

**Production:** 274 million new banknotes were issued in 2024. 30 million coins were minted and issued in the same year. There was a continued gradual reduction in surplus coins held by commercial banks accumulated during 2023 as a result of initiatives implemented by the BCCh. These included interbank sales, supply reductions, receipt of surplus coins and frequent collection of coins in poor condition.

Overall demand for banknotes and coins by banks in 2024 remained below the historical levels (noted as 2017–2019), but similar to what was observed in 2023.

**Destruction:** 315 million banknotes were taken out of circulation from commercial banks. In addition, 2.6 million banknotes and 7.2 million coins were exchanged by the public at BCCh cashiers. 266.9 tonnes of banknotes and 52.3 tonnes of coins were recycled.

**Sustainability:** the BCCh has been implementing measures since 2017 to minimise the waste generated in the banknote and coin cycle. In the case of polymer banknotes, shredded plastic banknotes are transformed into chips, which, when mixed with other polypropylenes, become a wood-like material that is used in carpentry to manufacture flooring, roofing and furniture. Shreds from cotton banknotes are processed to produce a solid alternative material for cement manufacturing. Finally, coins in poor condition are melted down and the resulting material is reused.

## ■ Banco Central de Costa Rica (BCCR)

**Cash in circulation:** circulating currency increased by 14.7%, up 11.8% from 2023 figures. The balance of banknotes and coins in circulation was ₡1.6 trillion at the end of the year. BCCR informs issuance of currency as a percentage of GDP, and according to the latest annual report, the amounts issued have been around 3.4% of GDP every year since 2010 except for 2020, when the amount increased to 4.1% due to the COVID-19 pandemic.

With respect to coins, the ₡100 coin was the most widely used (36% of the total number of coins in circulation); the ₡10, ₡25 and ₡50 denominations accounted for between 16% and 23%, and the ₡500 denomination accounted for just 7%. For banknotes, the ₡10,000 banknote was predominantly used (61%), followed by the ₡20,000 (15%).

93.6% of the number and value of ATM transactions were cash withdrawals (versus 97% in 2023).

**Production:** the process of replacing the new family of polymer banknotes, which began in 2020, continued in 2024. The replacement of cotton banknotes by

## ... Central Banks and Cash Round-Up

polymer ones in denominations of ₡2,000, ₡5,000, ₡10,000 and ₡20,000 was completed. Additionally, the BCCR informed a level of 88% progress in the replacement of the ₡1,000 denomination in both series A and B. These notes cease to be legal tender on 1 July 2025.

In coins, several circulating coin collections were announced and presented to the public: the ₡500 coin will commemorate milestones in Costa Rica's history; the ₡100 coin will focus on cultural heritage; the ₡50 coin will showcase natural (flora and fauna) heritage; and the ₡25 coin will feature seven emblematic sites in the provinces of Costa Rica. The coin series replacement process began in 2024 with the circulation of 21.8 million ₡500 coins and 2.6 million ₡50 coins. The same coins from the previous series lose their function as legal tender on 1 July 2025 but they can still be traded in at the BCCR.

**Destruction and sustainability:** as in previous years, during 2024 the BCCR had a contract for the comprehensive management of solid waste, covering all of the bank's buildings, including polymer waste (banknote material) which, once it has reached the end of its useful life, is reused to create 'plastic wood' that is incorporated into new products.

During the period, the recycling process involved the management of 15 tonnes of paper through final disposal by an authorised waste management company, thereby preventing this type of material from ending up in a landfill.

**Payments:** In line with the BCCR's push for financial inclusion and reduction of cash usage to decrease informality, the number of ATM transactions started to decrease from 2018 onwards. In 2024, ATMs were at 2,612 terminals along the country, 50 less than in 2023. Considering the number of transactions made with payment cards, cheques and digital banking, in 2024 there were 439.2 cashless payments per capita (only 50 in 2010), 71.7 more per capita than in 2023.

Programme L (Cash-Free Entity) was designed by the BCCR and has been operating since 2016. Its objective is to reduce the use of cash in transactions by public entities and companies, thereby reducing the risks associated with the use of cash. Companies and entities that join the programme receive certification. In 2024, Programme L reached a cumulative total of 110 certified entities and 32 recertified entities.

### ■ Reserve Bank of India (RBI)

**Production costs:** the RBI's Annual Report for 2024-25 highlights a 24.9% increase in security printing costs, which rose from ₹51 billion to ₹63 billion, driven mainly by an increase in the indent for printing of banknotes.

The cost of printing banknotes has surged by around 59% over the last five years, while the supply has increased by around 36%. Expenditure on printing was over ₹40 billion in FY21, which rose to over ₹63 billion, an increase of 58.8%. During this period, the supply of notes increased to 30 billion pieces, up from around 22.3 billion pieces, representing a 35.7% rise.

The report also noted that during the last two years, FY24 and FY25, the cost increased by 24.9%, compared to a 24.7% increase in supply.

**Cash in circulation:** both the value and volume of banknotes in circulation increased steadily, with the value rising by 6% and volume by 5.6%. The ₹500 (now the highest circulating denomination) remains dominant, accounting for 86% of the total value of notes in circulation – a slight decline from previous levels. In terms of volume, ₹500 notes are the most circulated, making up

40.9%, followed by ₹10 notes at 16.4%. The lower denominations of ₹10, ₹20, and ₹50 collectively account for 31.7% of the total volume.

The RBI has stopped printing ₹5 and ₹2,000 notes and the withdrawal of the latter, which began in May 2023 and has seen strong participation, is nearing completion. As of 31 March 2025, 98.2% of the ₹3,560 billion initially issued had been returned to banks.

The circulation of coins has also increased, with a 9.6% rise in value and a 3.6% rise in volume. Notably, the value of the e₹ (digital rupee) in circulation surged by 334% over the same period. The circulating coins include denominations of 50 paise, ₹1, ₹2, ₹5, ₹10, and ₹20.

**Counterfeiting:** during 2024-25, out of the total counterfeits detected in the banking sector, 4.7% were detected at the RBI. The counterfeit notes detected in the denominations of ₹10, ₹20, ₹50, ₹100, and ₹2,000 declined during 2024-25, but increased by 13.9% and 37.3% for the ₹200 and ₹500 notes respectively compared to the previous year.

**Sustainability:** the RBI has been exploring sustainable and eco-friendly disposal solutions for banknote briquettes – which, in recent years, have averaged around 15,000 tonnes – versus current methods involving landfill and incineration.

It commissioned a study by the Institute of Wood Science and Technology (IWST) titled 'Evaluation of Suitability of Banknote Briquettes Replacement with Wood Particles to Manufacture Particle Boards'. This study confirmed currency briquette particles would meet the technical requirements for recycling into particle boards (which are used for interior design, particle board furniture and acoustic applications).

Based on the findings of this study, RBI has initiated a process to empanel particle board manufacturers, who will source briquettes for use as a partial replacement for wood. Moving forward, the RBI will continue its efforts to find more environmentally-friendly disposal methods for banknote shreds and briquettes.

**Future agenda:** in 2025-26, the RBI will focus on modernising currency management, introducing upgraded security features on banknotes, and installing new SBS machines. The plan also includes expanding banknote processing capacity and surveying public payment behaviour to guide future strategies.

In 2025-26, the RBI will also conduct a survey on digital payment usage, develop a Digital Payments Intelligence Platform to combat fraud, and commence drafting the Payments Vision 2028. The RBI will also tackle delays in cross-border payments by identifying the challenges faced at the beneficiary end and proposing regulatory solutions.

Denomination (₹)	Supply (pieces in million)		
	2022-23	2023-24	2024-25
5	-	-	-
10	600	800	1,800
20	1,999	2,000	1,500
50	2,000	2,500	3,000
100	6,000	7,000	8,000
200	2,000	3,000	4,000
500	10,000	9,000	12,000
2,000	-	-	-
<b>Total</b>	<b>22,600</b>	<b>24,300</b>	<b>30,300</b>

Supply of banknotes by BRBNMPL (Bharatiya Reserve Bank Note Mudran Pvt. Ltd) and SPMCIL (Security Printing and Minting Corporation of India Ltd), 2022-2025.

# GUARDIAN™ ENVIRO – the Next Step in Sustainability for Central Banks

**CCL Secure – the pioneer in polymer substrates for banknotes – has launched a more sustainable version of GUARDIAN™ substrate, which builds on decades of work to drive greener outcomes with polymer banknotes. According to the company, independent evidence shows polymer banknotes lower emissions, reduce the use of raw materials, and limit waste through recycling, with more than 85% of GUARDIAN banknotes being recycled right now.**

The next step, it says, is GUARDIAN ENVIRO, which enables central banks to choose to use bio-renewable feedstocks as a substitute for fossil raw materials that have traditionally been used in polymer film.

GUARDIAN ENVIRO was launched at the recent Currency Conference in Bangkok. Currency News™ spoke to Tim Berridge, CCL Secure's Director of R&D, Marketing and Design, and Neil Sanders, Vice President and Managing Director, to find out more.



Tim Berridge (left), CCL Secure's Director of R&D, Marketing and Design, and Neil Sanders (right), Vice President and Managing Director.

**Q:** Tim, first things first, what exactly is GUARDIAN™ ENVIRO?

**A:** GUARDIAN ENVIRO is the more sustainable option for GUARDIAN. It shares all the same physical properties as GUARDIAN, but is produced using bio-renewable feedstocks. The primary difference between GUARDIAN and GUARDIAN ENVIRO lies in the reduced reliance on fossil feedstocks, traditionally used in the production of polymer film.

Instead of using fossil raw materials, central banks have the option to utilise by-products from the food and forestry industries. These include used cooking oil, and tall oil, which is typically generated in timber mills as part of the 'kraft' pulping process. Both GUARDIAN and GUARDIAN ENVIRO offer identical product performance and construction, with the key distinction being the use of feedstocks from more sustainable sources.

It is important to note that the transition towards GUARDIAN ENVIRO can be

implemented gradually, allowing central banks to designate the degree of substitution. This approach enables them to maintain control over the cost and pace of the transition, while providing a clear, scalable pathway towards reducing the use of fossil feedstocks.

**Q:** Don't such alternative feedstocks reduce product performance?

**A:** Not at all. The product specifications remain exactly the same. GUARDIAN ENVIRO is guaranteed to provide the same performance in the cash cycle as traditional GUARDIAN notes, in terms of durability, security, and existing environmental benefits. The only difference is a reduction in the reliance on fossil feedstocks, with all the environmental benefits this brings.

**Q:** How can the product specifications remain the same when some feedstocks are different?

**A:** The performance guarantee comes from the fact both banknote substrates are based on the same polymer film, which is Propanote™ Clarity C, and that is what underpins their durability and security features.

While the sustainable feedstocks draw their raw materials from tall oil and used cooking oil, they undergo a pre-production process that ensures they're chemically identical to the fossil feedstocks which are being replaced. The film manufacturing process itself does not change.

Central banks can be assured that the sustainable feedstocks will be chemically identical and interchangeable with fossil feedstocks because this is a requirement of International Sustainability & Carbon Certification (ISCC) – a regulatory scheme GUARDIAN ENVIRO complies with.

**Q:** What does ISCC do?

**A:** ISCC is the independent and globally recognised framework for verifying the sustainability characteristics of alternative feedstocks. It provides a standardised system for authenticating environmental claims. The ISCC also supplies the methodology, rules and guidelines to track sustainable feedstocks within the supply chain, including through an active auditing process.

This third-party accreditation and accounting system provides central banks with a transparent and verifiable method of documenting environmental advances, which supports credible communication with stakeholders while streamlining environmental reporting at the same time.

**Q:** How are different feedstocks tracked under the ISCC framework?

**A:** There are different accounting systems under the broader umbrella of ISCC. We have chosen the 'mass balance' method. It's a chain-of-custody model designed to support manufacturing processes that mix fossil feedstocks with sustainable alternatives in one industrial process.

Mass balance doesn't guarantee the sustainable feedstocks are 'physically' there. Instead, it relies on detailed bookkeeping to track these as a proportion of all feedstocks used. This ensures central banks receive accurate information about the percentage of final product produced using sustainable feedstocks as opposed to fossil raw materials.

**Q:** Does the CCL Group already have experience working within the ISCC framework or is this a first?

**A:** Yes to the first point. CCL Secure's sister company, Innovia Films, has extensive experience working with the ISCC mass balance model, through its Encore range, and we've been able to leverage this inhouse knowledge. Innovia Films is our sole film supplier and produces Propanote Clarity C, the polymer film for both traditional GUARDIAN banknotes and GUARDIAN ENVIRO.

Innovia Films' experience has helped ensure the most environmentally advantageous and cost-effective alternative feedstocks are used. It will also support ongoing compliance, research and development as CCL continues to innovate and create pathways towards a greener cash cycle.

**Q:** Turning now to Neil, can you provide the business case for why CCL Secure developed GUARDIAN ENVIRO?

**A:** Sustainability is a core value for CCL Secure, and GUARDIAN ENVIRO is best understood as the next step in a journey towards stronger environmental outcomes that stretches back decades.

Since the first GUARDIAN banknotes were issued, in 1988, they've been the green choice, but as the importance of sustainability continues to grow, it's incumbent on companies to meet that demand.

Of course, sustainable outcomes can't be achieved overnight. It's an ongoing journey. We wanted to provide a pathway that supports gradual change, and while GUARDIAN banknotes remain the first



## From Money to Medals in Indonesia

**The Bank Indonesia (BI) office in Bali has come up with a novel – and appropriate – way to recycle end of life banknotes – by turning them into medals that were given to participants in the QRIS Summer Run Bali fun run.**

'This is our first medal using waste banknotes,' said Deputy Head of the office, Butet Linda Helena Panjaitan

The central bank representative office processed around 40kg of banknotes of various denominations that had been shredded, and then collaborated with a number of banks and business enterprises to turn the shreds into the medals. A total of 1,500 were produced, in line with the

number of participants in the first running race held by BI in Bali.

The utilisation of waste rupiah banknotes in medals has been recorded in the Indonesian Record Museum (MURI) as the first running medal made from waste banknotes in the country.

In separate news, but also on the topic of uses for end-of-life banknotes, Indonesia's state-owned electricity firm PT PLN Indonesia Power, through its office in North

Sumatra province, has started to burn banknote waste for power.

The Labuhan Angin power plant utilises the waste as a biomass-based primary energy mixture (cofiring), reducing its dependence on coal. According to the organisation, the plant is also equipped with environmentally friendly technologies such as an electrostatic precipitator (ESP) and continuous emission monitoring system (CEMS), to ensure that exhaust gas emissions remain within the set threshold.

Other representative BI offices are also working with regional power plants to provide fuelstock for energy recovery, alongside other biomass waste such as sawdust and corn husks.

## ... GUARDIAN™ ENVIRO

step on that journey, central banks can now go further with GUARDIAN ENVIRO.

**Q:** Can you provide a reminder of the environmental benefits of traditional GUARDIAN notes?

**A:** GUARDIAN banknotes can be fully recycled, after a long life in circulation, and compared to banknotes based on cotton paper substrate, they last three to five times longer in the cash cycle. This durability drives a reduction in greenhouse gas emissions from transport and production.

Raw materials use is also reduced, because the banknotes last longer. This lowers procurement volumes and increases seigniorage in turn.

Over time, central banks can reinvest those savings to upgrade to GUARDIAN ENVIRO and achieve even more sustainable outcomes.

**Q:** How much does it cost to upgrade to GUARDIAN ENVIRO?

**A:** As you might expect, bio-circular feedstocks are more expensive. That's why central banks will be able to choose the level of substitution – meaning the extent to which fossil feedstocks are replaced with sustainable alternatives accredited by the ISCC.

We felt it was important to ensure central banks retain control over the cost and speed of transition, because individual issuing authorities will be at different points in their green transition. For some central banks, initial polymerisation with GUARDIAN will be the next step. Others will be ready to start phasing out fossil feedstocks with GUARDIAN ENVIRO.

I'd encourage central banks to reach out directly with any questions about how to progress their transition to a greener cash cycle, whether that's through GUARDIAN or GUARDIAN ENVIRO.

**Q:** How does GUARDIAN ENVIRO fit into CCL Secure's broader sustainability program?

**A:** As I mentioned before, GUARDIAN ENVIRO is the latest initiative to enhance environmental performance, but it's part of a deeper commitment to sustainability.

One tangible example of this commitment is that CCL Secure has been working with central banks to facilitate recycling for decades, and we've achieved real and measurable outcomes. The data shows that between 2017 and 2023 we were able to support central banks to recycle 85% of GUARDIAN banknotes at end-of-life, and GUARDIAN ENVIRO can be recycled in exactly the same way.

**Q:** How does CCL Secure work with central banks to increase the rate of recycling?

**A:** This is an outcome that has been driven by our GUARDIAN Global Recycling Program. It's an award-winning initiative that combines comprehensive support services, direct infrastructure investment, and complementary capacity building throughout supply chains. As part of this program, our sister company Innovia Films has established a banknote recycling facility in Zacapu, Mexico, with specialised pelletising and extraction systems to support central banks.

**Q:** Is the reduction of emissions in production also part of this story?

**A:** Yes, this has been another area of significant investment. CCL Secure has partnered with environmental consultants at Verco to define the carbon profile of our operations and implement initiatives that drive down emissions across incoming transport, on-site energy use, and the carbon embodied in materials throughout our supply chains.

The plant in Wigton is a good example. Between 2018 and 2022 we were able to reduce emissions by 26%, energy consumption by 31%, and water usage by 40%. That work was recognised with an Energy Institute Award for environmental management.

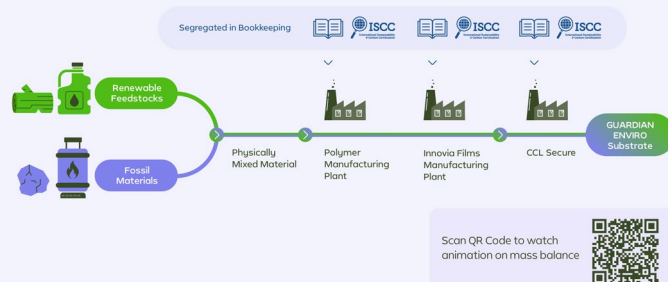
Of course, these efforts continue. As I said earlier, sustainability is a journey, and we all have an obligation to do what we can to support stronger environmental outcomes. That's why I'm so thrilled we are launching GUARDIAN ENVIRO as the next big step towards greener cash cycles.

**Q:** Is GUARDIAN ENVIRO ready to order and issue right now?

**A:** Yes. It's cash cycle ready and guaranteed to match the performance of traditional GUARDIAN banknotes in terms of durability, security, and existing environmental benefits.

Central banks that are ready to take the next step towards a greener cash cycle should get in touch.

### Accounting for Feedstocks under Mass Balance





# Cash is a Handshake

Cash is not just a store of value or a transaction, it's a means of mutual human connection – in other words, a handshake. So said Mark Gould, Chief Payments Executive at Federal Reserve Financial Services, in his keynote address at the Currency Conference in Bangkok in May.



'You can't email a handshake, and that is the problem with all things digital', he said. Digital has many strengths but its lack of a human touch limits what it can achieve. When you 'tap and go' at a digital payment terminal, you may or may not look the vendor in the eye and exchange a word. When you hand over cash it is rare that you don't. Sometimes you may prefer the former, but generally humans thrive on interaction. What sort of world do we prefer to live in?'

## Perspectives on cash

Across the conference, strengths and weaknesses of different payment options kept coming up. For example, the Bank of Namibia made the point that when you withdraw cash in Namibia you pay a fee, thereafter every transaction with that cash is free. With digital payments there is a fee with every transaction.

Crunchfish, a Fintech working on payment systems, made the comment that digital payments only work when everything works. They said this because their specialism is offline payments, but the fact remains that cash works, assuming you have some, when everything else does not.

Rufaida Hamilton, Head of Payments for Standard Bank in South Africa, was tasked with presenting a 'murder mystery' about who had 'killed' cash. While she made the case for cash having been 'murdered', she did question whether Mark Twain's quote about 'the report of my death was an exaggeration.' Certainly, the newest generation, Gen A, appear to be storing cash but paying digitally. According to Hamilton, cash remains a safety net and needed for financial inclusion. More interestingly, there is evidence of a return

to the 'physical', almost a counter-culture event. Cash is seen as an expression of independence and personality.

While this did not come up on the stage, in discussion the apparent fragmentation of civil society with compromise between those with different views apparently ever harder to find or accept, the role of the banknote as a unifying force was discussed. While the concept of a banknote being the 'calling card of a nation' is overused, in fact it is one part of daily life that is used by the rich and by the poor, in cities and the country, across every community and part of society. It is one of those 'unseen' unifiers that connects us all.

## Paying for cash

Burkhard Balz, Board Member of the Deutsche Bundesbank, spoke about Germany's National Cash Forum and the steps Germany is taking to ensure the future of cash. The Bundesbank regards cash as being at a crossroads and that there is the need to take action to maintain cash. The Australian cash distribution problems were offered as an example of how when failure happens, it happens fast and has a big impact.

Part of the presentation dealt, therefore, with how to ensure cash remains. Whether it should be a private or public monopoly. Cash should be a profit centre so that the private sector engages, but what happens people won't pay? What happens in regard to other universal services when a sector of society can't afford them?

This led to a series of questions. Should cash be declared a utility and/or should cash infrastructure be nationalised? Could a low digital transaction tax fund cash infrastructure? Should banks that don't

offer cash services be targeted? Should there be cross subsidies? Should there be minimum pricing structures for cash?

This tied into a presentation by Anak Somkarnae of the Bank of Thailand (BOT), which provides nine consolidated cash centres that support 120 small cash hubs. They are owned by the BOT, along with the high speed sorters that are used in them, but the private sector operates them. An interesting example of BOT meeting the capital costs but allowing market discipline to ensure the cash centres are operated efficiently.

## Changing digital payment landscape

The Digital Currency Conference (DCC), which overlapped with and then ran on from the Currency Conference, gave context for the role of cash. There was an interesting panel that discussed the rise of stablecoins and their role in fragmenting the concept of money and the payment system. While stablecoins support the 'singleness of money' concept (all forms of money within an economy should be interchangeable at par and maintain a consistent value) in primary markets, they do not in secondary markets.

Fintech companies were, originally, not taken seriously. The second generation of Fintechs started to have an impact but today's 3rd generation Fintechs, Square, Stripe, Venmo etc., and the digital/challenger/neobanks such as Revolut, Nubank, N26, Atom bank etc. are changing the payment and banking landscape fundamentally.

Add in real time payments, think Pix, UPI etc. stablecoins and, possibly, CBDCs. Add in digital wallets, QR codes, satellite systems such as Starlink that mean everywhere can be always online, AI, quantum computing, and the rate and degree of change is unlikely to slow.

## Final word

Mark Gould's opening resonated with the audience and is the experience of us all. However, the facts on the ground mean that we need to adjust the cash infrastructure to reflect reality alongside taking action on access and acceptance of cash.

As he concluded, 'who knows what the future holds for cash, but central banks need to be prepared for whatever the next decades throw our way'.

With nearly 420 delegates from 164 organisations (including around 200 delegates from 60 central banks and 50 delegates from 20 printworks), the Currency Conference continues to lead the industry in bringing together senior central bankers and leaders in the currency sector.

The next Currency Conference will take place in Berlin, Germany, in May 2027.

## People in the News

■ **Olaf Sleijpen** has succeeded **Klaas Knot** as President of De Nederlandsche Bank (DNB). The current executive board member, who has been responsible for the bank's monetary affairs portfolio, will serve a seven-year term.

■ **Marilou Arends** has been appointed CEO of Canadian Bank Note Company. She has years of experience at CBN, most recently as Chief Operating Officer, and will lead the execution of corporate strategy across key strategic markets, including border security, civil identity, currency and excise. She succeeds **Craig Bascombe**, who becomes Executive Vice Chairman.

**Meredith Anglin** has joined CBN as Executive Director for Banknotes. She was formerly Senior Sales Manager at the Royal Canadian Mint.

■ **Alex Lewis** has joined Komori Security Business Group as Regional Business Development Manager. Alex joined from ITW Speciality Films where he worked in a similar role. Alex resides in the US and will be responsible for promoting the sales of Komori security and banknote presses in the US and Latin America.

■ **Gianni Santoro**, former Commercial Director at SICPA, has been appointed Chief Commercial Officer at Oberthur Fiduciaire, responsible for all sales and marketing across the business.

■ The ATM Industry Association (ATMIA) has announced the appointment of **Lee Williamson**, Managing Director at CMS Analytics, to its Board of Directors.

# Honouring the Leaders in Cash

In 2011, the International Association of Currency Affairs (IACA) held the inaugural Currency Hall of Fame (CHF) induction ceremony, providing a permanent public record and memorial of the outstanding achievements of very select individuals who have made a significant impact in the currency industry.

That year saw the induction of four contributors to the currency industry. Since then, 14 more inductees have been celebrated. This year, they were joined by two titans of the industry – Antti Heinonen and Richard (Rick) Haycock.

## ■ Antti Heinonen

Antti Heinonen's career is marked by significant contributions to the field of cash and banknotes. He originally worked in monetary policy and strategic planning at the Bank of Finland (BoF), and his expertise in the history of money led to his appointment as the secretary of the theme selection and design committee for the new markka note series in 1981. From 1985 to 1992, Antti served as the Head of Communications at BoF.

In 1993, he became the Chief Cashier of BoF. He played a crucial role in the preparations for the introduction of euro banknotes and coins, joining the Working Group on Printing and Issuing a European Banknote in 1994. In 1996, he succeeded Roberto Andrade as the chair of Task Force C on the issuance of euro banknotes and in 1998 was appointed as the Director of Banknotes at the newly established European Central Bank (ECB) and chaired the Banknote Committee.

Antti's experience in communication was invaluable during the preparations for the euro launch, and he became Chairman of the Cash Changeover Coordination Committee (CashCo) in 2001. This committee oversaw the coordination of the changeover to euro banknotes and coins, including risk management, crisis communication, and logistics. The changeover was hailed as a great success.

Subsequently, Antti oversaw the development of the new Europa series until 2008, when he handed over his role as Director Banknotes and Chair of the Banknote Committee to Ton Roos. Antti also chaired the Executive Committee of the Central Bank Counterfeit Deterrence Group (CBCDG) from 2008 to 2012. In 2013, he was asked to chair the Banknote Ethics Initiative (BnEI), which aims to ensure ethical practices in the banknote industry. Under his leadership, the initiative successfully raised awareness and encouraged numerous companies to seek certification.

Antti has also been active in speaking at conferences and writing articles for papers and online magazines over the past 15 years, including for Currency News (where he sits on the Advisory Board).

## ■ Rick Haycock

Rick Haycock's career in the currency and payments industry began in 1986 when he joined Mohawk Data Sciences (MDS) in Canada, which later became a subsidiary of Recognition Equipment International (REI). In 1990, he became the Vice President of REI's Currency Division and moved to Texas. A year later, he acquired the technology rights and intellectual property to REI's next-generation currency sorters and founded Currency Systems International (CSI). Under his leadership, CSI grew from seven employees to over 350, with seven international subsidiaries by the time it was sold to De La Rue (DLR) in 2001.

One of the highlights of CSI was its development of a high-speed currency processing system (CPS) that brought innovation and efficiency to the market, selling to central banks, commercial banks, casinos, and cash management companies in over 40 countries.

Rick organised the first conference for the currency industry, the Currency Automation Conference, in 1992, which evolved into the Currency Conference. He also founded the North American Seminar on Currency Operations (NA\$CO), later rebranded as the International Commercial Cash Operations Seminar (ICCOS) and eventually the Cash Cycle Seminars. Additionally, he founded Currency Software Solutions (CSS) and Currency Consulting International (CCI). After selling CSI, CSS, and CCI to DLR, Rick bought back the conference side of the business and founded Currency Research (CR) in 2002. Over the next 23 years, CR expanded to include multiple regional events, such as The Coin Conference, The Banknote Conference, The Central Bank Payments Conference, and The Global Payment Summits.

Rick also founded industry associations and publications to strengthen the currency industry through community and information sharing. In 2002, he became a joint owner of Currency Publications Ltd, publishers of Currency News (launched in 2003) and subsequently Cash & Payment News and Coin & Mint News.

In 2004, he founded the International Association for Currency Affairs (IACA) and initiated the Excellence in Currency Awards program. He also started the Currency Hall of Fame to recognise significant contributions to the industry. In 2014, he founded the Asia Cash Management Association to support Cash Management Companies in Asia, Africa, and Australia & Oceania.



# Q&T's POLYSECURE® SHIELD Embeds OVDs into Polymer

Hanoi-based Q&T Hi-Tech Polymer is the newest entrant to the market for polymer substrate market, and is already supplying its POLYSECURE® product for Vietnam's banknotes. At the recent Currency Conference in Bangkok, the company unveiled its latest innovation – POLYSECURE® SHIELD.

POLYSECURE SHIELD is an advanced multilayer polymer security banknote substrate which is designed to enhance the longevity and security of banknotes by embedding the OVD within the polymer substrate structure.



POLYSECURE SHIELD incorporating a hot-stamped embedded demetallised KINEGRAM® registered stripe.



An embedded demetallised UV cast and cure embossed oval OVD patch.

As the company explained, typical polymer banknote substrates feature surface applied OVDs, which are subject to abrasion from handling, mechanical stress from bending and crumpling, and exposure to chemical and environmental contaminants. These factors can lead to a shorter lifetime of the OVD and the withdrawal and destruction of the banknote from circulation, even though the substrate itself continues to be fit for further circulation. They can all be overcome by embedding the OVD with the substrate rather than putting it on the surface.

Q&T has developed two ways of embedding the OVDs, which can be in either patch or stripe form. They can either be applied via hot stamping a foil onto one of the polymer laminate materials prior to coating with a durable water clear adhesive, or they can be UV cast and cured onto one of the polymer laminates prior to further processing. The latter involves a UV-curable coating on the film which is exposed to UV light to fix the microstructure pattern from either a shim or a seamless cylinder, the coating flowing

into the microstructures to create a near perfect copy.

Q&T says that inclusion of both hot stamped OVD foils and UV cast and cure OVDs ensures that it is able to offer complete flexibility of technologies and feature types.

Q&T has produced sample notes demonstrating both options. One sample incorporates an embedded demetallised UV cast and cure embossed oval OVD patch of Ho Chi Minh. The other incorporates a hot stamped embedded demetallised KINEGRAM® registered stripe.

According to Q&T, POLYSECURE SHIELD complies with all durability tests and polymer specifications, and seamlessly integrates with all security print equipment for further processing.

It also incorporates an in-house developed white opacifying ink that provides vivid colours due to enhanced whiteness and contrasting hues, and also reduced see-through due to the enhanced opacity.

In addition to embedded OVDs, POLYSECURE SHIELD can also incorporate:

- Magnetically printed stripes
- Iridescent printed features that change reflective colour when the banknote is tilted
- Secureshade – a watermark type feature which is revealed when the banknote is viewed in transmission or held up to the light)
- Securegravure – a securely printed polymer window feature that is visible from both sides of the banknote
- Laser Optical Feature (LOF) – a covert polymer window security feature that produces customised highly secure diffraction patterns that are only revealed when using a point light source such as from a smartphone torchlight.

Q&T Hi-Tech Polymer has built a reputation for innovation and, in a short period of time, has built a production plant and secured orders. Concurrently with the launch, the company announced the successful signing of its fourth contract with Vietnam's National Banknote Printing Plant (NBPP) this year. It now supplies substrate for four out of the six VND denominations.

## Watermarks for Polymer in New Boa Sorte House Note

A presentation given at the recent HSP Latin America by Ian Brigham of Spectra Systems covered the new house note that has been produced by Casa da Moeda do Brasil on its Fusion™ polymer substrate. The 'Boa Sorte' note incorporates a level 3 taggant unique to Fusion as well as, for the first time, a new level 1 polymer-specific optical security feature from Oberthur Fiduciaire – Kryptonome™.

Oberthur describes Kryptonome as the digitalisation of the original mould made watermark that we can observe in a paper-based banknote to polymer substrates. As such, it gives customers the opportunity to secure their notes with a watermark effect as they would with the paper version.

Of course, Kryptonome isn't a watermark, but it does look like one. It is the combination of two grids (comprising very fine lines with the same thickness as the gaps between them) printed on both sides of the substrate. When the note is tilted, movement and light and dark shadows can be observed. Each grid is calculated precisely and printed in perfect registration to guarantee the efficacy of the so-called 'digital watermark'.

As it is digitally controlled, portraits, animals, landscapes, values, denominations or other symbols can all be utilised. The feature can be integrated into the polymer substrate as a full-covered watermark, half-covered, or in the window.

Moreover, the feature – which is suitable for all polymer – can be adjusted for the thickness of the chosen substrate.

According to Oberthur, which is a papermaker and feature developer as well as a banknote printer, what drives it is always being able to offer its customers solutions that enable them to stay one step ahead of counterfeiters. And given that polymer is of interest to some of those customers, the company's R&D team is working to develop security features that guarantee that banknotes made on those substrates are counterfeit-proof as well.

# Rio Delivers a Stunning Display for HSP LatAm

**This year's High Security Printing (HSP) Latin America, the 12th edition of the conference, returned to Rio de Janeiro, where it all began with the inaugural event back in 2012.**



The sell-out conference was both a homecoming and a reminder of how far the event has advanced in its 13 year history. Over 310 delegates attended from 143 organisations and 42 countries, including 137 from Latin America and the Caribbean. The ratio of supplier organisations to government (including central banks and law enforcement) – an important metric for any conference – was three to one.

The twin track programme delivered two workshops – including one a full-day hands-on discussion on cash sustainability together with the International Currency Association (see page 13).

The programme then delivered 47 presentations over two days, starting with the regional landscape for secure documents, concluding with initiatives to battle counterfeiting, and ranging from design, security, substrates and features to production and print, sustainability, and combating fraud in-between.

The conference was formally opened by Antonio José Medina Lima Júnior of the Central Bank of Brazil, and by Thaigo Marçal Portela of honorary sponsor Casa da Moeda do Brasil, both of whom introduced delegates to the payments, cash and ID production landscape in the country.

## Different perspectives

On the currency front, a number of central banks took delegates through developments in their currencies from a range of different perspectives.

The Central Bank of Curaçao and Sint Maarten, for example, talked about the imaginative public engagement campaign to ensure support and familiarity for not just a new series of banknotes and coins, but a whole new currency.

The Central Bank of Bolivia explained how the upgrade of its banknotes has resulted in a dramatic reduction in counterfeits – from a ratio of 200 ppm in 2016 to 26 ppm in 2025.

Banco de Guatemala provided the rationale for its award winning commemorative 1 quetzal banknote, issued to reinforce national pride in the stability of the currency over the 100 years since its introduction.

The Central Bank of Costa Rica offered an end-to-end overview of the cash department's work, particularly the latest series which has been created with sustainability at its heart. From the images on the notes, to the choice of substrate through to extensive work done to ensure that the polymer is recycled and turned into useful products, creating a sustainable cash cycle has been at the heart of the project.

## House notes demonstrate innovation

There were plenty of technical innovations too, some of which were demonstrated in a number of new house notes presented at the conference for the first time.

Two of them were from Casa da Moeda do Brasil. First was the Rio note – the third in a series to be produced to demonstrate sustainability in features and substrates as part of the Tran\$forma initiative with the Brazilian papermaker BP Security. The note also demonstrates CMB's design capabilities, with stunning imagery celebrating the iconic culture and topography of the city. The Rio note follows on from the Cotton Cycles house note – also presented at the conference – which won the Best New House Note award (see page 14).

Second was the Boa Sorte (Good Luck) note, the first in the world to be produced on Spectra System's Fusion polymer substrate, with an embedded level 3 taggant and a brand new level 1 security feature from Oberthur Fiduciaire – Kryptonome™, a digitally-generated polymer-specific OVD with lenticular effects similar to a watermark that are viewed in the window (see page 11).

China Banknote Printing and Minting also presented two house notes – one with a panda theme on polymer and the other with an avian theme on paper. Both were designed to demonstrate its active programme of innovation and development of substrates, new optical security features

and the implementation of smart end-to-end production.

## Protecting the environment

Latin America is something of a global trailblazer in the protection of the environment, and this was evident throughout many of the presentations.

They included Brazilian papermaker BP Security who is recycling banknote paper into new banknote paper, and Biobanknote of Colombia, who spoke of its various products generated from banknote waste. Two such products are Biofort, an organic soil fertiliser, and BiobankMulch, a biodegradable protection ring for trees. The company has also developed Biobanksludge, which transforms the sludge from intaglio printing into soil enhancers, and will shortly launch the Bioreactor, a composting solution that turns banknote waste into compost in 24-48 hours.

Continuing on the sustainability theme, delegates heard about Oberthur's new Green HighLink, a durability treatment that adds bio renewable elements to latex that is incorporated into cotton paper substrates, and about sister company Oberthur Cash Protection's answer to reducing the environmental cost of transporting banknotes – namely Intelligent Banknote Neutralisation Systems (IBNS) that deface cash during robberies, thereby removing the incentive to steal it and hence reducing the need for heavy weight, energy-intensive armoured vehicles.

SICPA described its four-point programme for reducing the environmental impact of ink, ranging from hazard free materials and less fossil dependency to production efficiencies and life cycle optimisation. It also celebrated the growing success of SPARK®, the various iterations of which are now in use in 120 of the world's currencies, and introduced its new SPARK Flow Stream feature.

Hueck Folien reviewed its sustainability work using its Ocean Dollar as a recycling concept for banknotes. This includes Optomove® security thread that achieves 53% CO2 savings through the recycled PET and aluminium it uses and is produced on EcoBreath® paper from BP Security in partnership with the Casa da Moeda do Brasil.

Hueck Folien also talked about Nanoswitch®, which combines nanoengineered optical security elements with partial ColorSwitch™, and is the result of a new, and now enhanced, cooperation with IQ Structures (see page 3), who also presented on its latest optical features. As did KURZ with KINEGRAM Agile and Louisenthal on its new generation of patch features. In all cases, movement and colour are key.



# Cash Sustainability with a Latin American Twist

The Cash Sustainability Forum has to date been held as a standalone event in Europe but, this year, it went regional for a one day workshop at HSP Latin America, held in conjunction with the International Currency Association.

The agenda was developed in response to a survey of Caribbean and Latin American central banks about their work on sustainability. 46% of countries in the region replied to the survey, with priority areas identified as:

- Durability of banknotes
- Recycling of unfit banknotes
- Biodiversity & the environment – CO2, water, waste etc.
- Cash handling
- Adopting sustainable cotton as a substrate.

The environmental initiatives already under way, unsurprisingly, matched those areas – with finding new ways to dispose of unfit notes the priority, followed by durability, the cash cycle, including sustainability in the procurement of banknotes, and finding new materials to reduce the impact of the cash cycle on the environment and to safeguard biodiversity. While many countries use more than one way to dispose of their notes, eight still send notes to landfill and seven burn them with energy recovery. Seven countries include procurement in their banknote tenders, if only to a limited extent.

Based on these, the agenda for the day long workshop consisted of discussion groups exploring the biggest challenges facing central banks, experts leading discussions of different options to dispose of unfit banknotes, round table discussions on the cash cycle, and a panel on how central banks and printers can help each other to reduce the environmental impact of cash.

## Biggest challenges

Discussions covered six topics. Beforehand, the ICA led central bankers and suppliers in a vote on how important those items were to them. Each person had three votes. At the end of the day the poll was rerun. The rankings changed both over the day and between central banks and suppliers.

The table below shows the rankings before and after the discussions (with 1 being the most important, and 5 being the least).

Subject	Central banks		Suppliers	
	First vote	Second vote	First vote	Second vote
End of life management of unfit banknotes	1	1	2	2
Transportation of cash and management of ATMs	2	4	4	4
Carbon footprint reduction	3	5	3	4
Durability of banknotes	3	4	1	1
Including sustainability requirements in procurement	5	3	6	6
Setting organisational targets	6	2	5	3

For both groups, the importance of setting organisational targets moved significantly up the priority list. In terms of the number of votes, setting targets and the importance of reducing carbon footprints were the two biggest movers. Clearly the day had an impact.

## Manufacturing

The manufacturing session saw Koenig & Bauer Banknote Solutions provide detailed evidence about how the carbon intensity of different stages of the production process have reduced over time.

G+D introduced its work across banknotes and the cash cycle to reduce the impact of banknotes. It also introduced the Banknote Fiber Extraction solution which went on to win the award for the Environment later in the conference.

Oberthur provided detailed examples of how they have significantly reduced the power used in the production of banknotes by using metrics to drive investment in energy management, energy reduction and process improvements.

At the last two Cash Sustainability Forums Verco has presented on their work in the cash industry. It turns out that Verco is owned by the Bip group who are a Brazilian company. Bip presented on the IFRS S1 and S2, reporting standards that large organisations, including central banks and major corporations, are already required to report on in many jurisdictions.

Finally, Orell Füssli presented their BEES® software that assesses banknote designs for their environmental impact through their life.

## Disposal of unfit notes

Kusters opened this session reporting on a hierarchy for the disposal of unfit banknotes and their 2023 survey of central banks on this topic.

Attendees were then invited to join three out of six experts for 15 minutes to discuss different methods of disposing of unfit banknotes. The six topics were:

- The composting of banknotes by BioBanknote
- The reworking of cotton fibres back into paper by Blendpaper
- The importance and options for selecting materials in the production of security features by Hueck Folien
- How the Banco Central de Costa Rica is recycling its polymer banknotes
- Kusters Engineering on developments in options to create a true circular economy with polymer and cotton substrates
- De La Rue on developments and options for recycling polymer banknotes.

## Improving the cash cycle

Cash demand remains strong in Brazil but it is changing as Brazil's real time payment system, PIX, changes the way people pay.

In this context Prosegur – one of four CITs in Brazil – looked at how cash management is changing. It is moving to renewable energy, solar panels, electric and hybrid vehicles etc, and is both managing and owning more ATMs to optimise resupply and minimise cash movements.

## Central bank and printer as partners

The final session in the day was a panel discussion between the central banks of Peru and the Bahamas, Casa de Moneda de Chile, Orell Füssli and SICPA. As the discussion flowed, what became clear was that collaboration was the only way to make real changes. Trust is critical if this is to work.

This is difficult when there are commercial rivalries between suppliers and the technical implications of what they are saying require detailed knowledge to understand the different positions. A willingness to face up to these difficult discussions will be needed and the end point was a challenge to the industry to work out how to resolve this sort of challenge.

## Final word

It has been a year since the last full Cash Sustainability Forum. This workshop aimed to put sustainability on the agenda for those who couldn't attend the Forum.

The level of interest and the quality of discussion would suggest this topic is still seen as central to banknote operations.

# Best in Banknotes Recognised in HSP Latin America Awards

The Regional Banknote and ID Document of the Year Awards form part of the industry's High Security Printing (HSP) Latin America conference. The awards at this year's event were presented at a special ceremony during the conference dinner on top of the iconic Sugarloaf Mountain.

Awards were made in the three traditional categories for this year's Banknote awards – Best New Banknote, Best New Series and Best New Commemorative Banknote – with Curaçao and Sint Maarten, Bermuda and Guatemala all receiving recognition. In addition, a fourth category has been introduced for the first time – Best New House Note, with Casa da Moeda do Brasil and its two partners, BlendPaper and Hueck Folien, taking the honours.

And in another innovation to the awards format, a completely new award was created, which will become a regular feature of HSP going forward – namely, Best Environmental Project. The winner was Giesecke+Devrient with its Banknote Fiber Extraction (BFE) technology, with special commendations going to CCL Secure and Banco de Portugal. (Details of these and the other nominations were covered in the May issue of Currency News™).

## ■ Best New Banknote

The Bermuda Monetary Authority won the Best New Banknote, or rather Banknotes, award for the 2 and 5 Bermudian dollars (B\$), issued last November on SAFEGUARD® polymer substrate under the theme 'Same Look, Smarter Design'.

Designed and printed by De La Rue, they incorporate a number of innovative security features. These include half windows which are fully and partially transparent, depicting a cloudy sky and an underwater scene viewable from both sides of the notes. Surrounding these windows, features such as ILLUMINATE™ and ROTATE™ are fully integrated into the iridescent ink design of waves, multiple fish, and a sun, that appear when the notes are tilted.



In addition, the notes feature the silver ARGENTUM™ in the form of a tuna fish and

Enhanced GEMINI™ that appears under UV light. They also have raised dots as an aid to the visually impaired.

## ■ Best New Series

The winner of the Best New Series was the Central Bank of Curaçao and Sint Maarten, with not just a new series (including coins as well as notes) but a new currency – the Caribbean guilder. This went into circulation on 31 March, replacing the Netherlands Antilles guilder, with exceptional thought given not just to the design and features, but to engaging and educating the public about their new currency.



The theme of the new Caribbean guilder is 'The World Under the Sea' and both notes and coins have been designed with a distinctive Caribbean identity, celebrating the natural beauty, cultural heritage, and biodiversity of the two island nations.

The colourful new banknotes were designed and produced by Crane Currency with a landscape front and portrait reverse. Each features a different form of marine life and significant building or beach. Security features include a watermark with electrotpe, MOTION SURFACE® stripe, SPARK Flow® in the shapes of shells which change from blue to green, and 3mm wide RAPID HD® Detect micro-optics threads.

## ■ Best New Commemorative Banknote

This award went to the Banco de Guatemala (Banguat) for the 1 quetzal commemorative note issued to mark the 100th anniversary of the introduction of the national currency, named after the Resplendent Quetzal, the Central American country's national bird.

The Q1 is only the second commemorative banknote in Banguat's history, and the denomination has been brought out of

retirement, having been replaced by a coin in 2012. It is similar in design to the previous editions of the note, but has been produced on paper rather than polymer and was printed by Giesecke+Devrient.



The note features a portrait of General José María Orellana, President of Guatemala from 1921 to 1926 who introduced monetary reform and oversaw the introduction of the quetzal. The key security feature is an octagonal varifeye® ColourChange patch, depicting the iconic arch of Santa Catalina in Antigua Guatemala. The patch is gold in reflected light, with a window on the reverse that appears in transparent blue when the note is held up to the light. When the banknote is rotated, a change between the years 1924 and 2024 is optically visible.

## ■ Best New House Note

The Best House Note Award was first introduced at the sister event HSP EMEA last year, but such was the demand and pace of innovation that it has now been extended to Latin America and the Caribbean. The winners of this inaugural award for the region were Casa da Moeda do Brasil, BlendPaper and Hueck Folien for the Cotton Cycles House Note, produced to highlight the importance of using natural resources in the production of banknotes, and reducing resource waste.

These themes were explicit in the design of the note, with the history of cotton cultivation featuring on the front, and the production of security paper from banknote waste on the reverse.

Casa da Moeda do Brasil printed the note on a substrate from BlendPaper made of recycled fibres from shredded Brazilian real banknotes under the Tran\$forma initiative, a pioneering and scalable solution that enables the reuse of banknote fibres as raw material for new security papers. The Optomove® micro-optics security thread was made from recycled PET and aluminium and supplied by Hueck Folien.





# Note and Coin News

## New Themes Sought for Bank of England Notes

The Bank of England has announced a public consultation into the redesign of its banknotes – the first in more than 50 years.

While the current series was issued on polymer from 2016 onwards, the basic designs remained the same as their paper predecessors – with the image of the monarch of the front, and notable historical figures on the reverse. These have featured on the notes since 1970, changing over the years. The monarch's portrait (itself recently changed from Queen Elizabeth II to King Charles III) will remain, but the historical figures on the back are likely to be replaced in their entirety.



The six themes identified by the Bank are:

- notable historical figures
- nature
- architecture and landmarks
- arts, culture and sport
- noteworthy milestones
- innovation.

The public are being invited to submit their preferences, or indeed suggest new themes. The deadline is 31 July, and whatever is chosen must symbolise the UK, resonate with the public, support banknote authentication, be non-divisive, enduring, and consistent with the Bank's legal obligations.

## In Other News...

■ The Bank of Mauritius has issued a new Rs 100 banknote – the penultimate denomination in the series to switch to polymer. The new note is similar in appearance to the paper note it replaces but has an egg-shaped transparent window and features an image of a dodo with a Swing™ feature (a combination of iridescent inks – blue and gold – which are inverted when viewed in transmission).



The note also incorporates Securicoat, a feature comprising a matt varnish overprinted with the denomination numeral in gloss varnish, the contrast – and hence the numeral – becoming visible in indirect light. The note was printed by Oberthur Fiduciaire on CCL Secure's GUARDIAN™.

The new Rs100 polymer banknotes will be used alongside the existing paper banknotes, both of which will remain legal tender.

The Bank has been gradually introducing polymer to all its banknotes, starting with the Rs 25, 50 and 500 denominations in 2013, followed by the Rs 2,000 in 2018 and, at the end of last year, the Rs 1,000. The only remaining denomination on paper is the Rs 200. A polymer version will be issued later this year.

All the banknotes are printed on GUARDIAN with the exception of the Rs 500 and Rs 2,000 banknotes, which have been produced on De La Rue's SAFEGUARD®.

■ The Central Bank of Bolivia has issued new 100 and 200 boliviano (BOB) banknotes, the first in its new Series B family of banknotes, which offers enhanced security and durability over the Series A versions issued in 2019. Although the designs remain the same, the upgrades include a 4mm wide RAPID® Vision thread, enhanced intaglio elements, tricolour UV fibres, a durable coating and IR and magnetic machine read features.



The other denominations – the BOB 10, 20, and 50 – will be issued gradually over the next few months. In addition, a commemorative BOB 200 note on polymer will be issued this year to celebrate Bolivia's bicentennial.

■ Bangladesh Bank has issued the first three denominations of its new series – the 20, 50 and 1,000 takas (Tk).



The theme of the series is 'Historical and Archaeological Architecture of Bangladesh', in contrast to the previous series, which was introduced in 2011 and all of the notes in which feature the portrait of the first President of Bangladesh, Sheikh Mujibur Rahman. The change is the result of the overthrow of the Bangladeshi Prime Minister in 2024, his daughter Sheikh Hasina, in 2024.

The new banknote series depicts elements of Bangladesh's current political climate: cultural landmarks, religion (Hindu and Buddhist temples), history, and nature.

The notes include a watermark with electrotpe, windowed security thread (Kinetic StarChrome® in the case of the Tk 1,000) and the denomination numeral in OVI. The Tk 50 and Tk 1,000 also feature tactile marks for the visually impaired.

The remaining six denominations – the Tk 500, Tk 200, Tk 100, Tk 10, Tk 5, and Tk 2 notes – will be released gradually.

■ The Central Bank of Trinidad and Tobago has suspended work on the issue of a new version of a new \$100, originally due to be issued this September. The new version was announced in February, and was intended to have an image of the steelpan (the national instrument) along with the country's new coat of arms.

According to a statement by the Bank, it has instructed the printer (De La Rue) to cease work relating to the design and printing. No reason was given.

## ... Rio Delivers a Stunning Display for HSP LatAm

De La Rue shared central bank data showing that the volume of banknotes is rising at 5% per annum across the globe – challenging central banks because of the budgetary and logistical challenges that this raises for them. This rate of increase is occurring despite the adoption of longer lasting banknotes and introduction of new high values.

De La Rue argued that a move to a polymer substrate offers such a step change in note life, that much of cost and complexity of ever-increasing demand for banknotes can be mitigated.

On the production side, Komori offers a Basic and Advanced version of its KP-

Connect cloud-based data system, which can collect data from up to 15 machines and offer staff a complete view of the performance of the equipment and staff. The data ranges across environmental data through performance and quality to security.

For those who chose to stay on after the main conference agenda ended, there were tours to Casa da Moeda do Brasil and to SICPA América do Sul, while on 13 June a smaller group of 20 travelled to São Paulo to visit Blendpaper.

The weather for HSP Latin America was nowhere near as good as it had been for Rio back in 2012; however, fortunately,

on the night of the conference dinner, the clouds parted, and the moon shone – providing a memorable night on Sugarloaf Mountain with the lights of Rio and its bays shining in the valleys below. The dinner was also a carbon neutral event, underscoring the organisers' commitment to sustainability.

The weather worsened again for the beach volleyball the following evening – where players had to contend not so much with each other for possession of the ball, but with the wind. Even so, a great evening was had by all.

The next HSP Latin America will take place the first week of June 2026.

### Events

9–11 SEPTEMBER 2025

CBDC CONFERENCE

Nassau, Bahamas

[cbdc-conference.com](http://cbdc-conference.com)

15–17 SEPTEMBER 2025

OPTICAL & DIGITAL  
DOCUMENT SECURITY

Warsaw, Poland

[opticaldigitalsecurity.com](http://opticaldigitalsecurity.com)

3–5 NOVEMBER 2025

THE FUTURE OF CASH

Warsaw, Poland

[thefutureofcash.com](http://thefutureofcash.com)

1–3 DECEMBER 2025

HIGH SECURITY PRINTING ASIA

Kuala Lumpur, Malaysia

[hsp-asia.com](http://hsp-asia.com)

2–4 MARCH 2026  
HIGH SECURITY PRINTING EMEA

Africa

[hsp-emea.com](http://hsp-emea.com)

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