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Insights from Deutsche Bank Corporate Bank

2022–2023

Green growth

How net-zero transition goals are redefining corporate bank services

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Four thousand downloads later after the launch of our *flow* app in 2021, more and more readers are enjoying the experience of financial news you can use on the go, along with the convenience of offline access.

And of course, we continue our online provision of news, in-depth articles, white papers, videos and other digital content via our central *flow* content hub at db.com/flow.

You may therefore wonder why, in this digital age, you have this redesigned and redeveloped print copy of *flow* in your hand. The answer is quite simple, and based on readers' feedback.

There is a place for the considered, longer read and explanatory articles in a printed publication. Indeed, we are passionate about providing you with an annual magazine that shines a light on trends that will be important for more than a couple of months. As with previous issues, you can also read the magazine digitally – it's accessible from db.com/flow and on your *flow* app.

You will also see that we have structured the main articles into self-contained 'chapters' that align with the core areas of corporate banking, for ease of navigation: Cash Management, Trade Finance and Lending, Securities Services and Trust and Agency Services.

Now in our seventh year, we would like to take this opportunity to say a big thank you for your support, feedback and ideas, all of which have contributed to *flow*'s evolution. Do please keep them coming.

We hope you enjoy the read!

The *flow* team

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"The majority of world trade is currently unsustainable

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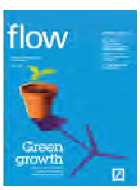

Cover illustration: Gary Neill

flow is published annually by Deutsche Bank Corporate Bank

Deutsche Bank Corporate Bank
Christoph Woermann
Clarissa Dann
Desiree Buchholz
Sandy Klein

Wardour
Fred Heritage
Rob Patterson

For more information about *flow*, please email corporate.bank@db.com

To review the full list of sources please see the online and app versions of each article.

Trust and Agency Services

> We have come a long way from the pre-crisis. Now, lending is a well-disciplined market and underwriting standards are solid

James Macmillan, Co-Head, Document Custody Services, Deutsche Bank

Closing thoughts

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Democratising finance

Periods of disruptive innovation have always transformed the inequality map. Digital technology has transformed and democratised finance, for example. In her new book, Deutsche Bank Research Senior Strategist Marion Laboure explains how fintech is tackling financial exclusion, and what more can be done

Published in 2022 by Harvard University Press, the book 'Democratizing Finance: The Radical Promise of Fintech' was completed during the Covid-19 pandemic, when my co-author Nicolas Deffrennes and I were confined to our respective homes and teaching online, instead of at Harvard's campus in Cambridge, Massachusetts.

The experience concentrated our minds on the profound changes in the ways people were handling payments. Physical cash was regarded a potential transmitter of the virus, and with the willingness to comply with social distancing, digital payments were rapidly becoming mainstream. We saw how the pandemic accelerated efforts by governments to deploy central bank digital currencies (CBDCs), and we reflected on the resilience of consumer trust in online payment security. Just as the 2008 global financial crisis catalysed change – allowing for innovative companies to emerge and thrive – the pandemic appears to have acted as another catalyst – or perhaps a 'fertiliser' – for these new payment technologies to become mainstream.

Financial inclusion

We also reflected on how the uneven distribution of resources such as labour, capital and technology can limit economic growth. But beyond its macroeconomic benefits, financial inclusion leads to significant social and personal benefits. Consider the basic benefits of having a bank account: it allows individuals to save, earn interest, balance household consumption and raise productive investment. Moreover, a bank account can empower women and give them more economic equality.

Although more people have gained access to bank accounts, there is still considerable work to be done. By 2017, 1.7 billion adults were still unbanked, according to the World Bank Global Findex. If we look deeper into that database, we find that nearly half the world's unbanked people lived in seven countries: Bangladesh, China, India, Indonesia, Mexico, Nigeria and Pakistan. But people need more than a bank account, and the financial needs of individuals and families evolve along a lifecycle, as summarised in Figure 1.

When households have access to financial products such as money transfers, savings and investment, credit, insurance and pensions, they tend to enter an upward cycle towards increased wealth and wellbeing. By contrast, the absence of these basic financial services can derail low-income households and push them into debilitating debt cycles and spiralling poverty traps.

Furthermore, in developing countries, a large share of GDP comes from small and medium enterprises (SMEs), including subsistence farmers, traders and shopkeepers. Although formal financing exists in all countries, many traditional banks refuse to lend to SMEs because the amount borrowed is typically too low to cover transactional costs related to the bankers' time and evaluation services. Many owners of land, homes, farms or shops have no official proof of ownership, rendering their properties ineligible as collateral. Weak regulations and laws are an added complication. With seasonal agricultural loans, agents do provide credit to farmers, but only if the agent can sell the crops or take a percentage of profits.

> "Fintech is profoundly changing our economy and our lives. This important book is necessary reading for anyone who cares about the future of our economy or our society
>
> Lawrence H. Summers, Former United States Secretary of the Treasury, Charles W. Eliot Professor and President Emeritus, Harvard University

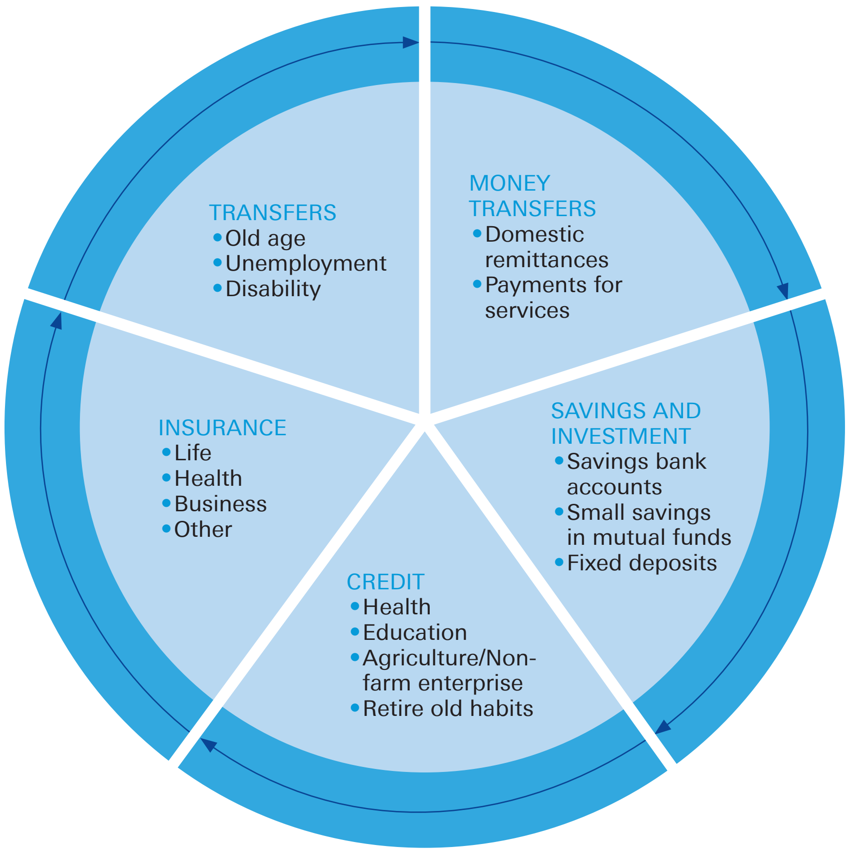
How fintech can help

A large proportion of people in developing countries work in traditional sectors such as agriculture. Because innovation and productivity growth tend to take place within the non-farming sectors of the economy, rural citizens are often excluded from the formal economy. This presents a strong need for technology that can enable higher productivity by improving the speed, reliability, transparency and cost of information delivery.

Mobile phone ownership is widespread among the unbanked. Globally, in 2017 about 1.1 billion unbanked adults – representing about two-thirds of the 1.7 billion unbanked adults in the world – had a mobile phone. The rising rate of global cell phone use has the potential to advance financial inclusion. Technology has ensured that even basic devices can enable transactions, thus reducing the need for branch banking. In sub-Saharan Africa, relatively simple text-based mobile phones have powered the spread of mobile phone accounts via services such as M-Pesa in Kenya.

Further details of emerging market penetration levels are set out in the book, and the success of fintech in emerging markets is not just because of its ability to tap into a large, tech-literate population, but also by reaching those who had previously been financially excluded. South Africa, Mexico and Singapore are on track to become significant fintech players, with borrowing and financial planning as the fastest growing fintech services. All of this indicates growing opportunities for the expansion of mobile banking.

Figure 1: Essential lifecycle of financial needs of low-income people



Source: Democratizing Finance: The Radical Promise of Fintech

However, for financial services to move out of the bank branch, providers require:

- Physical infrastructure, such as electricity, mobile and internet networks
- Technology solutions, such as mobile phone applications and sufficient security
- Financial institutions, such as banks and insurance companies, that are willing to customise products and services for the underserved
- Government regulation in the telecoms, banking and insurance sectors

Fintech and government

While fintech can provide significant assistance to low-income populations in emerging economies, it requires the commitment of social actors with power and influence to direct technological designs towards the goal of improving financial inclusion in emerging economies. The Chinese and Indian governments, for example, have made financial inclusion and equality central aspects of their economic policies.

Fintech can facilitate direct links between governments and individuals. Government to Person (G2P) applications include wage and pension payments, health subsidies, unemployment allowances and disability benefits. Digitising these types of social transfers can help enrol large numbers of underserved persons in social programmes while reducing costs – which could incentivise governments to promote G2P applications. Digitising government payments could increase bank account ownership among adults worldwide without a bank account – around 80 million of them opened their first account to collect public sector wages. Governments can enable even greater financial inclusion by digitally transferring funds, subsidies and pensions.

However, for digital government transfers to work, the technology ecosystem must be ready to use. All citizens should be able to open and access their accounts without difficulty – and without intermediaries exploiting the financial illiteracy of underserved people.

Recommendations for developing countries

First, developing countries should launch programmes to digitise IDs and create a positive ecosystem for e-commerce and financial services. The Indian government has led the way with its Aadhaar ID system, which has helped more people get bank accounts and access other financial services.

Second, the public sector should develop partnerships with start-ups to invest in telecom and payment infrastructure for rural areas. In emerging economies, the combination of mobile, e-commerce and digital payment options helps growth, better development and higher living standards. Governments should continue working with the private sector to develop public–private partnerships offering access to broadband, e-commerce and payment solutions in the most remote areas.

Finally, newly created fintech ecosystems are a great stepping stone for government services and wealth redistribution. One of the biggest barriers to creating social security or other redistribution services is the lack of official identities among the most remote citizens. Without IDs and residential addresses, citizens cannot access government services, and they become vulnerable to theft, loss and corruption. Fintech solutions can help to gather valuable data and create digital wallets or other means for people to receive benefits.

Marion Laboure is a Senior Strategist at Deutsche Bank Research and a Lecturer at Harvard University. 'Democratizing Finance' was co-written with Nicolas Deffrennes and published by Harvard University Press.

'Democratizing Finance' is available from https://uk.bookshop.org using the QR code

The road from Shanghai

Over the past 44 years, China has emerged as a global economic superpower. *flow*'s Clarissa Dann explores its growth trajectory, and reflects on how Deutsche Bank's own history in the region has come of age in corporate banking

Ever since former President Deng Xiaoping opened up China's economic system to the West at the 1978 Third Plenum, China has seen vast economic expansion and growth. Deng's reforms, which he is said to have likened to crossing a river "by feeling the stones", introduced private enterprise and market infrastructure incentives to an economy that had been entirely state led.

Researched as part of Deutsche Bank's reflections on 150 years in Asia (the first Asian Deutsche Bank offices were opened in Shanghai and Yokohama in 1872), this article provides a backdrop to how foreign banks have built cross-border capabilities, are ramping up their presence in the custody market, and are supporting clients in the region with their ESG transition. China and Japan were the countries where Deutsche Bank first connected European companies to the rest of the world and began directing cross-border capital to finance the growth of industries, economies and markets.

The bumpy growth trajectory

China's zero-Covid strategy has, for the time being, reduced the pace of growth. Yi Xiong, Deutsche Bank's Chief Economist

US$190bn

Investment inflows to China 2021

Source: UNCTAD

for China, has revised down his China growth forecast to 3.3% as the impact of Covid-19 "is even worse than expected", but his 2023 forecast is revised up to 5.7%. In his 'China's "Whatever it takes" moment?' report of May 2022, Yi points out that it will "take some time for mobility and activity to recover" after lockdowns. However, we should not allow short-term Covid shocks to distract from the long-term picture. "We're still confident that China will bounce back and grow at a fast pace, given its goal of doubling income again over 15 years by 2035," says Yi.

Total GDP is second only to that of the US, and by the end of 2020 the total assets under management of China's asset management industry reached US$15trn; it has remained in double-digit growth in the past few years. Nicolas Aguzin, chief executive of Hong Kong's stock exchange, said in November 2021 that China's capital markets "would probably more than triple" in size to US$100trn in the next decade.

Deutsche Bank's Peter Qiu, Greater China Head of Corporate Coverage, notes that China is now a very internationally connected country, and this is a big factor in investor decisions. "China is the number one trading partner of 130-plus countries in the world. From the investor point of view, the levels of FDI into China are very significant." The first four months of 2022 saw an increase of 20.5% year-on-year to the CNY equivalent of US$70.67bn, according to data from China's commerce ministry. China's capital markets continue to experience intense transformation, with global holdings of Chinese stocks and bonds rising by about US$120bn in 2021, and still growing rapidly to cater to surging demand for new asset allocation and diversification. However, there are concerns that small outflows could be on the cards in 2022, given the likely market interest rate differentials between the US Federal Reserve and People's Bank of China (PBOC).

The environment, says Qiu, is "heavily regulated" with tight capital controls, but "a fast liberalisation process is under way", and this brings opportunities for an international bank such as Deutsche Bank to support clients as they navigate this and decide how to position themselves while this process continues. In addition, he explains, China is a huge knowledge economy, and one of the largest internet economies as well.

> China is the number one trading partner of 130-plus countries in the world
>
> Peter Qiu, Greater China Head of Corporate Coverage, Deutsche Bank

RMB opportunities

By March 2022, China's offshore currency, the renminbi (RMB), had retained its position in SWIFT's RMB Tracker as the fifth most active currency for global payments by value, with a share of 2.20%. "In terms of international payments excluding payments within the Eurozone, the RMB ranked seventh with a share of 1.47% in March 2022," notes SWIFT.

UNCTAD's World Investment Report 2021 confirms that, despite the pandemic, flows to developing Asia were "resilient" in 2020 and inflows to China had increased by 21% to almost US$190bn.

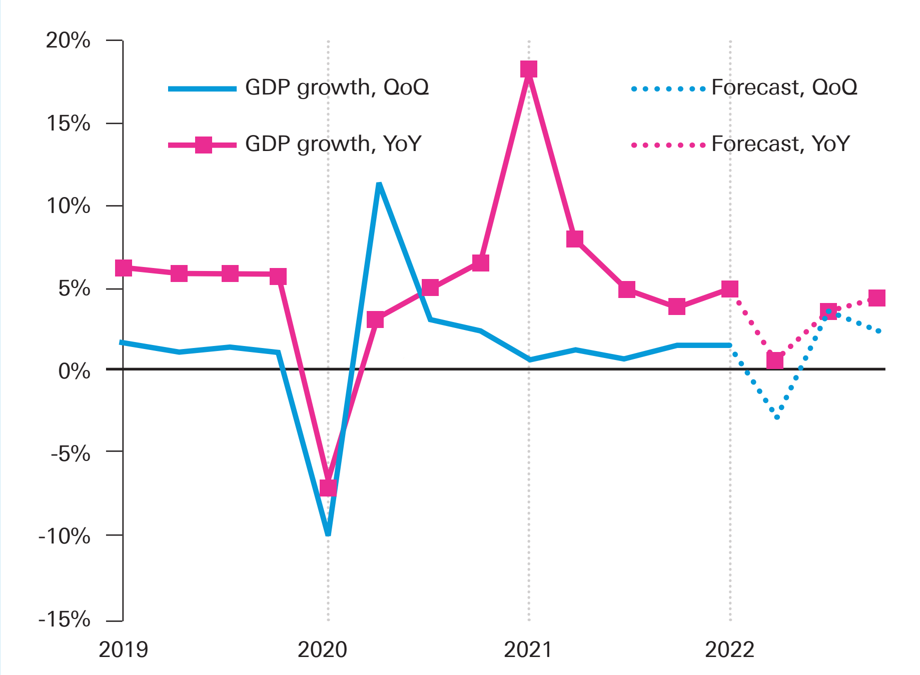
The expected increase in usage of RMB internationally could give investors greater confidence to invest in and hold RMB-denominated assets, despite the uneven progression of China's capital account liberalisation effort. Tony Chao, Head of Securities Services China, Deutsche Bank, sees the internationalisation of RMB as an opportunity, as overseas institutional investors want RMB exposure in bonds and equity markets – and overseas governments want to invest in the currency as part of their wealth fund foreign currency reserves. Going forward, China will encourage the use of RMB for settlements and even as a trade currency. "This will further inject growth into China, because if you look at the actual usage of RMB from a transaction volume standpoint currently, it is quite low, considering the size of economy," notes Chao.

China is also looking likely to be the first major economy to issue a central bank digital currency (CBDC), as the PBOC ramps up trials for the e-CNY. "The CBDC development is extremely interesting because it offers a way for the currency flows to grow by bypassing the traditional mechanism," says Chao.

Erin Huang, Manager, Corporate Treasury Services, Deutsche Bank, agrees, adding that "with the two dominant mobile payment service providers (PSPs), Alipay and WeChat, facing increased regulatory oversight, a CBDC might be coming at the right time where, instead of a technology provider, the central bank can provide trust in digital money in the digital age". Over the last decade, large Chinese corporate groups have emerged as global multinational corporations (MNCs), to the point that examination of the Fortune 500 list reveals more than 145 Chinese entries. In addition, western MNCs are now investing in China at full speed – Qiu points out that many of Deutsche Bank's clients in Germany are looking to do more in China. "For instance, Volkswagen has about 35% of its total group business in China, and BMW now has 40% of its business there. These corporates are finding that the demand is often even bigger in China than it is in Germany – and it continues to grow."

To achieve this, cash management solutions such as the CNY Payment on Behalf of (POBO), and Collections on Behalf of (COBO), as well as a nationwide single window (China's customs clearing system), and automated cross-bank liquidity management, are just some of the ways Deutsche Bank has supported Merck, the science and technology multinational, to maximise liquidity in China. And German automotive parts producer Continental now uses a cross-border RMB cash pooling solution from Deutsche Bank China.

Figure 1: China 2022 growth forecast



Source: Deutsche Bank Research


Present-day view from Hong Kong office over the harbour

Turning to Chinese corporates, when Shanghai-headquartered fintech XTransfer needed support with cross-border collection and foreign exchange (FX) on behalf of its Chinese exporting SMEs, Deutsche Bank stepped in with a COBO and FX solution.

In addition, when LianLian Global, a leading international payment solution provider based in Hangzhou, needed support in helping Vietnamese e-commerce merchants to grow their business globally, Deutsche Bank solved the problem with a PSP collection and FX solution.

Custody and capital markets

One example of this is the provision of custody services from a local perspective. Deutsche Bank is one of only three foreign banks to have obtained a local fund custody licence – something of a milestone – receiving it from the China Securities Regulatory Commission in late 2020. As China's population has become wealthier, and domestic investors seek asset diversification including overseas asset classes, the ability to meet local demand for custody services is key to being part of China's ongoing growth story. Custody is a platform business in China and is difficult to do without the ability to allocate portfolios across multiple markets covered by the bank's network.

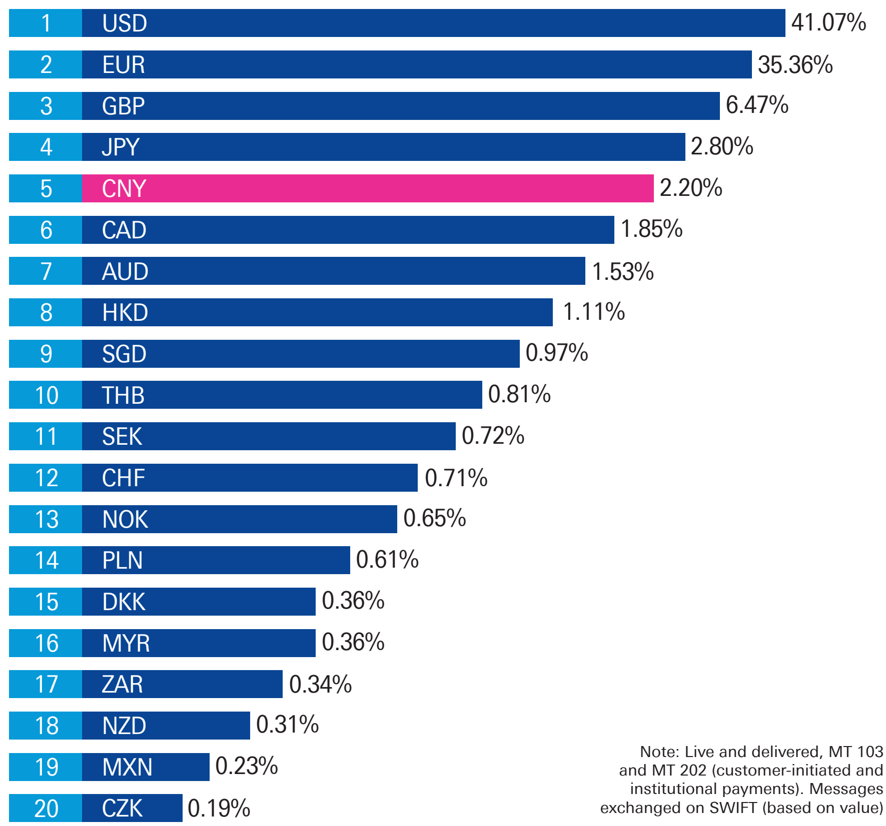
Population demographics and wealth creation in China have led not only to domestic advances in the financial instruments available, but also the knock-on effect of attracting more foreign investment to meet the needs of a growing and eager consumer base. "We have a rising number of high-net-worth individuals and more fund managers are emerging that serve these clients – rather than just the traditional houses. The licence is essential to meet these needs," explains Chao.

Domestic investment behaviour is also evolving. "What's becoming apparent is the massive shift in interest away from China's traditional domestic saving method," adds Chao. "Where the average household traditionally used to put between 30% and 40% of its income into savings accounts, in the past few years people have been increasingly looking at asset diversification as a means of supplementing the returns that banks are providing."

Merchant and FX solutions

For 150 years, corporate treasury clients were concerned with three main objectives: saving costs, making funds available and getting timely financing. Huang reflects on how the needs of MNCs have changed during his 20-year tenure in the industry. "These three aspects are still important but nowadays, the digitalisation of treasury is growing in popularity and, more often

Figure 2: RMB's share as a global payments currency



Note: Live and delivered, MT 103 and MT 202 (customer-initiated and institutional payments). Messages exchanged on SWIFT (based on value)

Source: SWIFT BI

than not, we are talking about automation and standardisation with clients instead."

Keen to benefit from digitised and paperless payment workflows and merchant solutions, corporate treasurers are helping to drive the digital revolution, transforming traditional economic models. This is true around the world, but it is particularly prevalent in China, where e-commerce and payment channels – such as Alipay

> People have been increasingly looking at asset diversification
>
> Tony Chao, Head of Securities Services China, Deutsche Bank

and WeChat – are very popular. "We are seeing a rapid move to online business models across sectors," says Huang. "We have launched several different merchant solutions to meet the needs of the digital corporate treasurer, such as solutions designed to help our multinational corporate clients who are managing an online store or setting up self-managed online stores."

The internationalisation of China's economy has also led to new currency flows in corporate treasury. While RMB is still the dominant currency flow, euro flows are gaining popularity in China. However, low euro interest rates have caused problems for banks around the world, incurring costs to place money with central banks overnight. As Huang notes, "Corporate treasury clients in China aren't happy to be charged for placing euro overnight deposits, so we are setting up an automated FX solution so that corporates with euros can automatically convert their holdings into RMB."

Given the demand from Chinese corporates for cash management, FX and trade finance solutions as they expand into emerging markets, Deutsche Bank developed a one-stop solution to address funding and risk management needs. Deploying the GEM Connect one-stop workflow automation solution for treasurers in emerging markets (launched in March 2021), the bank helped SANY Group, a leading Chinese construction and engineering machinery manufacturer, improve the efficiency of its intercompany payment settlements and reduce manual processes, thus playing a key role in SANY's globalisation strategy.

Trade powerhouse

Before China's economy opened up in 1978, its share of global trade stood at less than 1%. As helpfully explained by UNCTAD, in 1986, to enhance and secure access to foreign markets for its growing exports, China applied to join the General Agreement on Tariffs and Trade. However, it was 15 years before China could formally connect to the multilateral trading system. During these years, China's share of global trade gradually increased but its participation in the global economy remained well below its potential. But as globalisation took off, along with the emergence of global value chains, China rose to become the world's number one exporter by 2010, helped by its accession to the World Trade Organization in 2001.

China's pivotal position in the production of metals and minerals has, however, become a source of concern among other economies in a geopolitical landscape that is moving away from globalisation. Of the 30 critical raw materials that the European Commission identifies, 10 are mostly sourced from China and eight from the African continent, where China increasingly invests in commodity-related infrastructure. Within this group are the metals and minerals needed to produce electric vehicles and the renewable energy equipment that will enable economies to transition away from fossil fuels. "Decarbonisation is becoming a material demand driver for several metals, such as aluminium, copper and lithium," noted Deutsche Bank Research in January 2022. China is the world's largest aluminium producer, with an output of 38.5 million metric tons in 2021.

As for financing trade, it remains complex because of the various controls in place. Two years ago, Bank of China's Yunfei Liu told *flow* that handling cross-border transactions in China means getting comfortable with more than 200 sets of rules, the majority of which come from the State Administration of Foreign Exchange, with a few from the PBOC.

Photography: Alamy, Deutsche Bank

Figure 3: Selected economic and energy indicators for China

Indicator	2000	2010	2020	Change 2000–2020
GDP (USD billion PPP [2019])	4,790	12,747	24,410	+410%
Share of global GDP	7%	13%	19%	+12% points
GDP per capita (USD PPP [2019])	3,773	9,479	17291	+358%
Population (millions)	1,269	1,345	1,412	+11%
Total primary energy demand (EJ)	49	107	148	+200%
Primary energy demand per capita (GJ/capita)	39	80	104	+170%
Import dependency (%)	4%	15%	23%*	+19% points
Energy sector CO_2 emissions (Gt CO_2)	4	9	11	+218%
Energy intensity (MJ per USD PPP)	10.2	8.4	6.0	-41%
Carbon intensity (g CO_2/USD PPP)	655	616	412	-37%

*2019 values

Notes: GDP = gross domestic product; PPP = purchasing power parity. Import dependency is calculated based on the difference between imports and exports relative to total primary energy demand

Source: International Energy Agency

Meeting climate goals

The International Energy Agency puts China's share of global greenhouse gas emissions at around 25%. With its period of rapid economic growth getting under way as late as 1978, its path to carbon neutrality was always going to be rather different from that of the EU and the US. The region did not achieve universal access to electricity until 2014, for example. At the United Nations General Assembly in September 2020, China's President Xi announced that the country aims to have CO_2 emissions peak before 2030, and to achieve carbon neutrality before 2060.

This has set the stage for green investment and financing to become the most important market themes of the coming decades. The government's green transition investment agenda is much more advanced and detailed than it was two years ago, and is another magnet for capital flows and lending and, with that, client demands for innovation and support with ESG transition. Experts estimate China's average annual green financing demand to be between RMB2.5trn and RMB16trn before 2060. "As green investment accelerates in 2022, so will the structure and breadth of China's green finance market," says Deutsche Bank Research China Strategist Linan Liu.

> China is seeing intensive import and export flows related to wind turbines"
>
> Steven Yu, Head of Trade and Lending for North Asia, Deutsche Bank

As part of its energy transition strategy, China has made a significant commitment to invest in renewables. According to a United Nations Environment Programme report, China has been the biggest investor in renewable energy over the past decade, spending nearly US$760bn between 2010 and 2019 – double the US's US$356bn investment and greater than the US$698bn from the entire European continent.

Hunter Xiong, Deutsche Bank's Greater China Corporate Coverage COO, explains that Green Investment Principles that came out of its Belt and Road Initiative (BRI) have evolved as a robust framework to guide investors and corporates doing business in the region. And in July 2020, China and the EU set up a working group to assess existing taxonomies for environmentally sustainable investments. This resulted in the Common Ground Taxonomy, released in November 2021, identifying around 80 climate mitigation activities recognised by both the EU and China. "This paves the way for international collaboration in sustainable finance," says Xiong.

According to the Frankfurt School of Finance & Management, China has been the top investor in clean energy for nine out of the last 10 years.

"In particular, China is seeing intensive import and export flows related to wind turbines," says Steven Yu, Head of Trade and Lending for North Asia, Deutsche Bank. "For instance, a wind turbine may be produced in China, but key components are often produced by clients in Europe and then sold to a company in another country, perhaps Australia." One example of this is the Global Power Generation wind farms in New South Wales, powered by Vestas machinery and supported by China's export credit agency, Sinosure.

Deutsche Bank has been supporting Chinese power utilities to transition away from fossil fuels with ESG-aligned lending. In May 2022, Deutsche Bank completed its first sustainable trade finance transaction, aligning the Common Ground Taxonomy with the Use of Proceeds to finance a Chinese leasing company's direct leasing for two wind power developments. The three-year CNY187m accounts receivable facility aligns with UN Sustainable Development Goals 7 and 9, related to renewable energy and infrastructure development.

Given China's position as the largest vehicle market in the world since 2009, it has had to contend with the rapid expansion of its vehicle industry and the fact that emissions from vehicles have contributed hugely to air pollution in its cities. Scrapping of older vehicles is one measure being taken, but another is investment in electric vehicles. Participants in the electric vehicle industry have been turning to Deutsche Bank for a range of trade finance and lending services.

Corporate crossroads

While the landscape of today looks very different from 150 years ago, the role of a corporate bank, and indeed that of the Global Hausbank, remains the same: to support corporates with their unique requirements – something that was recognised by The Asset, with its 'Best Transaction Bank in China 2021' award, announced in May 2022.

Having reflected on the past 150 years, Deutsche Bank's Singapore-based Head of the Corporate Bank, David Lynne, is emphatic that "Deutsche Bank's strategy has remained the same – providing trade corridor connectivity and long-term commitment – but our delivery mechanisms have evolved." He adds, "Helping clients transform their business models in these challenging times is our USP."

Further reading...

Read on for more of the bank's insights on China and the wider commodities landscape:

China's capital markets path to growth
bit.ly/3IlRNku

Commodities 2022 – a transition-tinted landscape
bit.ly/3NSjYIT

China's balancing act
bit.ly/3aoGM5r

From the history book

Martin Mueller, Head of Deutsche Bank's Historical Institute, provides an illustrated summary of the bank's China operations

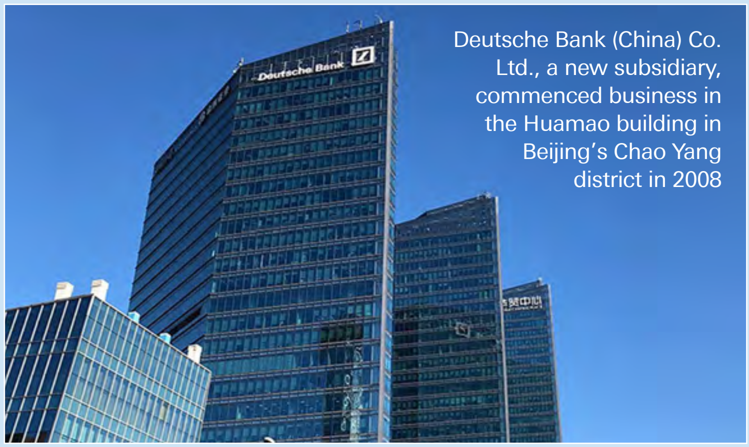
Deutsch-Asiatische Bank on the Bund in Shanghai. When it opened this branch, the bank leased the building from a member of the Sassoon family, an Indian merchant dynasty, and finally acquired it in 1898. Two years later, lack of space persuaded the bank to purchase the neighbouring property and build an extension

From 1897 onwards, Deutsch-Asiatische Bank was represented in Hankow by an agency, which moved into its own building in 1906 and was converted into a branch in 1910

Deutsch-Asiatische Bank set up a representative office in Peking (now Beijing) in 1905 and upgraded it to a branch in 1910. The Peking branch built its own premises, which featured a corner tower, in 1906

Deutsche Bank opened its second Chinese representative office in Guangzhou in 1994. Just one year later this office was converted into a branch. This was the first Deutsche Bank branch to open since the office in Shanghai had been closed in 1875

Deutsch-Asiatische Bank opened its first post-war branch in Hong Kong in 1958. The image shows accounting staff at Deutsch-Asiatische Bank's Hong Kong branch in 1964



Deutsche Bank (China) Co. Ltd., a new subsidiary, commenced business in the Huamao building in Beijing's Chao Yang district in 2008

In 1972, the former branches of Deutsch-Asiatische Bank in Hong Kong, Kuala Lumpur and Jakarta were converted into branches of European Asian Bank. In Hong Kong, the bank moved into new premises in the American International Tower on Queen's Road in 1977

The Blue Water Fintech space, the bank's first innovation hub in China, opened in 2019 to grow its digital offering and create fintech partnerships

Deutsche Bank's illustrated history of its presence in Asia Pacific can be downloaded from the dedicated APAC anniversary website at *https://country.db.com/asia-pacific/apac-150-years*

India's gateway to growth

India is cementing its place as a titan economy of the 21st century. *flow* looks at the significant investment inflows, driven by the country's sound fundamentals, and its ability to weather geopolitical shocks. We also reflect on the far-sighted innovations driving India's digital economy forward

This year marks the 21st anniversary of the IMF's 1991 loan to India which, accompanied by its then-fashionable 'structural adjustment' conditionality, augured the end of 'Licence Raj' – the myriad regulations that had hampered businesses since India's independence 44 years earlier. But the flourishing economy of India in 2022 also represents something of a coming of age. The 1991 pivot to a more open economy after years of hard work and enterprising businesses has seen India more than make up for lost time, countering historic criticisms of unfulfilled potential.

Economic recovery and resilience

India's direct risks from the Russia–Ukraine conflict are limited, with Indian exports to Russia being less than 1% of its total exports, while imports are about 1.5%, according to Deutsche Bank Research. However, the indirect impact, mainly through the channel of higher global oil and gas prices, is much deeper. "The bigger priority now is to reduce inflation, so that the ongoing growth recovery can be sustained on a durable basis; after all, there is no trade-off between growth and inflation in the medium-term," explains Kaushik Das, India Chief Economist, Deutsche Bank Research. While the large FX reserves buffer (almost US$600bn in early May 2022) will help mitigate some of the global spillovers, he welcomes the Reserve Bank of India's repo rate hike of 40bps, along with a CRR hike of 50bps, because it accords "higher priority to fighting inflation and inflation expectations, without which the repercussion for medium-term growth prospects would probably be dimmer".

> There is no trade-off between growth and inflation in the medium-term
>
> Kaushik Das, India Chief Economist, Deutsche Bank Research

Tailor-made for investors

While global events and spikes in energy prices since the Union Budget may cause some slight adjustment to the figures, investors remain confident that India can navigate the turbulence and continue its economic recovery, as it did with the Covid-19 pandemic. However, a -23.9% GDP slump in the quarter April–June 2020 proved a brief stumble, with Prime Minister Narendra Modi's 2019 vision of a US$5trn economy by the end of 2025 potentially staring at a four-year delay.

Despite these headwinds, there are five very positive underlying trends, reflects Sriram Krishnan, Head of Securities Services for India and Sub-Continent at Deutsche Bank India, together with Anand Jha, Head of Trade Finance and Lending at Deutsche Bank India. The first three relate to financial market infrastructures and capital flows, and the remaining two impact trade flows.

1. The government's disinvestment and asset monetisation strategy.

The primary impact of this is what Das refers to as "India's Margaret Thatcher moment", drawing a parallel between the Indian government's desire to withdraw from specific areas of economic activity in order to make space for the private sector and that of the UK in the 1980s. The secondary impact is the concomitant opportunities for private sector expertise, IPOs and FDI that such liberalisation provides. Examples of these include Air India's (re-)acquisition by the Tata family and the Life Insurance Corp's IPO that closed on 9 May 2022.

2. India's 'demographic dividend'.

Many emerging markets benefit from rural-to-urban population shifts and spending boosts from growing middle classes, but India has the added advantage of a median age of just 28.4. This is far below that of China, such that the "discretionary spend of India's working-age population is at a tipping point", says Das.

3. Financial inclusion and the 'financialisation' of savings.

Goods and sales tax reform has brought more transactions into the formal economy which, added to the growing wealth of an expanding middle class, means many more people will bring their savings into the financial and banking systems. Das points out that this influx will facilitate stronger credit growth, with more of the population able to borrow to establish and grow their businesses.

But this influx means other opportunities abound in the insurance and mutual funds sectors. One sign that this new money is being put to new uses is reflected in the recent surge of retail investors, with 190 million active dematerialised (or 'demat') accounts being opened in the first nine months of 2021 alone. Moreover, this new breed of investor has a growing appetite for selecting new asset classes, moving beyond the traditional gold and fixed deposits into more sophisticated products, including non-Indian assets – for example, large pharmaceutical stocks in the US. Further

Photography: Alamy

India Gate in New Delhi

examples of such specialised offerings, which build upon India's long heritage in commodities markets, include silver exchange traded funds (ETFs), with ETFs for base metals and agricultural commodities also being planned. Such has been their rise in attracting retail investor capital that Jha believes that commodities "could give more traditional asset classes like equities or bonds a run for their money".

4. Increased appetite for commodities.

There has been a recent upswing in oil prices, in addition to those for raw materials such as aluminium, copper and steel, notes Jha. This in turn increases the working capital requirements for Indian businesses, and the demands they place upon their banks. Regulatory caps – limiting the disbursements that an Indian bank can make to any single borrower – are being reached, especially for many of the larger Indian corporates. This is therefore a busy time for many treasury departments in large Indian-based corporates, as options are explored, such as raising funds overseas both through capital markets and in the form of equity specifically. The country's strong post-Covid rebound has seen many production plants running near capacity, causing many Indian corporates to devise ambitious capital expenditure plans which, Jha believes, will have the benefit of trickling down to those micro, small and medium enterprises (MSMEs) able to help meet production demands. Squeezes from commodity price rises and production capacity constraints are consequently behind the fourth trend driving India's growth – namely, the expansion of working capital and production capacity.

5. Digitalisation.

Initiatives such as the new Port Community System, and the Export and Internal Data Processing and Monitoring Systems (EDPMS), launched by the Reserve Bank of India in March 2014, are important steps forward. Jha points out that the advice from the central bank to other banks is to "just connect your engine to these two platforms and take whatever information is available there". He reflects, "we are really gravitating towards a document-less export and import system, which is quite a change from what we used to see a few years ago", despite the current backlog the banks are ploughing through.

India's digitalisation journey so far

Many governments are investing heavily to build 'digital public highways', which corporates can then leverage. Such initiatives include unique identification provided to each citizen, and bank accounts opened for them. India's government is helped by the fact that the country's mobile telephone penetration actually exceeds 100%, and smartphone penetration constitutes 50–60% of this total. These factors have combined to transform India's payment systems, now operating 24 hours a day, seven days a week, while rapid advancements are being made in the development of 'contextual banking' (or 'in-app purchases'). These are payment options for consumers already using 'freemium' online services with basic free and pay-for ad-free options, such as Spotify.

A key focus is the consumer experience, given that digitalisation and smartphone penetration enable corporates to engage directly with their customers. But the digitalisation process is neither a panacea nor a quick fix for corporates. A huge amount of work, coupled with significant expertise, is needed to ensure that existing systems architecture can be developed to the point where it can cope with an increased frequency and volume of transactions and the decreased transaction size. "Transactions happen 24/7 and systems have not been designed for this," says Rajesh Thakur, Co-Head of Transaction Bank & Head of New Economy Coverage for India and Asean at Deutsche Bank.

Another example of India's digital momentum is The Gujarat International Financial Tec-City (GIFT City) – an ambitious response to the call for an offshore centre for India-focused business. A four-phase construction development, which at first will be similar to the Dubai International Financial Centre, GIFT City already houses global businesses and 12,000 professionals.

True to India's entrepreneurial culture, many start-ups are being created to develop offerings in areas such as banking and financial services, but also edtech, online fashion and beauty, and green ventures focused on electric batteries and vehicles, and battery swapping. Many of these start-ups are platforms, creating marketplaces in the growing e-commerce space. That these have been fruitful endeavours, created and grown by India's highly educated and entrepreneurial workforce, is evidenced by the fact that, after the US and China, India has more unicorns (private companies with valuations of more than US$1bn) than any other country globally.

Fighting inflation

As the Federal Reserve grapples with persistent high inflation, how will it manage the risk of recession? *flow* shares some insights from the US Deutsche Bank Research team

At the end of 2021, rising inflation and the unwinding of globalisation, along with the impact of climate change policies, were the watch areas as the new year beckoned. But, by mid-2022, the impact of the Russia/Ukraine war and a spike in energy prices had wreaked havoc on what was supposed to have been a recovery from Covid-19 among G7 economies.

As David Folkerts Landau and Peter Hooper pointed out in their April 2022 World Outlook, "War has broken out in Europe with Russia's invasion of Ukraine—a development that has pushed energy prices significantly higher and disrupted a number of other key commodity markets and supply chains... Even more importantly for the economy further down the road, the momentum of inflation has continued to build at a surprising pace in the US, Europe and elsewhere, necessitating more aggressive tightening of policy by key central banks."

This was underlined by the Federal Reserve's FOMC statement published on 15 June: "Inflation remains elevated, reflecting supply and demand imbalances related to the pandemic, higher energy prices, and broader price pressures." What does this mean for monetary policy?

Central bank intervention

Federal Reserve rate hikes demonstrate that the monetary policy stance is adjusting quickly to a new reality of persistently elevated inflation. Deutsche Bank's US Chief Economist Matthew Luzzetti wrote in his 'Fed Notes' report (14 June 2022), "Ideally, these moves will reign in demand more quickly and prevent a further rise in inflation expectations, helping to short circuit this possible adverse feedback loop before it starts."

However, the speed of tightening needed to curb inflation carries with it the risk of tipping the US economy into recession. "A more accelerated Fed hiking cycle ultimately should help tame inflation pressures but will make it more difficult to thread the needle between lower inflation and a recession. We continue to anticipate that bringing inflation back down to target will require a meaningful hit to demand and rise in the unemployment rate, the latter of which historically does not happen without a recession," reflected Luzzetti.

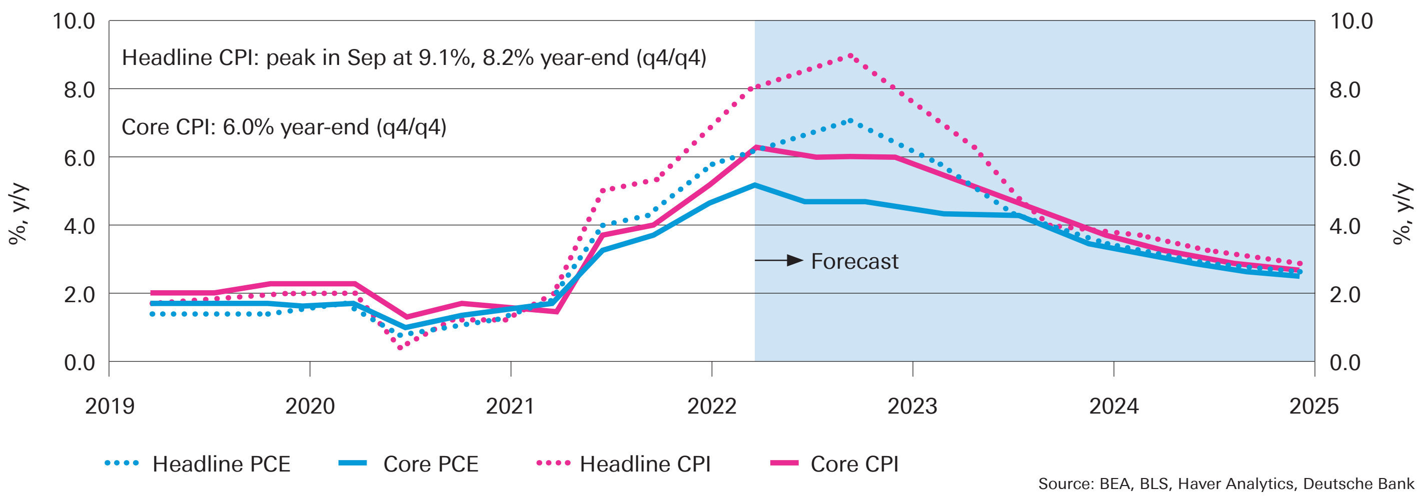
However, while acknowledging that the Fed's leverage over inflation is primarily via damping growth in aggregate demand – and hence the demand for employment – Luzzetti added that the Fed's Chair, Jerome Powell, went to some pains to avoid saying a recession might be the required medicine. In his view, the Fed's Summary of Economic Projections (SEP) skirts "very close to a recession with the unemployment rate rising 0.5 points over the next two years".

While overly optimistic, Luzzetti does see this as "a step in the right direction and a recognition of what might be needed to maintain the Fed's credibility as it strives to keep inflation expectations in check".

Deutsche Bank Research reports referenced

- *World Outlook 2022–24: Over the Brink* (5 April 2022) by David Folkerts-Landau and Peter Hooper, Deutsche Bank Research
- *Fed notes. June FOMC recap: A perilous path to price stability* (14 June 2022) by Matthew Luzzetti, Peter Hooper, Brett Ryan, Justin Weidner and Amy Yang, Deutsche Bank Research
- *US Inflation Outlook: Sizzling spring service inflation spooks central bank* (21 June 2022) by Matthew Luzzetti, Suvir Ranjan, Brett Ryan, Justin Weidner and Amy Yang, Deutsche Bank Research

Figure 1: Inflation to run well above Fed's target through 2023

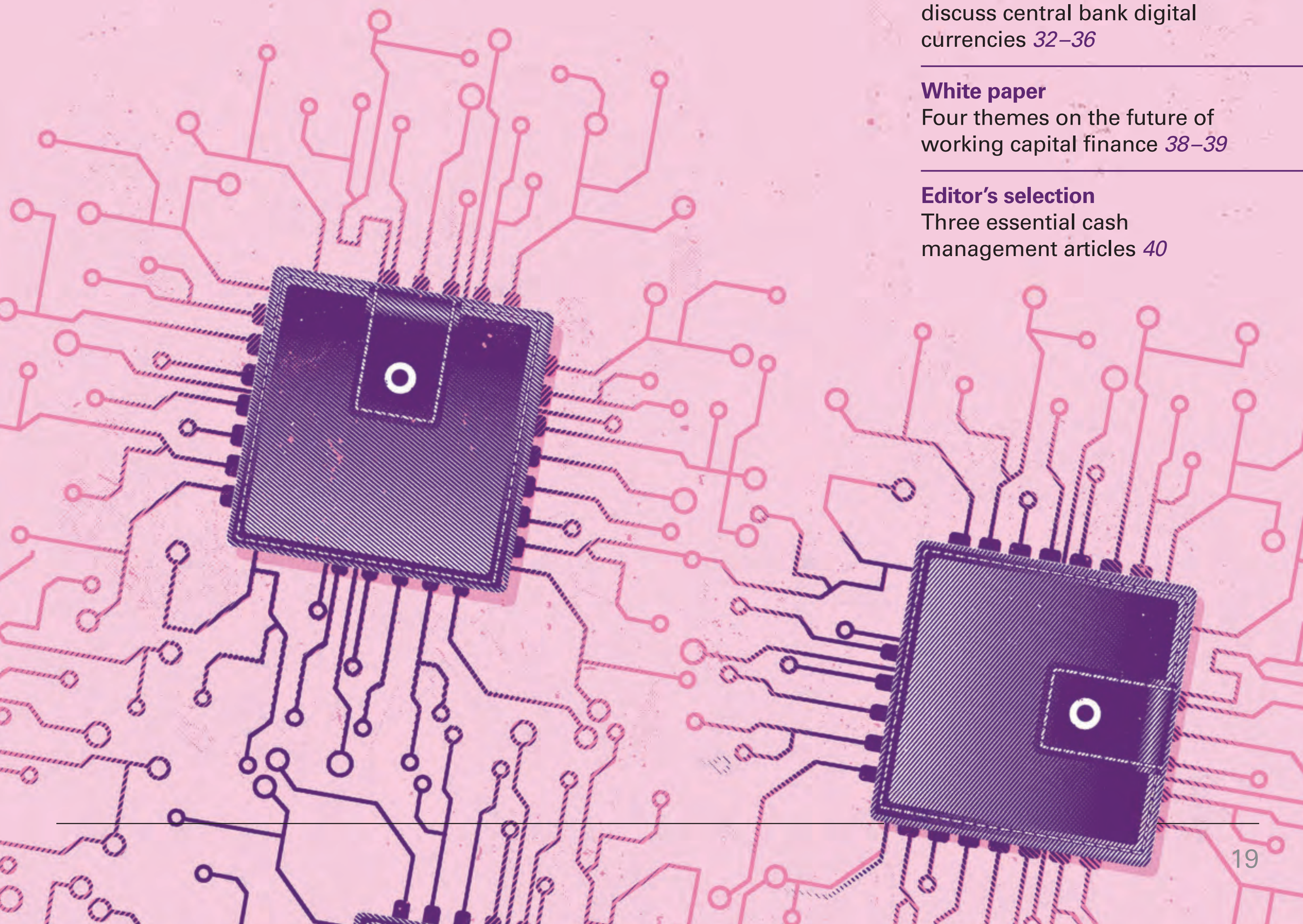


Source: BEA, BLS, Haver Analytics, Deutsche Bank

Photography: Alamy

Cash management

The latest cash management insights, from client digital payments strategies to the evolution of payment standards and central bank digital currencies



Smart payments for smart cameras

Azena, an IoT-based security equipment start-up funded by German engineering and technology giant Bosch, is revamping its digital payment strategy. *flow*'s Desirée Buchholz reports on its partnership with Deutsche Bank to improve the customer experience and meet the needs of a fast-growing B2B marketplace

Where in the car park can you find vacant spaces? Which parts of a shopping mall attract the most customers? How can manufacturing processes become more efficient and secure for workers? All these questions can nowadays be answered with the help of smart video cameras – and the Munich-based start-up Azena is working on delivering exactly these kinds of analytics to users of security cameras. Its customer list includes local transport operators who want to gain insights into passenger flows and retailers studying shopper behaviour to optimise product offering and placement.

Azena was founded in 2018 under the roof of German technology company Bosch, a global supplier of mobility solutions, industrial technology, consumer goods and energy technology with total revenue of €71.5bn in 2020. Among the areas Bosch focuses on are solutions around the Internet of Things (IoT). This is where Azena comes in.

The company has developed an open operating system for security cameras which runs on the cameras of Bosch and other manufacturers such as Hanwha Techwin and Vivotek. Based on this system, Azena launched a marketplace in March 2020 allowing software developers to sell their video analytics applications to the users of these video cameras. Users include the US professional hockey team the Pittsburgh Penguins, who are using AI to monitor crowding at their stadium entrances.

"Our app store connects software developers and the users of cameras, and we receive commissions for the sale of software licences that take place on our marketplace," explains Michael Staneker, Azena's Project Manager. Currently, the marketplace offers more than 100 video analytics apps from 30 software developers to registered customers in more than 40 countries.

Digital marketplaces require a new payment strategy

Business models such as Azena's are currently gaining traction. "Companies are building digital ecosystems around their original product and service offering," says Ole Matthiessen, Global Head of Cash Management, Deutsche Bank. Automobile companies are expanding their offering horizontally with mobility solutions such as car-sharing, machine builders are ramping up their software development, and in the healthcare sector, manufacturers of diagnostic equipment create vertical marketplaces to monetise new goods and services at scale, through a convenient integration of smaller medical suppliers.

> Our previous payment service provider was unable to fulfil all our requirements
>
> Michael Staneker
> Project Manager at Azena

This growth is sparked by several advantages that these marketplaces deliver to their participants. While buyers benefit from greater choice, faster delivery and cost reduction, sellers gain access to a larger number of clients at a lower risk. The company operating the marketplace can generate new revenue streams from fees on transaction volumes. These platforms also enable manufacturers to sell directly to the customer, thereby circumventing resellers and increasing their margins. "Owning the interface to the client is getting even more important as sales channels shift from physical to digital," Matthiessen adds.

Therefore, global sales conducted via B2B marketplaces are expected to quadruple from US$1trn in 2020 to US$4trn in 2025. The consultancy McKinsey even expects marketplaces to account for 60% of online sales by 2023 – or US$9.2trn – an increase of 22% each year compared with figures from 2019 (see Figure 1). The higher expected volume is because McKinsey also includes business-to-consumer (B2C) sectors such as retail, travel, media and entertainment as well as food and beverages.

Yet building a digital marketplace is challenging for several reasons. The benefits outlined above can only be delivered when all relevant industry players are participating. "Among the decisive factors for the success of marketplaces is a convenient, safe and cost-efficient payment strategy," says Victor Winterhalder, Deutsche Bank's Relationship Manager for Azena. In an extreme scenario, a customer may even stop a purchase if they do not find a payment method that fits their needs. "In any case, this would create a bad user experience," Winterhalder adds.

Replacing the payment service provider

It is for this reason that Azena decided to replace its existing payment service provider (PSP) in early 2021 and migrate to a new payment platform that Deutsche Bank has developed specifically for digital marketplaces.

"Our previous PSP was unable to fulfil all our requirements," recalls Staneker. Most importantly, the range of available payment methods was limited. "In the B2B world, it is very common to purchase on account, but this wasn't supported by our PSP in all countries. However, many of our clients didn't want to use the methods available, such as credit card payments or PayPal."

The second feature that convinced Azena to shift payment handling to Deutsche Bank was "the geographic reach of the bank", explains Staneker. The start-up is pursuing an ambitious global growth plan for its marketplace.

"As we expand the marketplace internationally, we will require further assistance – for example, when it comes to embedding currency conversion," says Staneker. "We feel there is strong support from Deutsche Bank at this end too."

Automate the payment process end-to-end

So how does the new payment solution that Azena has implemented with Deutsche Bank work? In a nutshell, this is a platform that was developed specifically for digital marketplaces by allowing companies to automate and integrate the entire payment process end-to-end (see Figure 2).

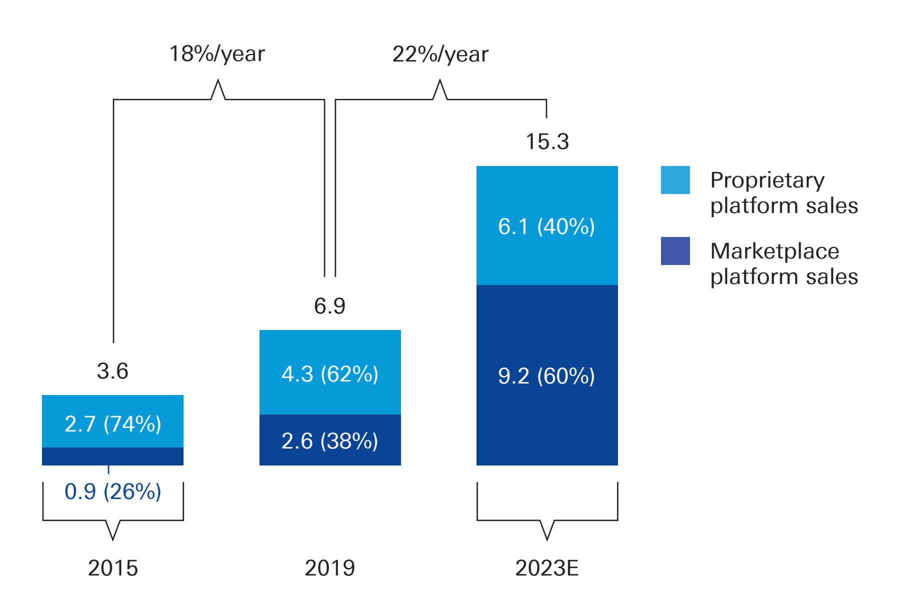
In Azena's app store, users of surveillance cameras can now choose between credit transfers in euro, US dollar or credit card payments when paying for their software purchases – with more options to follow. Customers can potentially buy from multiple app developers in one transaction, thanks to the 'Amazon-like' check-out process with a single debit for software licences from multiple sellers, explains Matthaeus Sielecki, Cash Management Structuring at Deutsche Bank. This is possible because funds can be split between different merchants, with charges and marketplace commissions also being deducted in the pay-out process.

Azena also benefits from an automated matching of incoming payments to the respective orders, "which makes reconciliation more efficient on our end as well as providing the basis for further internal process automation," explains Jörg Halder, a consultant at Bosch and IT Manager for Azena's payment project.

Deutsche Bank also takes care of regulatory responsibilities such as

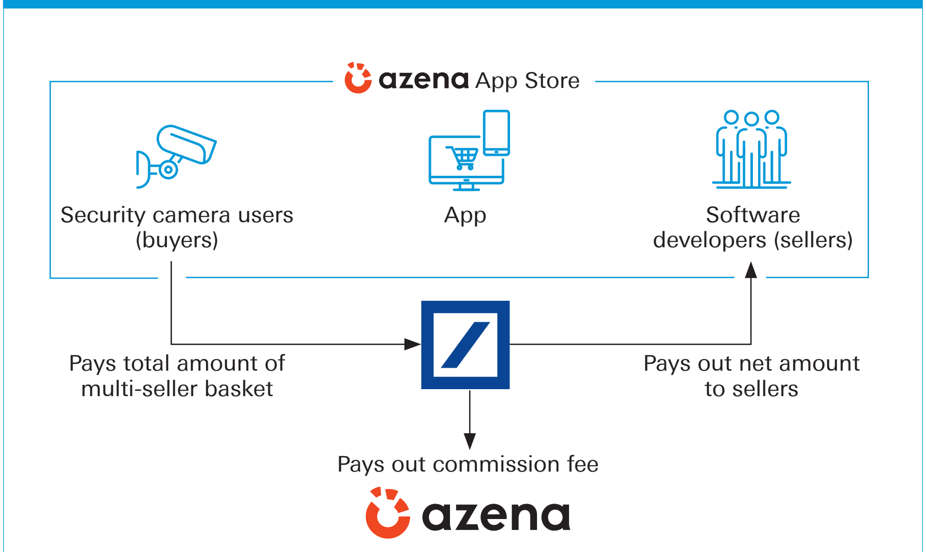
> We didn't simulate in a sandbox, but tested on the live system
>
> Jörg Halder, IT Project Manager at Azena

Figure 1: Sales via digital marketplaces are set to increase



Source: McKinsey Global Payments Map; McKinsey Digital Commerce Benchmark

Figure 2: How the new payment process works



Inside Azena's
Munich office

onboarding software developers on the payment platform, which includes contracting, risk assessment and Know Your Customer (KYC). The bank also assures that software developer funds are protected and ring-fenced on the platform, while flows can be traced to create an audit trail for treasury. "All these features will make payments more efficient, more secure and cheaper for us and our partners," says Staneker.

US$4trn

Anticipated global sales conducted via B2B marketplaces in 2025

Be Shaping the Future (be-stf.de)

Azena acted as a pilot client

What made this project special was that Azena acted as a pilot client for Deutsche Bank's new marketplace payment engine. This in turn meant that "we entered new territory together", recalls Halder. "For purchase on account there was nothing we could copy and paste from, which is why we needed to co-develop and re-iterate to find the best solution." As the processual and technical features were agreed on, the company started testing by initially sending small payments. "We didn't simulate in a sandbox but tested on the live system to verify if reconciliation works as expected across different countries and will cope with high volumes," Halder explains.

After one year's work, the new payment solution went live in early January 2022, with the existing PSP gradually being replaced. "We are now live in Germany and the US. Once we have gained more insights, we will continue the roll-out to other countries – for example, in Asia," says Staneker.

Although his priority is to drive up transaction volume by getting more software developers to join the new payment platform, Staneker already has more plans on the drawing board. This includes the offering of FX conversion services as well as financing solutions such as factoring within the marketplace. "This will help sellers to improve their receivables management and cashflow," says the project manager, adding that "this is not urgent, but rather something for the future". When it comes to payments, the next step could be to introduce the feature of recurring payments, which would allow for subscription-based software purchases.

All this will support Azena to grow its marketplace and further expand service offerings to its client.

Deutsche Bank *flow* app

For more insights on digital payments, and case studies about Deutsche Bank's partners, download the *flow* app. Available on iOS and Android.

Staying one step ahead of payment fraud

When it comes to payment fraud, companies and banks are increasingly facing organised crime. *flow* explores the latest fraud patterns and how banks can help their clients to safeguard systems and processes

Over the past decade, the payments sector has been through a transformative journey, with digital innovations and new players shaping it to become faster and more streamlined. However, it is not just corporate treasuries and their banks that have been incorporating these technological changes; fraudsters have made their own strides by continually developing new techniques to exploit corporate vulnerabilities. Today, payment fraud has turned into a lucrative business model for criminals around the world (see Figure 1).

The consequences of this evolution are reflected in projections for the cost of global cybercrime, which is expected to climb by 15% per year over the next five years, reaching US$10.5trn annually by 2025 – up from US$3trn in 2015. Cybercrime is an enabler for fraud because it targets (and can even produce) technical weaknesses. For example, a cyber criminal might use a Trojan – a virus containing malware that is made to look like a legitimate program – to gain access to personal data or mail accounts, which in turn could be used to initiate fraudulent payments.

> The dangers of fraud were brought into sharp focus during the Covid-19 pandemic
>
> Dr Gerd Berghold, Head of Treasury Operations and Digital Treasury at Deutsche Bahn AG

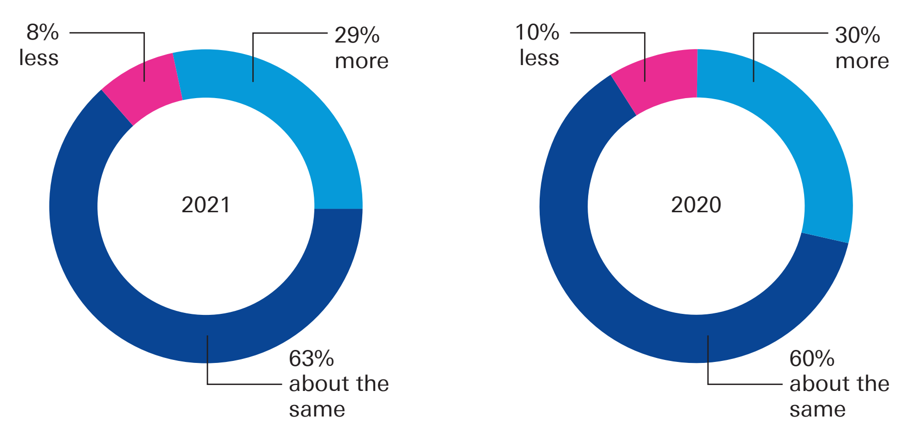
This development is affecting corporate clients. "The dangers of fraud were brought into sharp focus during the Covid-19 pandemic, which saw many of our employees, and those of our counterparties, move to a working-from-home environment," said Dr Gerd Berghold, Head of Treasury Operations and Digital Treasury at rail operator Deutsche Bahn AG. "This left communication channels more exposed and more susceptible to fraud attacks."

With the frequency of payment fraud increasing in addition to the amounts being lost, companies are looking for better ways to fight it. So, what are the fraud patterns that they should be aware of?

Changing fraud techniques

While corporate clients of all sizes have ramped up IT security of electronic payments, and now that tools such as Enterprise Resource Planning (ERP) systems and Treasury Management Systems (TMS) have been made more watertight, internal processes often remain a blind spot. "It takes a lot of time and resources to attack ERPs and TMS, which is why we are seeing fraudsters looking to attack the weakest parts in instructing payments, such

Figure 1: Change in incidence of payments fraud in 2021 compared with 2020



Source: 2022 AFP® Payments Fraud and Control Report

as process failures and human error," comments Andreas Hauser, Head of Fraud Prevention Management at Deutsche Bank.

This has led to techniques such as fake invoices, where a fraudster will glean as much information as possible on the relationship between a company and a supplier – including the content, the timings and the format of their legitimate invoices – and use this to create a fraudulent invoice. The only noticeable difference between a well-executed fake invoice and a real one will be the payee details, which ensure the money goes to the fraudster instead of to the supplier.

As a result of this painstaking reproduction, fake invoices can be very convincing and difficult to spot – particularly when you consider the number of payments that companies need to process. With many corporates operating large payment factories that pay thousands of invoices a day, their teams typically don't have the time and resources to check each payment. Instead, additional checks are put in place for large payments, with the bank authenticating the beneficiary account details. Fraudsters are aware of this and so they send multiple fake invoices of smaller amounts in a bid to slip through undetected.

Another popular form of payment fraud is the man-in-the-middle method (see Figure 2), where the fraudster manipulates communication channels. For instance, a fraudster could gain access to a supplier's genuine email account and use it to contact someone within their target company's treasury team, asking to update their bank account details. The treasury operative, believing they are speaking to their usual contact, then updates the bank details in their internal ERP system and payments thereafter are directed to the fraudster – until flagged by the bank, payer or payee.

Many of these techniques are underpinned by so-called "social engineering", where a fraudster uses social media channels to gather information on a company and its employees. For instance, a fraudster may learn that someone has taken a new role on a team and chose to capitalise on the vulnerability this creates by contacting them and pretending to be their colleague to build trust. After that trust has been established, the fraudster can ask for payment details to be changed without arousing suspicion.

Preventing payment fraud

With fraud ever-present, how can corporates manage the risks? According to Thomas Stosberg, Director of Cash Management Sales Structuring at Deutsche Bank, it's important for corporates to focus on four key pillars. "We recommend that companies promote awareness of the common risks among their staff, audit their processes to ensure consistency and security, conduct an organisational risk assessment which outlines a clear segregation of duties across branches, and implement innovative technology solutions to help catch any attempts as early as possible."

Foster awareness

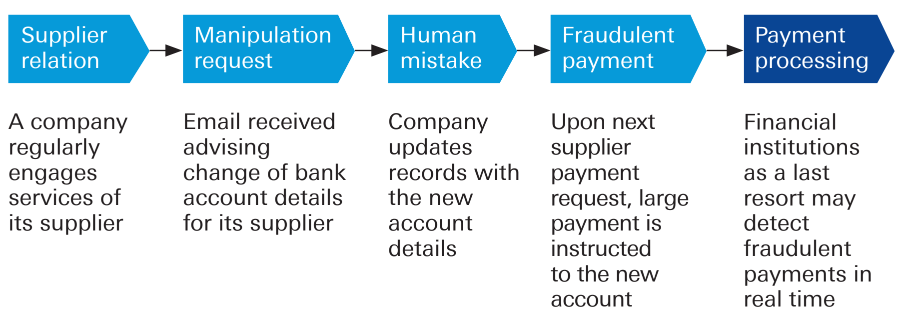
Human error is one of the most common entry points for fraudsters. To counteract this, a critical first step is to ensure all employees are up to date with the most popular fraud techniques and well versed in their company's security protocols. There are several ways to do this, including providing training to all staff as standard, followed by regular refresher sessions on prevailing fraud techniques.

These sessions can also look to teach staff how to check for red flags, such as late changes to payment instructions, spoof email addresses and subtly wrong domain names, and provide scenario planning sessions to coach team members on how to react when a suspicious transaction is flagged.

Audit processes

While it may seem like a logical step, auditing a company's practices with regard to payment processing and fraud prevention can often be overlooked due to the complex and time-consuming nature of this exercise. According to Hauser, "Corporates need to look across their entire operation, which may include different departments, subsidiaries and markets. The first step is to carry out a full audit of each process and protocol which finally triggers a payment

Figure 2: Man-in-the-middle attack – invoice redirect fraud



Source: Deutsche Bank

Photography: Getty

US$10.5trn

The expected cost of global cybercrime by 2025

Source: Cybersecurity Ventures

and then to look into any gaps that might be left. Corporates should highlight any geographical or divisional differences and any issues these might cause."

The audit can then help to inform the overarching fraud prevention strategy. For example, this can include implementing measures such as the six- or eight-eye principle, where – in addition to an established two-approver standard – a third or even fourth individual has to approve a payment instruction (depending on the underlying amount and fraud risk). Another measure is the call-back principle, where changes to the account are verified with an alternative contact person at the supplier via a phone call.

At Xylem – a large American water technology provider – the treasury team has implemented a robust set of processes to prevent fraud. "We see a range of different types of payment fraud attempts – from basic phishing emails to more sophisticated attempts, such as man-in-the-middle," says Aaron Johnston, Senior Manager, Treasury, Xylem. "We have incorporated a number of steps to prevent fraud, including a standard protocol for when any bank account change request comes through via email. The first step is to call the number that is logged in our system. If a phone number is not available through the system, then we will ask for confirmation of the last two payments made, the bank account number and details of their internal contact. We then check these details against our system to confirm that it is a legitimate change."

Implement a robust structure

Apart from robust processes it is also important that the organisational structures are fit for purpose. All departments – from the account payables team, finance and treasury, to the account receivables team, HR and the CEO's office – involved in the transfer of funds have a dedicated organisational risk assessment, with a clear segregation of duties. This can then be taken one step further and used to create a comprehensive risk matrix that incorporates every part of the business. This should also be reviewed and refreshed regularly.

Leverage technology

Real-time pre-validation measures, such as the SWIFT Beneficiary Account Validation (BAV) service, which was launched by a group of banks including Deutsche Bank in late 2021, can provide yet another line of defence. This preventative solution ensures payments are being sent to the intended beneficiary using the correct account details, by validating the information via SWIFT.

"The benefits of SWIFT BAV will be significant," said Marc Recker, Global Head of Product, Institutional Cash Management, at Deutsche Bank. "It will play an important role in the new age of fraud prevention, as it automatically verifies that payments are going to the right people and the right accounts in real time." For instance, when a treasury operative receives an invoice, they can first run the payee details through the SWIFT BAV service. The system will then recognise whether the beneficiary details match those of the intended recipient or not – alerting the company to a likely fraud attempt.

Moreover, the service could ease the onboarding on suppliers, adds Jose-M Buey, Global Head of Core Platforms and Accounts Solutions, Deutsche Bank: "The old process had our clients manually calling and checking each payment detail with each supplier. With SWIFT BAV, this process could be automated, and all supplier account names and numbers could be verified in real time." However, in order for the service to deliver its true benefit, more banks need to join the network.

To spot fraud attempts before it is too late, corporates can also carry out comprehensive risk assessments to look for outliers in payment flows. This is difficult because this contextual information often lies within several different data sets and systems across corporates and their providers. What's more, corporates often have several different banking partners – each involved with a set of payments. Without having access to the complete picture of payments, it is difficult to detect any fraudulent behaviour and easier for fraudsters to exploit the gaps.

> "We have incorporated a number of steps to prevent fraud
>
> Aaron Johnston, Senior Manager, Treasury, Xylem

One of the keys to solving this challenge is close collaboration between banks, corporates and technology vendors. By working together, these partners can look further upstream into the internal infrastructures of corporates, and share the payment information necessary to spot, and react to, fraudulent activity.

For instance, fraud prevention specialist TIS, together with Deutsche Bank, offers a solution that screens outgoing payments in real time by cross-checking them against a pool of historical payment data from a broad community of corporate participants, before assigning the beneficiary an overall trust score. This score is based on factors such as the number of times the payee has been paid, how much it has been paid and when it was last paid. Depending on the score, an alert management system is triggered to review the suspicious payment prior to execution.

It is important for corporates to foster awareness, audit their processes and organisational structure, and implement the necessary technologies to prevent fraud. And this is something that should be assessed regularly to ensure best practice. The fraud landscape is certainly evolving – but so too is the response. "By working together," concludes Deutsche Bank's Hauser, "the industry will be far better prepared to combat payment fraud in a holistic way, helping stay one step ahead of the fraudsters."

Deutsche Bank *flow* app

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Ushering in the ISO 20022 era

The migration of ISO 20022 promises to upend payments as we know them. *flow* looks beyond the upcoming deadlines to explore the long-term vision for the payments standard and the challenges that lie ahead for the industry

ISO 20022 has been many years in the making. First recognised by the International Organisation for Standardisation (ISO) in 2004, it was positioned as the global payment standard of the future – one that was both comprehensive in scope and flexible in nature.

However, it would take more than 10 years for momentum to build in its favour. The tipping point came as calls for faster payments grew louder, with demand coming from both retail and corporate banking customers. For banks to keep up with the expectation for near-instant payments around the clock, a next-generation market infrastructure would be needed – one that could offer seamless and quicker payments processing in support of digital business models.

These considerations led SWIFT, the global payments organisation, and the world's major central banks to agree on a common migration to ISO 20022. Fast forward to today, and the industry is well into its ISO 20022 journey – with the clock counting down to several significant milestones. By November 2022, a number of key infrastructures, including the Eurosystem, EBA Clearing and SWIFT, will have completed the first major milestone in the migration to ISO 20022 (see Figure 1).

> The faster the industry adopts the enhanced data… the more accurate AFC models will be.
>
> Christopher Gardner, Programme Manager at Deutsche Bank

Multiple benefits

The decision to migrate to ISO 20022 is a game-changer in payments processing. It promises greater interoperability between various settlement networks and will lead to simplified global business communication. As the standard is not bound to any existing technologies or processes, it will also be future-proof.

Moreover, compared with other formats, ISO 20022 introduces richer and more structured data components. This, in turn, increases the transparency of payments and supports financial institutions with their task of guaranteeing secure, straight-through payments processing and conforming to compliance regulations. For banks, this presents a host of opportunities, from offering enhanced customer services to completely re-evaluating their business models.

In particular, the richer data will have a significant impact on anti-financial crime (AFC) monitoring and surveillance. "The faster the industry adopts the enhanced data in addition to the schemes, the more accurate AFC models will be," says Christopher Gardner, Programme

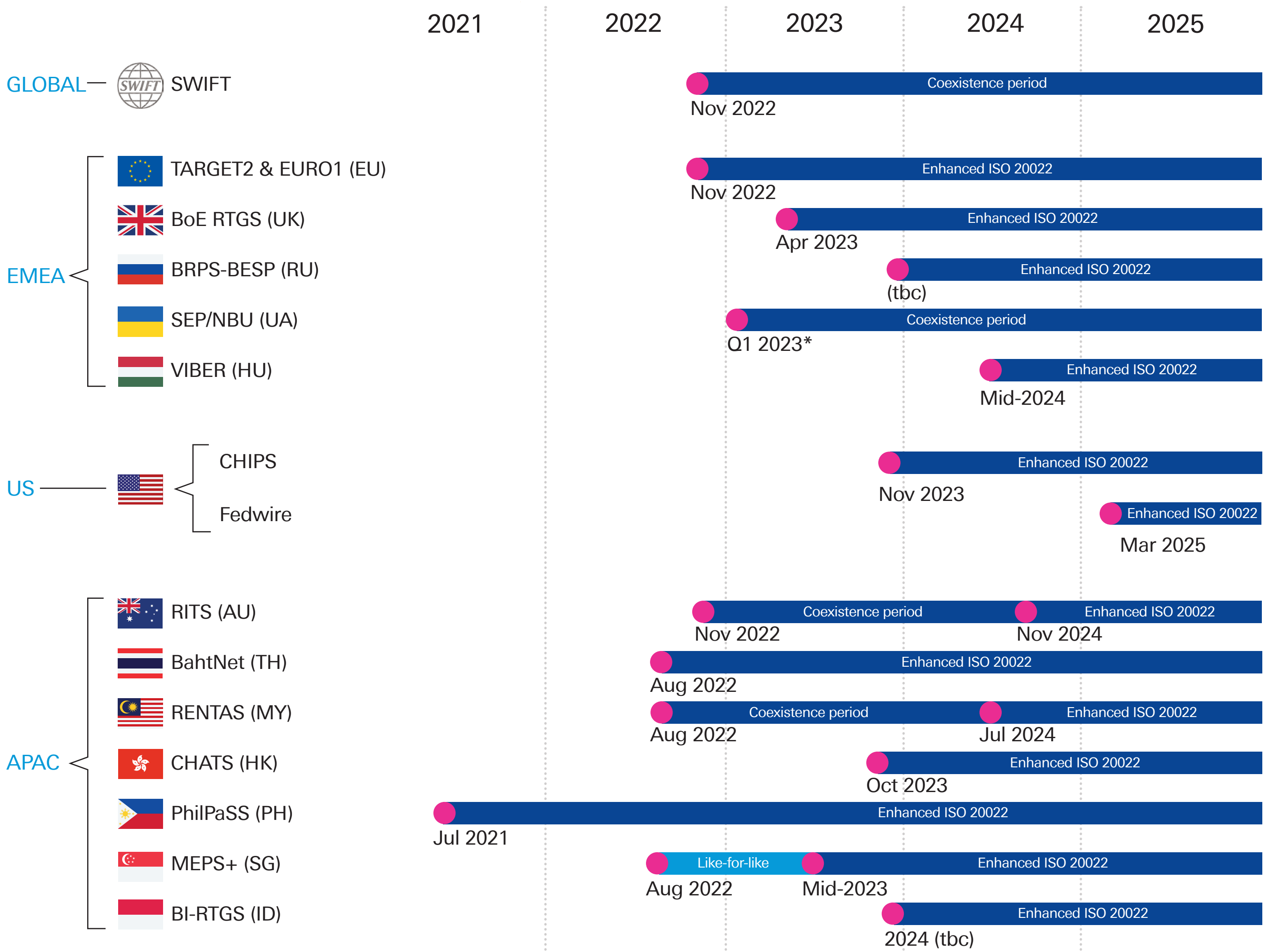
Photography: Alamy

11,000+

Number of banks that will need to migrate to ISO 20022

Deutsche Bank

Figure 1: Global ISO 20022 adoption overview



Corporate bank – Data as of June 2022
1. This overview includes DB Cash Management countries only. Please consult PMPG's document centre for the most comprehensive list of migrating Market Infrastructures
2. Like-for-like refers to an approach that implements a subset of ISO 20022 limited to the same functionality as the standard it replaces, e.g. MT
*The timeline has moved from August 2022 to Q1 2023, but there is still a lot of uncertainty surrounding the migration, due to the ongoing conflict in Ukraine

Source: Deutsche Bank

Manager at Deutsche Bank. By leveraging the Ultimate Debtor/Creditor address information – new to ISO 20022 – banks will, for example, be able to monitor the true initiator and destination of a payment, and better fight fraud as a result.

It is not only banks that stand to benefit. Corporates could also gain significantly, with standardised formats and processes for payment reporting and exception handling messages facilitating end-to-end automation, from invoicing and liquidity management to exception handling and reconciliation.

For example, delays in cross-border payments are often now caused by the need for manual compliance checks. "Think, for example, of a beneficiary living on Cuba Avenue, Staten Island, New York," says Christof Hofmann, Global Head of Corporate and Payment Solutions. "Any payment for a beneficiary with this address would likely involve the payment being stopped and manually investigated. In the future, 'Cuba' will be provided in the dedicated street name field, enabling this payment to be processed without any disruption, instantly."

Considering coexistence

It is important to note that the promised benefits of ISO 20022 will not be available overnight. From November 2022 to November 2025, there will be a coexistence period in the correspondent banking space during which some financial institutions will begin sending ISO 20022 messages, while others will rely on translation services to continue sending the existing Message Type (MT) messaging format.

Banks remaining on MT should note that, when receiving an ISO 20022 payment message from another agent, some data

> Training will be important because the flows will be different, and especially because some parts will be performed using ISO messages, while others will remain on MT
>
> Romain Reinhard,
> Head of Payments
> and Ancillary Services,
> Banque Internationale
> à Luxembourg

Figure 2: Why ISO 20022?

+ Benefits identified by the industry

- **EFFICIENCY GAINS**
  Increased efficiencies from a standardised and harmonised format of financial messaging, increased STP rate
- **COST SAVINGS**
  Potential simplification of cost intensive process, such as payment processing, investigations
- **DIGITAL COMPLIANCE**
  Automated analytics for various compliance purposes (i.e. sanctions screening) based on structured performance
- **NEW AND IMPROVED SERVICES**
  Enhanced customer satisfaction from improved services for corporate clients, addressing biggest pain points (e.g. reconciliation)

- Challenges identified by the industry

- **DATA TRUNCATION**
  Handling potential data truncation due to the coexistence of different messaging formats
- **IMPLEMENTATON COSTS**
  Significant investments and resources required until it releases anticipated benefits
- **STRUCTURED PARTY DATA**
  Changing static data and getting structured data from clients to provide structured name and address information
- **INDUSTRY-WIDE EFFORT**
  Industry-wide consensus (globally) of market requirements and standards required

Source: Deutsche Bank

truncation may be necessary due to the richness of the format. Due to the imperfect nature of the translation, it will therefore be necessary to have access to both the MT and the original ISO 20022 versions of the message for transaction due diligence, such as sanctions screening, creating additional challenges for those banks continuing to use MT messages.

SWIFT has understood that it needs to address these challenges, and one of the key tools will be its Transaction Manager solution. This will enable customers in a transaction to communicate in multiple formats and will be backwards-compatible with existing infrastructures. But this solution will not go fully live until March 2023, which means that the myriad challenges it seeks to fix will remain unsolved until then.

Beyond 2022

Over the last few months, all eyes have been on the industry's readiness ahead of the 2022 migration dates, but this is just the start of the ISO 20022 story.

The structured addresses ushered in by ISO 20022, for instance, will bring much-needed efficiency to payment processes. However, to start with structured addresses will remain optional in the cross-border payments space. It is expected that the market will move to structured addresses for debtor and creditor by the end of 2023. But the rules remain the same until November 2025: structured addresses are only required for 'new' parties (e.g. ultimate debtor, ultimate creditor) and highly recommended for others (e.g. debtor, creditor). By November 2025, this will be mandatory, meaning that all existing databases will have to be updated accordingly – or risk the payment being rejected.

Due to the nature of the discrepancies between the go-live of ISO 20022 and the go-live of certain mandatory aspects, one focus will be on getting teams up to speed using the new standard. "Training will be important because the flows will be different, and especially because some parts will be performed using ISO messages, while others will remain on MT," says Romain Reinhard, Head of Payments and Ancillary Services, Banque Internationale à Luxembourg.

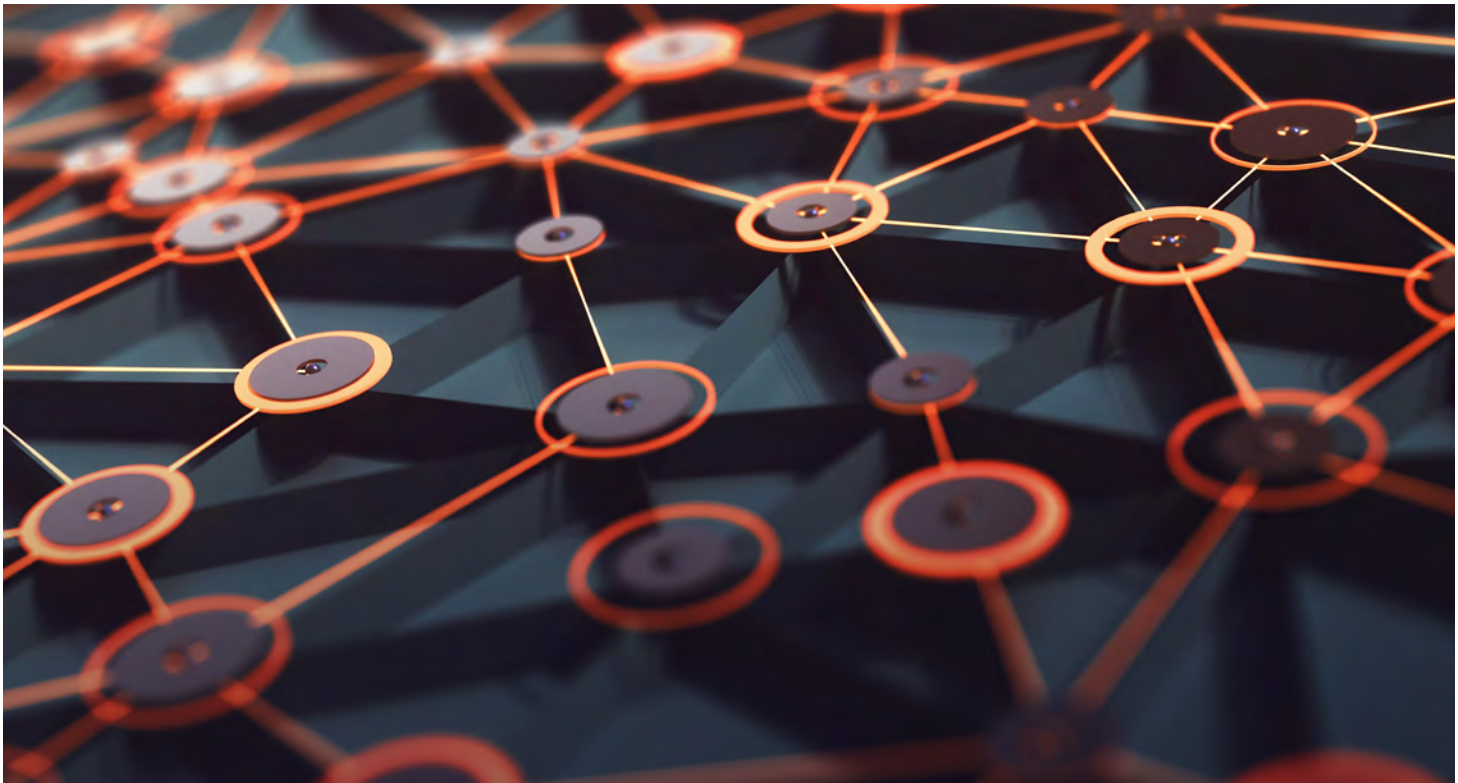
Some domestic systems also have mandatory aspects that will follow the go-live date. The Bank of England, for example, is planning to introduce mandatory purpose codes, category purpose codes, and legal entity identifiers (LEIs) for agents. These are planned to come into force by 2024 – though there is no strict deadline as yet, with the central bank keen to see how the migration itself goes first.

Work remains

The benefits of ISO 20022 cannot be unlocked without hard work. For an idea of the scale of the migration, think back to the transition to the Single Euro Payments Area, or the introduction of the euro.

Moreover, the impact extends beyond just core payments systems, touching everything from booking systems to embargo and know-your-customer systems, through to electronic banking, liquidity management and archiving. And ISO 20022 is not just about cash management – securities, trade finance, global markets and treasury departments will also need to be able to process the contained information and apply it elsewhere.

So, as we approach the deadlines, we must remember there is still more to be done.



THE BIG DEBATE

Gamechanger CBDC?

Central bank digital currencies (CBDCs) are gaining traction – but some corporate treasurers are missing a vision for token-based B2B payments, especially in Europe. *flow*'s Desirée Buchholz hosts a debate on the relevance of digital currencies for companies

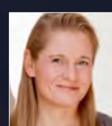
Central bank digital currencies (CBDCs) is no longer a buzz phrase with a background familiar only to the well-informed tech and payment communities. Over the past two years, CBDCs have found their way into the discussions of corporate treasurers, consumers, and even the broader public. This trend is driven by the fact that by June 2022, 105 countries, representing over 95% of global GDP, had started exploring a digital currency. The number has more than tripled since May 2020, according to a CBDC tracker published by the Atlantic Council.

The tracker also shows that 10 countries had launched a digital currency by March 2022 and another 16 were at the pilot stage – including leading economies such as South Korea and China. China's central bank, the People's Bank of China (PBOC), even used the Beijing 2022 Winter Olympic and Paralympic Games to globally showcase its digital currency, dubbed e-CNY.

Against these developments, the four largest central banks managing the world's most important currencies – in the US, the Euro Area, Japan, and the UK – are lagging behind. The European Central Bank (ECB), for example, only launched its investigation into the launch of a digital euro in October 2021, making autumn in 2026 the earliest that the concept could become a reality.

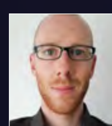
Professional perspectives

So, what do corporate treasurers think about these developments? Under what conditions would they like to use CBDCs for their payment processes? And what are the chances that current CBDC projects fulfil these wishes? *flow* set up a debate among four professionals:



Britta Döttger
Group Treasurer at Swiss pharma giant Hoffmann-La Roche

Martin Schlageter
Head of Treasury Operations at Hoffmann-La Roche

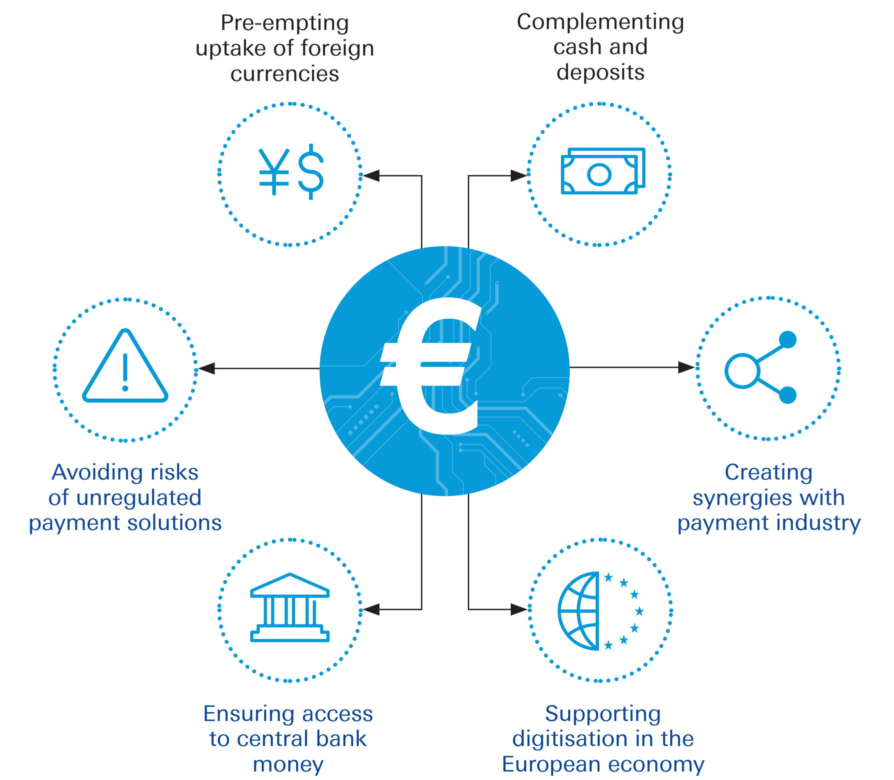


Alexander Bechtel
Head of Digital Assets & Currencies Strategy at Deutsche Bank

Jochen Siegert
Head of Asset Platforms at Deutsche Bank, Member of the Digital Euro Market Advisory Group of the European Central Bank

Photography: Alamy

Figure 1: Why the ECB wants to introduce a digital euro



Source: ECB

flow: *Alexander, to ensure that we all have a common understanding: What are central bank digital currencies?*
Alexander Bechtel: In general, we differentiate two different forms of money: central bank money and commercial bank money. In today's financial system, the former is available to end users only in the form of cash. Retail CBDCs would be an opportunity for the public to access central bank money in a digital form. This is what the ECB is planning with the digital euro and what China is doing with the e-CNY. However, there is a second version of a CBDC which is called 'wholesale CBDC'. Here, the use remains limited to the regulated banking sector – which translates into use cases that would mostly be limited to capital markets.

flow: *And what's the difference between an account-based and a token-based CBDC?*
Alexander Bechtel: This differentiation is relevant for retail CBDCs. Put simply, if a digital currency is token-based, the user can settle a payment without any intermediary. You could compare this with physical cash, where the payment is completed once the money is handed over. With account-based CBDCs, an intermediary has to verify the account holder's identity.

flow: *Britta, on a different occasion you revealed that you wished for CBDCs to become reality soon. Why is this the case and what form of CBDC were you thinking about?*
Britta Döttger: With over 90% of central banks investigating CBDCs, the introduction feels tangible, and China is front running. What's the purpose of a central bank? Ultimately, it is ensuring the wellbeing of the society – be it by controlling inflation, ensuring financial stability, and thereby supporting the economy. For me, the latter also encompasses facilitating digital business models. As Roche and other companies are increasingly transforming product and financial business activities to deliver greater value, existing payment systems no longer meet our needs. We still need several intermediaries to conduct a cross-border payment, which makes the process slow, costly, and fraud-prone. If central banks were to introduce token-based CBDCs, this could change. Central banks should play a key role in reshaping the future of money.

flow: *Jochen, you are a member of the Digital Euro Market Advisory Group of the ECB. Is a rethink taking place at the ECB?*
Jochen Siegert: The ECB has definitely understood the need to evaluate and most likely introduce a digital euro. In our advisory meetings, central bankers ask a lot of questions. Based on this information, they will decide on the design of the digital euro. Right now, we know that the ECB is thinking about making the digital euro available for retail payments. The ECB is very clear that the digital euro must deliver a perceptible benefit to the consumer compared to the status quo.
Britta Döttger: I am a bit worried to hear that B2B payments currently don't play a role for the ECB. To enable digital business models, improve speed, enhance security, lower costs, and improve cross-border payments, we need a vision for B2B payments as well. For Europe, introducing a smart, digital euro could be a great foundation of innovation while safeguarding European sovereignty and reducing the dominance of foreign payment service providers.
Jochen Siegert: To clarify, the ECB has not ruled out opening the digital euro for B2B payments. However, it is thinking in phases and will start with retail payments.

> The ECB is very clear that the digital euro must deliver a perceptible benefit to the consumer compared to the status quo
>
> Jochen Siegert, Head of Asset Platforms at Deutsche Bank, Member of the Digital Euro Market Advisory Group of the European Central Bank (ECB)

> From our experience, payment triggers solve about 99% of the blockchain use cases we are currently observing in the corporate space
>
> Alexander Bechtel, Head of Digital Assets & Currencies Strategy, Deutsche Bank

flow: *Why is this the case? Does the ECB believe that the value-add is higher for B2C payments than for B2B?*

Alexander Bechtel: I think one important reason for this is that central banks need to limit the risk for the commercial banking system. If consumers hold CBDCs as a direct replacement for physical cash, that's not a problem. But if they withdraw bank deposits and store the money in their central bank account instead, this could become a threat to financial stability. Today, about 90% of the money that is circulating is bank deposits. With the introduction of a retail CBDC, this relation could revert – especially if CBDCs will be used for large-scale B2B payments.

flow: *Martin, over the past few years Roche has spent a lot of time centralising and standardising its payments processes. In your view, which incumbent payment system problems could CBDCs solve?*

Martin Schlageter: As a cash manager you are working between two worlds: the physical supply chain, where we buy from our suppliers and sell to our customers, and the financial world where payments are made. At Roche, our goal is to integrate these two worlds end-to-end. That's why we have recently launched a proof of concept together with Deutsche Bank to automate and integrate the order process via smart contracts until the payment to the supplier. Up to now, order intake, checking of invoices, establishing bank data and initiation and approval of payments are sequentially done in different systems. In the future, we want to increase efficiencies in the purchase-to-pay process and eliminate costly and error-prone reconciliation steps. We strongly believe that token-based CBDCs are ultimately the best way to accelerate and improve the last step in this chain – in other words, the payment.

flow: *But wouldn't that be possible with incumbent payment systems as well?*

Martin Schlageter: For a start, it could be possible. In our PoC, we are drawing on so-called payment triggers to connect the blockchain platform that we use to make payments with our existing payment systems. However, this can only be an interim solution. From our treasury perspective, we want to strengthen our business models and therefore we need to be as close to business processes as possible. We believe that a programmable CBDC best meets this requirement.

Britta Döttger: Moreover, cash on chain transactions would also help to prevent payment fraud, as payment data originates from the blockchain and could only be changed if all parties agreed to it.

Alexander Bechtel: I agree, CBDCs are the best solution as they allow for frictionless automation. However, from our experience, payment triggers solve about 99% of the blockchain use cases we are currently observing in the corporate space. In a nutshell, these triggers are bridging the gap between blockchain platforms and existing payment systems such as SEPA or SWIFT. This allows companies to seamlessly include and automate payments on their trade finance, procurement, billing or Internet of Things (IoT) platforms. Furthermore, the question is who should put cash on chain: do we need central banks, or are commercial banks better positioned to offer this service?

> We still need several intermediaries to conduct a cross-border payment, which makes the process slow, costly and fraud-prone. If central banks were to introduce token-based CBDCs, this could change
>
> Britta Döttger, Group Treasurer, Hoffmann-La Roche

Advantages of token-based CBDCs for corporates

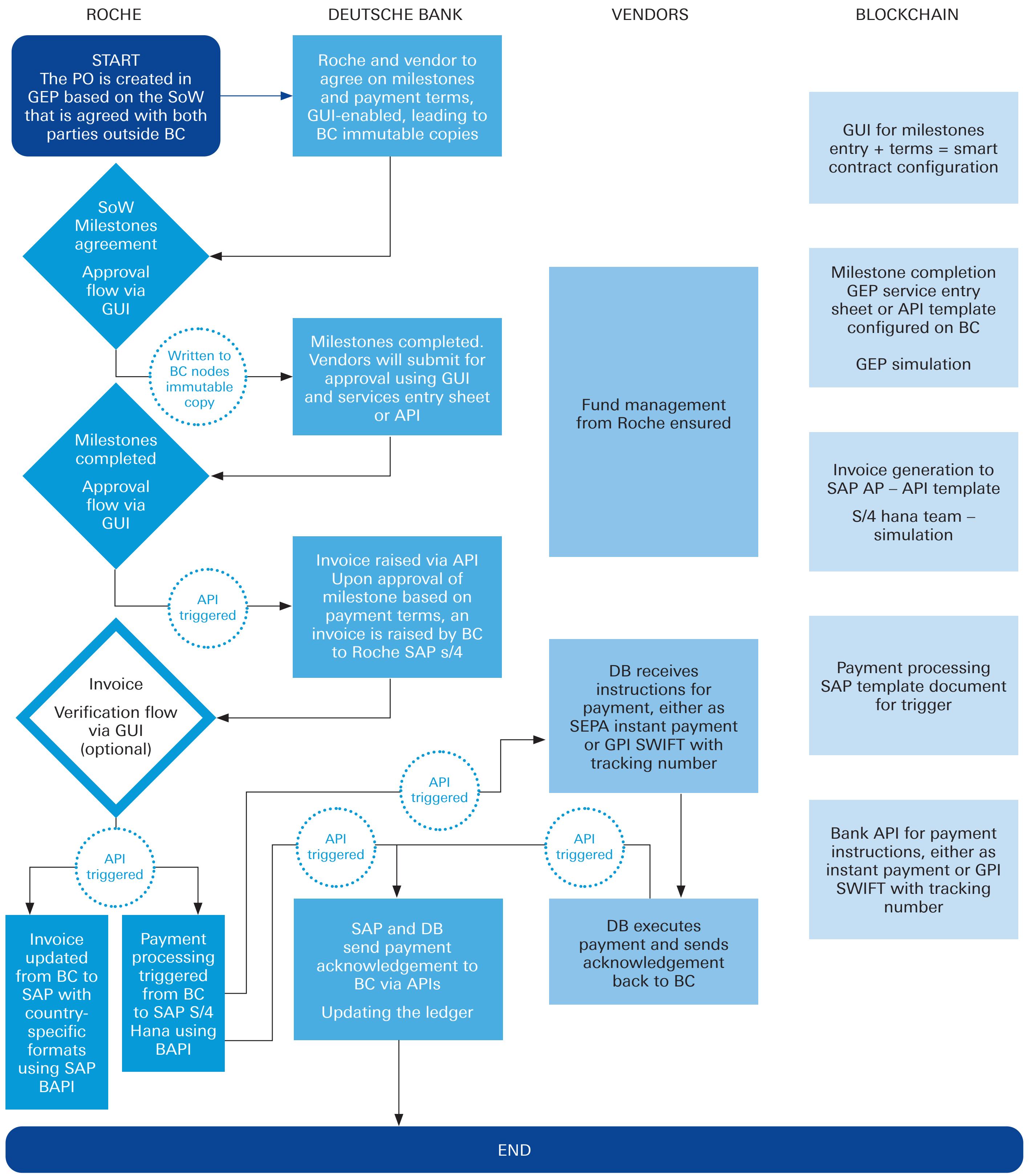
- Supporting digital business models by enabling payment automation on (blockchain) platforms for trade finance, procurement, IoT, etc
- Direct access to central bank money that eliminates counterparty risk
- Speeding up (cross-border) payment processes
- Supporting payment fraud prevention through consensus mechanism

Possible barriers to adoption

- Most CBDC projects are still at an early stage, few are launched yet
- Interoperability: the need to agree common global standards for cross-border payment based on CBDCs
- Missing regulation, e.g. how to deal with machine-initiated payments
- Companies need to ramp up internal processes

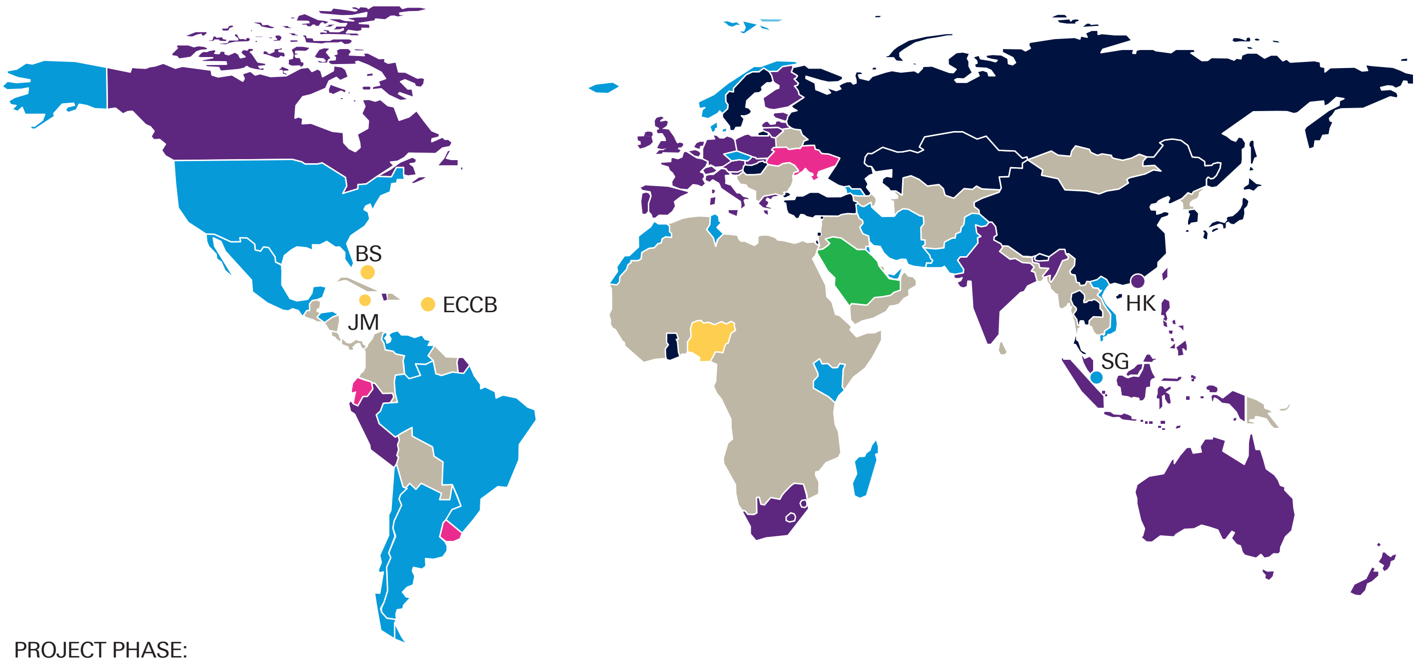
> At Roche, our goal is to integrate the physical supply chain with the financial ecosystem where payments are truly made end-to-end
>
> Martin Schlageter, Head of Treasury Operations, Hoffmann-La Roche

Figure 2: Smart contract PoC using blockchain and digital payments



Source: Roche

Figure 3: CBDC research and pilots around the world



PROJECT PHASE:

- Live retail CBDC
- Retail Pilot ongoing
- Retail Pilot completed
- Retail research
- Retail research and wholesale project
- Wholesale project
- N/A

BS = The Bahamas; ECCB = Eastern Caribbean Central Bank; HK = Hong Kong SAR; JM = Jamaica; SG = Singapore. The use of this map does not constitute, and should not be construed as constituting, an expression of a position by the BIS regarding the legal status of or sovereignty of any territory or its authorities, to the delimitation of international frontiers and boundaries and/or to the name and designation of any territory, city or area. Source: R Auer, G Cornell; and J Frost (2020), "Rise of the central bank digital currencies: drivers, approaches and technologies", BIS working papers No 880, August. Updated as of 1 July 2022.

***flow**: And what's your view on that?*
Alexander Bechtel: I believe this is a service that banks should offer their customers. They are more innovative and closer to the corporate world, which allows us to tailor solutions to our clients' requirements. This is something that central banks wouldn't be able to do, and it is not their mandate.
Britta Döttger: I agree, and I still see a role for central banks, given that we don't need different solutions from each bank. With central banks on board, there is an opportunity to develop global standards around cash on chain. Up to now, I see few banks that are as active as Deutsche Bank in this space, which is why I would be reluctant to leave it entirely to the private sector to bring cash on chain.

***flow**: Alexander, do you expect progress with respect to getting cash on chain?*
Alexander Bechtel: Yes, I think we will see progress over the next months and years. But let me explain why the banking industry isn't moving quicker when it comes to bringing cash on chain. We face the challenge that a token-based currency needs to be scalable, fungible and interoperable to deliver benefits. It's a tough task as it requires close coordination across the banking sector. At the same time, we need to make sure to adhere to new regulation, such as the Markets in Crypto-Assets Regulation (MiCAR). We are working on it – as Deutsche Bank and as an industry.

***flow**: For cross-border payments via CBDCs, global coordination is also needed. Which initiatives should corporates be aware of?*
Alexander Bechtel: The Bank for International Settlements (BIS) is working on a wholesale CBDC to increase the efficiency of cross-border payments. The idea is to build a multi-CBDC system which follows a single set of rules, a single technical system, and would essentially lead to the creation of a new multilateral payment platform. However, this is a complex model as it requires solid cooperation among central banks. So, we won't have this up and running soon.

***flow**: But if put in place, what would that mean for SWIFT and the current corresponding banking systems?*
Britta Döttger: If this becomes reality, I think it would be an alternative to SWIFT and existing clearing systems. Such a payment platform would not only allow for messaging but also for settlement. From a corporate point of view, it would be great to have such a system.

Four themes on the future of working capital finance

Do traditional working capital tools still meet business liquidity needs? A *flow* special white paper outlines how ongoing supply chain disruptions, digitalisation and sustainability considerations could shape the future of working capital finance – and what this means for treasurers

Asset finance is in transition. Triggered by interrupted supply chains following the outbreak of the Covid-19 pandemic and the war in Ukraine, companies, as well as entire countries, are prioritising security of supply over reducing storage costs. This departure from once-esteemed just-in-time thinking could be accelerated by hikes in the cost of raw materials and energy, as well as shortages of intermediate products. Even though supply delivery times eased have eased a bit since the start of 2022, manufacturers in the euro area still need to wait a long time before receiving their orders (see Figure 1).

Understanding how supply chains can become more resilient is therefore becoming a top priority for both governments and companies. Accompanying this is the need to rethink working capital financing. "Going forward, corporates will need to balance operational stability from larger inventories against the resulting reduced profitability," says Hauke Burkhardt, Global Head of Lending at Deutsche Bank Corporate Bank.

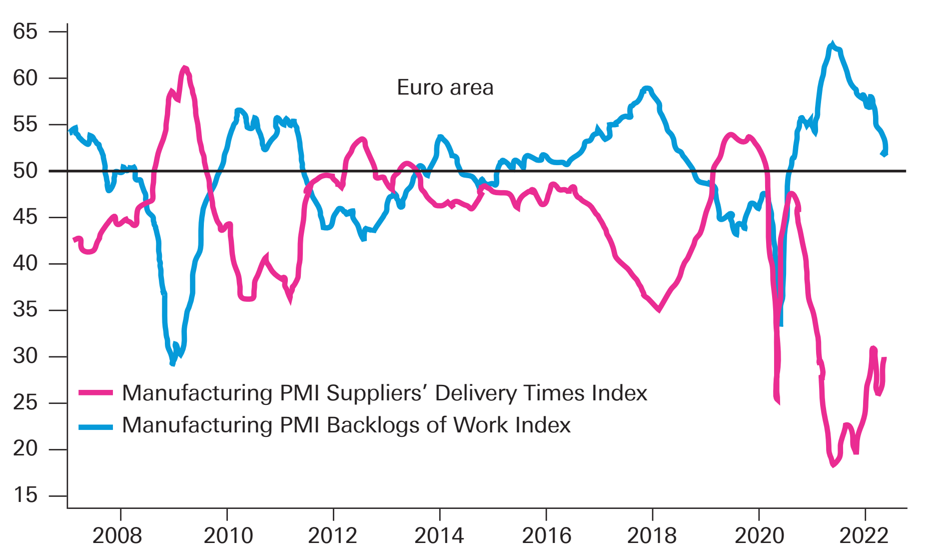
However, building resilience is not the only challenge to working capital management. In the *flow* special white paper *Working capital finance – the future*, which was published in January 2022 prior to the outbreak of war in Ukraine, experts from Deutsche Bank Corporate Bank teamed up with financial managers of leading German corporates to analyse four major themes which will reshape the future of working capital financing. This article summarises the key messages of each theme.

Theme 1: Strategic inventory management is crucial

To strengthen the resilience of supply chains, the white paper states that companies need new sourcing strategies. It names three basic approaches to ensuring procurement security:

- **Supplier retention and diversification:** Targeted investment in supplier loyalty, such as in supplier finance programmes, strengthens partnerships and binds parties closer together, even in crisis situations
- **Insourcing or local procurement:** International supply chains are particularly susceptible to disruption. Accordingly, it will become even more important for companies to have suppliers on-site in the future. Local sourcing also reduces dependence on container capacity availability and volatile freight rates
- **Rising inventory levels:** Supply chains become more robust when companies shift their inventory management strategy from just-in-time (JIT) to just-in-case (JIC). Specifically, this means that products are bought to be kept in stock as protection against unexpected increases in demand or price

Figure 1: Supply delivery times in the manufacturing sector



Source: Deutsche Bank, S&P Global, Macrobond

However, the JIC strategy also ties up more capital because of this increased inventory, which means that companies require new financing solutions (see Figure 2). "The goal must therefore be to allow companies to ramp up inventories while maintaining balance sheet efficiency," says Burkhardt. One way to do so, the white paper points out, is by using inventory finance. In essence, this is asset-based interim financing based on the value of the respective preliminary products. "While this solution is particularly suitable for companies with high inventory levels and low stock turnover, they are generally more expensive than the established working capital offerings – receivables purchasing and supplier financing," he continues.

Theme 2: ESG financing is gaining traction

The global megatrend towards a more sustainable world economy is also having an impact on supply chains. The EU, for example, plans to hold companies accountable for ensuring that human rights are respected and environmental impacts are reduced throughout their value chains. This is known as the EU Supply Chain Law, and is expected to be enforced in 2025.

In the future, companies will therefore be required to track, document and verify their supply chains more closely than ever. For this to be possible, they should initiate a comprehensive evaluation of their existing compliance and due diligence programmes, the white paper states.

While database providers or external consultants can help companies with this monitoring, banks can also assist companies to improve sustainability performance in their supply chains. Deutsche Bank has, for example, recently linked the existing supply chain finance programme of German consumer goods company Henkel to the suppliers' ESG ratings. By improving their ESG rating, suppliers can reduce financing costs in the supply chain. And this is of interest for other companies as well: in a 2021 survey of corporate treasurers, about half of the 125 respondents said they could envision using such programmes to incentivise their suppliers to be more sustainable.

Theme 3: Asset-as-a-Service schemes increase in popularity

Another major megatrend that will shape future working capital financing is the Internet of Things (IoT). "There will soon come a time when customers will no longer have to buy machines or equipment outright, but will also have the option to pay based on actual capacity and asset utilisation," says Jochen Siegert, Head of Asset Platforms at Deutsche Bank Corporate Bank.

Figure 2: Strategies for more procurement and price security alongside suitable working capital financing solutions

Strategy	Financing requirements	Total assets	Profitability	Financing requirements
Supplier loyalty and diversification of suppliers	↔	↔	↘	Supplier finance Dynamix discounting Reverse factoring
Insourcing and local procurement	↑	↔	↓	Investment loans
Raising stockpiling	↑	↑	↓	Inventory finance

Source: Deutsche Bank

This approach is also described as 'Capex-to-opex'. Customers can thus make their cost base more flexible and adapt it to the sales of their end products. In turn, machine and plant manufacturers can offer their customers additional services and complementary services such as maintenance ('servitisation').

In this environment, Asset-as-a-Service (AaaS) models will gain importance, explains the white paper. "The central concept here is that neither the balance sheet of the plant manufacturer nor that of the plant user becomes the limiting factor," says Siegert. This is made possible through a range of financing and risk management solutions presented on or off the balance sheet.

Yet, as the paper points out, AaaS is currently in its infancy – and all parties involved still have further work to do before they can successfully implement this business and financing model.

Theme 4: Ecosystems and fintechs permanently alter the structure of working capital financing

Finally, the topic of working capital financing has, in recent years, increasingly become the focus of fintechs and technology groups. These new market players want to create added value for companies through creative solutions and user-friendly platforms, the white paper outlines. The US tech giant Amazon is, for example, partnering with fintech Lendistry to offer short-term financing for Amazon sellers and, in conjunction with ING Germany, financing with terms of up to 12 months.

According to the white paper, the key for banks will therefore be to open their platforms up to the right fintechs. As one example of collaboration with fintechs, the report names Deutsche Bank's investment in Traxpay. Companies can use this platform to combine different working capital solutions – like reverse factoring, dynamic discounting and digital forfaiting. Another example that demonstrates how ecosystems can help improve working capital financing is the Trade Information Network, which was established in 2018 by six banks, including Deutsche Bank, to improve companies' access to trade finance solutions.

The white paper ends with the conclusion that finance managers should "start looking today at how to equip their working capital financing for this multidimensional transformation". As the world is changing, so are the requirements for corporate treasurers when it comes to working capital.

Download the full white paper

Use your smartphone to scan the QR code below and download *Working capital finance – the future* here

Editor's selection

What else is going on in cash management? We have assembled the top three essential reading items from our *flow* website. These are our editorial content highlights

Trip.com's journey towards a digital treasury

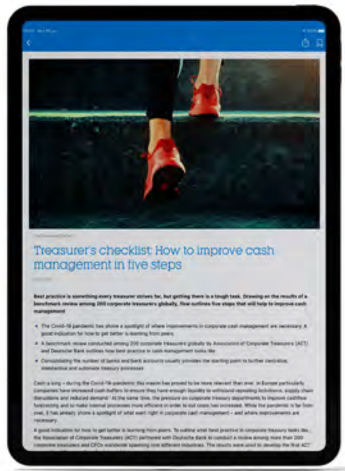
Trip.com Group is one of the world's largest online travel agencies operating platforms for booking flights, hotels, trains, car rentals and attraction tickets. As the company aims to regain its pre-pandemic international growth path, this creates new challenges for the treasury department. "Whenever the business introduces a new product – which often happens within one or two weeks as we are in the tech space – we need to incorporate this into our treasury processes," explains Xuelin Chen, Director Group Treasury, Trip.com Group.

Therefore, in 2021, Trip.com partnered with Deutsche Bank in a proof of concept (PoC) to standardise and automate treasury processes. This case study explains how the company uses process mining to identify and remove pain points in its FX payment process, and looks at the next digital treasury projects in Trip.com's pipeline.

Keeping the SWIFT network secure

The Bangladesh Bank heist was a turning point for the financial industry. In February 2016, hackers manipulated the internal systems of the Bangladesh central bank by deploying trusted Windows software. The attackers then issued bogus payment requests via the SWIFT network to illegally transfer close to US$951m. While most of the funds could be recovered, this was a wake-up call, and led SWIFT to introduce its Customer Security Programme (CSP) to ensure that banks put in place defences against cyberattacks to protect the integrity of the entire network.

However, as cybercriminals ramp up their efforts and new fraud techniques evolve, SWIFT is regularly updating its Customer Control Framework. This article summarises the upcoming changes and how banks can prepare for staying compliant, while also shedding light on the difficult question of how to define and identify abnormal behaviour.



Treasurer's checklist: How to improve cash management in five steps

What makes a good treasury? As finance departments need to keep pace with the digitalisation of the business, this question has become more important than ever. To outline what best practice in corporate treasury looks like, Deutsche Bank partnered with the Association of Corporate Treasurers (ACT) to conduct a review among more than 200 corporate treasurers and CFOs around the world.

Drawing on these detailed results, *flow* selected five basic steps that are necessary to reach best practice in cash management:

- Step 1: Rationalise the number of bank accounts
- Step 2: Increase centralisation by using in-house banks
- Step 3: Improve cashflow forecasting
- Step 4: Utilise emerging technologies
- Step 5: Improve the handling with surplus cash

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Trade Finance and Lending

A closer look at transformational infrastructure, critical commodities for clean energy and smart procurement

3,800km

Rail network to be constructed between 2020 and 2035

Source: Ghana Railway Development Authority

Accra Central Station, start of the line to Kumasi

Transforming Ghana's railway infrastructure

In many developing economies, growth relies on cross-border trade aided by robust logistics infrastructure. *flow*'s Clarissa Dann looks at a remarkable collaboration between international banks and export credit agencies to help Ghana improve its rail network and remove freight and passengers from the roads

Railway networks first arrived in sub-Saharan Africa during the second half of the 19th century, with the main purpose of transporting natural resources from mines to ports – often with little benefit to the communities and would-be passengers along the way.

Built during the British colonial period of 1874 to 1956, the Ghanaian railways that remain today, and are still operational, come to barely 13% of the approximately 947km of railways that existed at independence in 1957. These railways were narrow-gauge, single-track lines with rolling stock that had deteriorated through lack of maintenance. More than a century after it was built, Ghana's small but economically vital rail network is undergoing major development as part of the Ghana Railway Master Plan, first announced in 2013 and refined in 2020.

> The completion of the line will boost economic activities
>
> Ken Ofori-Atta, Minister of Finance for the Republic of Ghana

Ghana's Railway Master Plan

The Master Plan now comprises 3,800km of rail network to be constructed over a period of 15 years, between 2020 and 2035, making it easier, cheaper and safer to travel. The revamped rail network provides a cleaner alternative to road-based travel and freight transport in private cars and trucks.

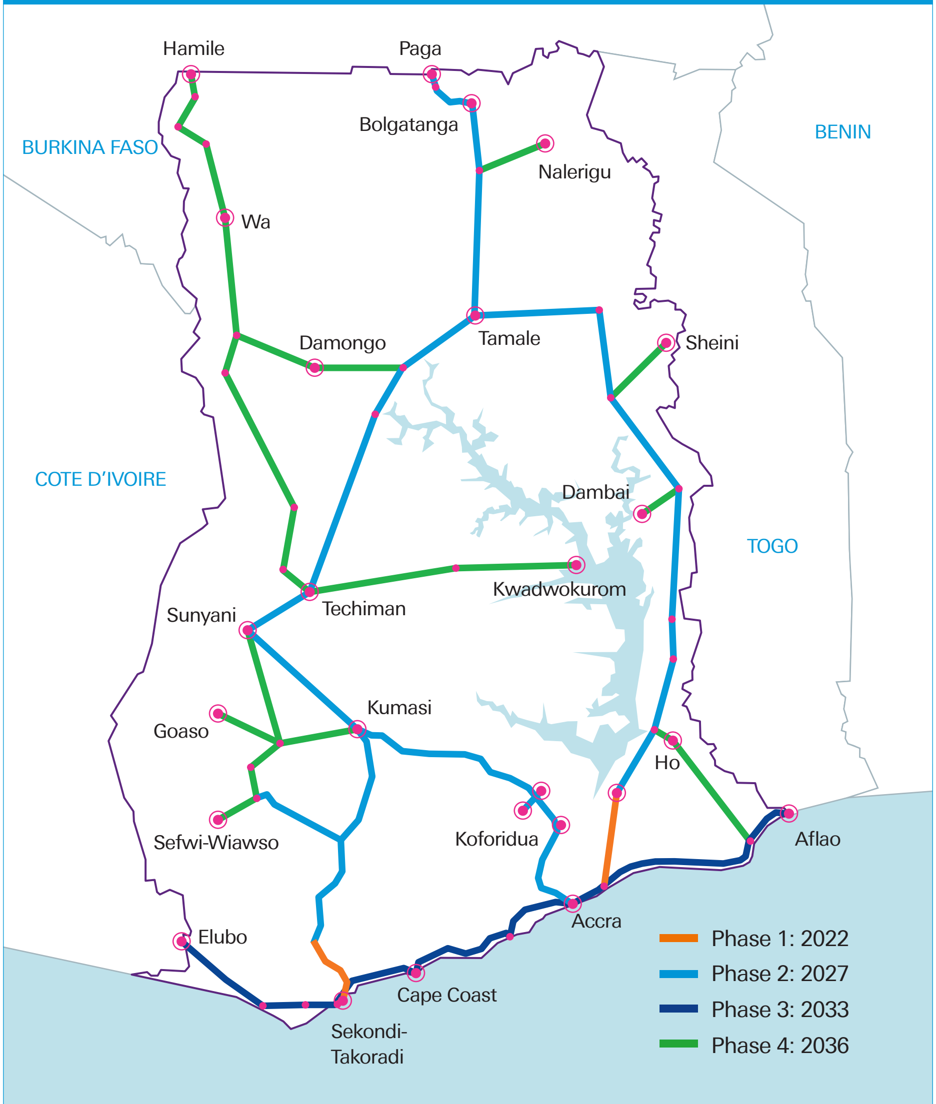
In 2017, the Ministry of Railway Development created the Ghana Railway Development Authority (GRDA) to focus solely on the new government's revamp of the railway sector. The existing infrastructure owned by the GRDA consisted of three lines: the Western, Eastern and Central Lines.

One of the reasons why the rehabilitation of the Western Line – which stretched 340km from the port of Takoradi to Kumasi – was prioritised was because of the rich natural resources available in this region, such as cocoa, bauxite and manganese. Takoradi is the main export port, and as such the Western Line is crucial to further developing Ghana's export industry – but currently only 66km is operational.

However, according to the Master Plan, the main purpose of Ghana's rail project is to reduce high-density road traffic congestion by removing freight and passengers from its roads. Rising levels of freight and passengers have caused levels of congestion that compromise public safety and workforce productivity, as well as cause environmental degradation. Shorter commuting times, providing better access to markets and minimising road traffic accidents were therefore huge benefits of this project. From January to October 2020, nearly 12,100 road traffic accidents were recorded in Ghana, involving 20,400 vehicles. Statistics from the National Road Safety Authority and The Accident Network Law Group indicate that road traffic accidents cost the West African nation 1.6% of GDP annually, which translates into about US$165m.

In addition, the Master Plan noted that modelled impacts of road use emissions were estimated to contribute more than US$2m in emissions-related costs by 2027, and around US$47m by 2036.

Figure 1: The Ghana Railway Master Plan



Source: Review of Railway Master Plan of Ghana (2013), Ghana Railway Development Authority

About the project

A key part of this particular development is the stretch of rail from Takoradi Port up into the Huni Valley – a 102km track forming a core element of the wider Western Line development running from the port to Kumasi, with a branch route into Awaso. It is designed to carry both freight and passenger services up to maximum speeds of 120km/h.

Commenting on the project, Ken Ofori-Atta, Minister of Finance for the Republic of Ghana, said: "This project is part of Ghana's railway infrastructure plan and has been earmarked for implementation by government and will be the single biggest railway investment by the country, post-independence. The Western Line is key to the haulage of agricultural produce and minerals from the Middle Belt to Takoradi Port in the south of Ghana. The corridor is home to key bauxite mines, which are the bedrock of the country's Integrated Bauxite Aluminium Masterplan. The completion of the line will boost economic activities along the corridor, and will reduce cost and time of transporting goods and passengers between the two ends."

The project includes the upgrade of the existing railway infrastructure between Takoradi Port and Huni Valley, allowing for standard gauge rail lines to be installed, and some realignments, so that trains can run faster and more safely.

In June 2020, a commercial agreement was signed between the Republic of Ghana, represented by the GRDA, and Amandi Investment Ltd, for the engineering, procurement and construction of the Takoradi Port to Huni Valley section of the Western Line. Once the railway is completed and trains are running, the GRDA will take over responsibility for operating the railway.

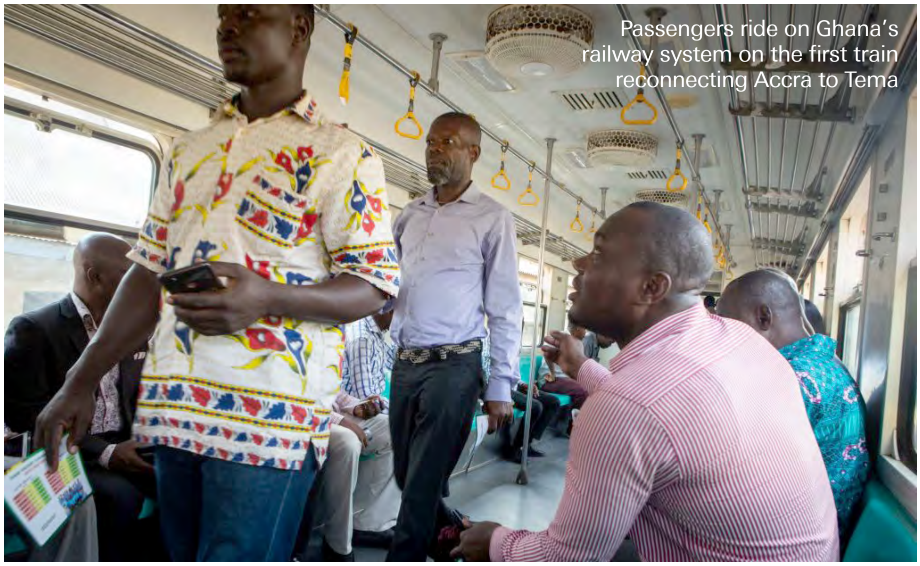
Sourcing the finance

While the Ghanaian government had financed other parts of the new railway network, it could not finance all of it, despite being a trusted Eurobond issuer. Bluebird Finance & Projects Ltd, a financial services firm based in Israel and Europe which specialises in putting together large-scale infrastructure projects in developing economies, was brought in by Amandi to look at financing sources from leading international banks, export credit agencies and the insurance sector, since Ghana's Ministry of Finance is a significant user of ECA finance. Deutsche Bank and Investec, with the support of Bluebird, structured and arranged the corresponding financing.

To comply with Ghana's national regulations, an Environmental Impact Statement (EIS) was undertaken for the entire Western Line project in 2015, on behalf of the GRDA.

Gaining access to international finance also requires an Environmental and Social Impact Assessment Report (ESIA), which identifies the potential for significant environmental and social impact and, in the words of the ESIA framework, finds solutions to "mitigate, avoid and reduce any potentially harmful effects during the lifecycle of the project". Mindful that any form of development will always have an impact on the environment and society, the assessment ensured that complete cancellation of the project remained an option. In other words, would the potential negative impacts of construction works be acceptable, when compared with the longer-term impact of reduced road traffic and better logistics for Ghana's imports and exports?

Extensive environmental and social impact assessment and due diligence was therefore undertaken by the lenders, as well as two specialist consulting firms. One of these was the Danish consultant engineering firm Ramboll, which published its report in September 2021. A summary of this is available on the GRDA website.


Passengers ride on Ghana's railway system on the first train reconnecting Accra to Tema

About the deal

Signed on 15 June 2021, this 18-year ECA facility with Swedish export credit agency EKN (of almost €523m, together with the tied five-year commercial loan of around €75.6m) was the largest ever financed rail investment in Ghana.

Covering the bulk of the project's costs, the loan is guaranteed by EKN and funded by Swedish Export Credit Corporation (SEK). Deutsche Bank acted as arranger. The €75m commercial loan to cover the down payment on the EKN-backed financing was arranged by Investec Bank and risk management specialists DNV – an accredited certifier with the Climate Bonds Standard.

DNV confirmed that the financing is a sustainable loan in line with the Green Loan Principles 2021 (GLP), the Social Loan Principles 2021 (SLP) and the Sustainability Bonds Guidelines (2018). DNV said: "We have adapted our Green and Social Loan Principles methodology, which incorporates the requirements of the GLP and SLP, to create a specific Sustainability Loan Eligibility Assessment Protocol (the Protocol). We also considered the Sustainability Bonds Guidelines (2018), which define a transaction as sustainable if the proceeds are applied to both green and social projects."

The firm added, "The overarching principle behind the criteria is that a Sustainability Loan should enable capital-raising and investment for new and existing projects with environmental and social benefits." The four criteria applied cover the use of proceeds, management of environmental impact, drawing down and disbursement of the facility, as well as ongoing reporting.

Swedish content

The support of EKN and SEK reflects the significant participation of Swedish sub-suppliers in the project, and the agencies' backing helps to secure a highly favourable borrowing rate.

In addition, a sizable share of the content is supplied by Swiss companies, which has allowed EKN to reinsure close to 49% of its risk at SERV, Switzerland's ECA. "This is a great way to participate in projects where total Swedish content falls short of the 30% share required by our statutes," said Malin Tegnér Larsen, senior underwriter at EKN.

Most of the Swedish suppliers of materials and equipment were coordinated by trading house Elof Hansson and integrator specialist XLIT. This includes construction equipment from VCE, signalling systems from Alstom and railway cars from Kiruna Wagon. The construction of the railway is managed by XLIT in partnership with Scandinavian Track Group (STG), which also engages and manages local labour.

"EKN and SEK are instrumental in securing a highly favourable borrowing rate that makes it possible to source high-quality products and services in the project," said Fredrik Agerhem at XLIT. "It's an important milestone in Ghana's economic growth story, creating jobs and providing sustainable transport for agricultural products, minerals and passengers for decades to come."

> "
> Deals like this make ECA finance so rewarding
>
> Ben Dobson, Director, Structured Trade & Export Finance, Deutsche Bank

"It is signing deals like this that makes working in ECA finance so rewarding," reflects Ben Dobson, from Deutsche Bank's Structured Trade & Export Finance team. He continues, "Our business is very much based on supporting our clients and, in this instance, we have helped both the importer and the GRDA as well as the Swedish exporters. However, more importantly, the new line will help improve the lives of millions of local people, who will soon be able to travel in Ghana by train – which is quicker, safer and has less of a carbon footprint than current travel by road."

Commercial loan

The tied commercial loan was Investec's third major ECA deal in Ghana in 2021. As an Anglo-South African banking and wealth management institution, this transaction extended its impact in sub-Saharan Africa. The deal included insuring a 15% commercial loan through the Export Credit Insurance Corporation of South Africa, making it possible for South African lenders to fund it.

Chris Mitman, Head of Export & Agency Finance at Investec, says: "We are delighted to have partnered with Deutsche Bank, MoF, ECIC, EKN, SEK and Bluebird to structure and bring this transaction to a successful financial close, at a time of unprecedented upheaval in the financial markets and, most importantly, realise a sustainable project which will benefit Ghana and the continent and its communities for the long-term."

With private risk mitigation disrupted significantly, 2021 was not the ideal time to get a deal over the line. But the commitment and determination of stakeholders to make it happen was vital.

Photography: istockphoto, Getty

Trade's sustainability challenge

The majority of world trade is unsustainable, and where it is not, it is a symptom of under-development, says trade economist Rebecca Harding. She shares her methodology for a trade sustainability score and demonstrates why trade policy needs to change

What happened to the ambitions of COP26? In December 2021, analysts and commentators alike were talking about 2022 as though it was likely to be the most important year for sustainability since the Paris Climate Accords. Policymakers set ambitious net-zero goals, there were further bans on deforestation and targets to reduce the amount of methane.

Alongside this, EU regulators in particular introduced stringent mandatory reporting requirements in the form of the Sustainability Financial Disclosures Regulation and the EU taxonomy, as well as in the form of the EC's proposal for a law on corporate sustainability obligations – known as the EU Supply Chain Law – expected to be enforced in 2025. By 2023, there will be requirements to report on both the 'E' and 'S' aspects of ESG (Environment, Social and Governance) criteria. The Security and Exchange Commission has similarly announced its intention to make sustainability reporting mandatory.

The crisis in Ukraine initially diverted attention away from this focus on sustainability. However, the EU's reliance on Russia for oil and gas in particular has put a spotlight on the need to source energy from alternative suppliers, as well as from alternative means. Financial transactions with Russia are now affecting the types of goods traded as well as individuals and entities. As a result of all this, the 'G' in ESG has increased in importance as well.

Yet the 'how' of all of this remains vague. The International Chamber of Commerce's joint position paper on measuring sustainable trade puts forward a proposal to use the Sustainable Development Goals (SDGs) as a framework for the approach to financial reporting. This is a useful framework, yet there is little guidance on exactly what needs to be measured, how it aligns with the SDGs and, most importantly of all, the base unit of measurement. It looks first at the challenges of measurement, and then looks at how to measure trade flows between countries, both within the EU and between the EU and the rest of the world, in a consistent way, using the match of product Harmonized System (HS) codes (those used in international customs and excise records as a means of allocating tariffs and duties), to the well-known SDGs as illustrated in the 17 SDG icons (see Figure 1).

Measuring ESG in practice

All countries have one thing in common – they trade in goods. So if it is possible to match the product or service to these SDGs, then a picture of the sustainability of a country through its profile of international trade can be drawn. The concept of the SDG is important because the regulations that are being developed are all based on these in one form or another – it is an agreed, standardised starting point, since both the definition of a product and of the SDGs are already agreed.

Photography: Alamy

The approach taken here is developed from the United Nations Economic and Social Commission for Asia and the Pacific (ESCAP) matching of SDGs to the HS codes first published in 2019, and the subsequently released 'R' code that provides a schema for matching SDGs to Non Tariff Measures (NTMs). The research conducted by the UN ESCAP both highlights the materiality of trade to the broader sustainability agenda, and similarly provides an excellent baseline for improving the matching. In particular, Coriolis Technologies has taken this paper and added to the number of products, as represented by their HS code, by undertaking an analysis for each product not covered in the paper, and using a global discourse analysis of how these products are reported in relation to the key words contained in the SDGs, positively or negatively.

In other words, the data looks at products only, and uses a country's product-based profile of trade using refined UN Comtrade data at a six-digit HS code level. It matches a country's imports and exports to the 17 SDGs in terms of their negative or positive contribution. Products are then weighted for the value of trade in each SDG from the trade profile of the country concerned.

Because some products count against several SDGs, the total annual values are higher than the value of trade in a country. For simplicity of comparison, the score is normalised on a ranking of -1 (where everything is negative) to +1 (where everything is positive). A score of 0 means that trade is neither negative nor positive.

So how sustainable is world trade?

The analysis concludes that world trade is negatively contributing to the SDGs. Overall, the score for trade across the world is -0.58. Nearly 80% of world trade contributes negatively to SDGs. In other words, in 2020 the negative impact was some US$122.7trn that undermined the achievement of SDGs. The equivalent value of positive contributions was just US$19.3trn, or 17%. The five factors contributing to SDGs most negatively (in value terms) are summarised in Figure 2.

If these figures were not worrying enough in their own right, the trade profiles of developed economies with heavy manufacturing bases are generally less sustainable than emerging economies. For example, intra-EU trade scored -0.68 in 2020, while imports into the EU as a whole scored 0.67, and exports -0.71.

This can be explained by a simple look at the EU's trade profile. The top five sectors that the bloc of 27 EU countries imports from and exports to the rest of the world are oil and gas, electricity, machinery, automotives and pharmaceuticals. As a result, adding these together, some US$4.7trn of trade in 2020 contributed negatively towards the elimination of hunger, US$2.2trn of trade contributed negatively towards responsible consumption and production, and a further US$1.6trn made negative contributions towards affordable and clean energy. In contrast, only US$2.3trn contributed positively towards decent work and only US$257.5bn went towards good health and wellbeing, even in a year where health was a primary public policy concern.

Intra-European trade has a similar profile – all of which reflects the fact that the EU's regional supply chains that fuel its exports to the rest of the world are equally unsustainable. Some of the eastern European nations within the EU score worst – in 2020, Hungary's exports to the rest of the EU were at -0.75 on the ranking of -1 to +1, for example. The reason was the country's heavy reliance on imports and exports of plastic components to automotive and electronic supply chains. Romania and Slovakia have similar trade profiles in terms of ESG. While all improved during 2020 compared with an average score since 2011, this was largely due to an overall drop in trade in automotives and oil and gas, rather than an intrinsic improvement in the sustainability of trade.

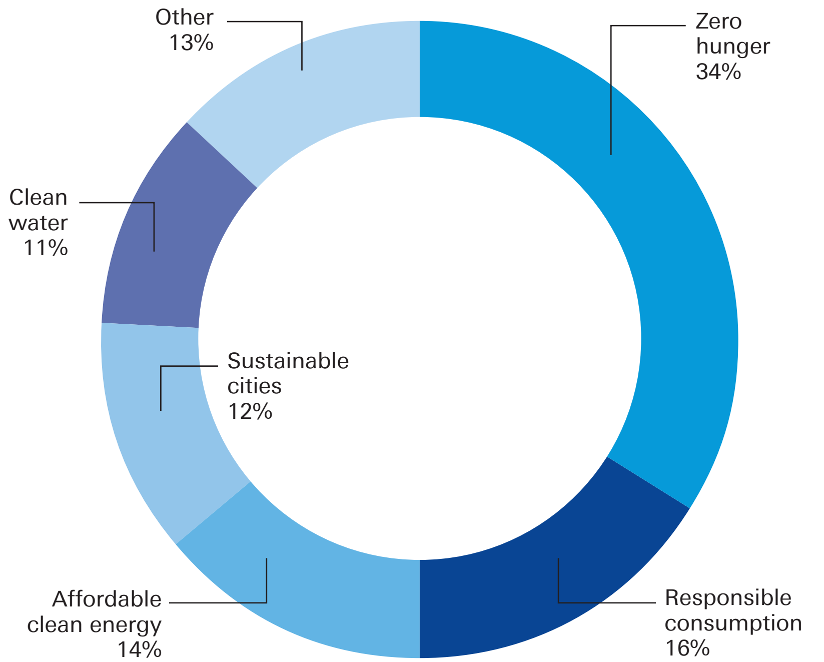
> Oil and gas alone contribute some 10% to the value of world trade

Two aspects of this scoring system are really interesting, however, and both are positive. The first is that, for many countries, 2020 was better in terms of sustainability than an average for the past five years. This is unsurprising, since 2020 was the year when pandemic-induced reductions in global trade meant that for a few months the amount of fossil fuels, manufactured items and consumer goods was considerably lower (see Figure 3).

Figure 1: The 17 SDGs

Source: United Nations

Figure 2: Percentage of total negative value contributed by global trade by largest negative contributions



Source: Coriolis Technologies

For example, Germany's global trade improved from -0.58 to -0.57, and while this may not seem a huge improvement, it was caused by nearly 14% annualised growth in vaccines to the end of 2020, a result of the Covid-19 pandemic.

The largest and most manufacturing-heavy economies fare the worst of the G20 in terms of the sustainability of their trade: the EU's trade, whether in the region itself or between the EU and the rest of the world, has the lowest score, but China, South Korea, Japan and Mexico also tip above the -0.6 mark. These are economies where automotives, consumer electronics as well as machinery and components (including computing) are routinely among the top five sectors for both imports and exports. Interestingly, the UK has one of the better scores for the developed economies, but this reflects a smaller manufacturing base and a higher contribution of sectors such as 'Works of Art' – its tenth largest sector for exports – which are not measured against the SDGs.

The other positive aspect of this scoring system is it does not bias the sustainability risk against emerging economies, or oil-producing economies. Within the G20 it is the emerging economies, with the exception of China and Mexico, that have the best scores, albeit still negative. Within the G20, oil-producing economies have among the better scores – not because exporting fossil fuel is necessarily a good thing, but because they are less reliant on energy imports.

For the poorest nations, the scores are materially lower – between -0.39 and -0.52 (Figure 4).

US$4trn

Anticipated global sales conducted via B2B marketplaces in 2025

Be Shaping the Future (be-stf.de)

Figure 4 highlights the fact that trade in the poorest economies has a completely different structure from trade in developed world economies. For example, Madagascar's cereal imports were some US$206m in 2020, while automotive imports were similar at just US$214m and on a steady downward path since 2017. In other words, imports are often for subsistence purposes rather than aimed at meeting luxury or consumption-based markets.

Under these circumstances a 'better' ranking, insofar as it reflects lower economic development, is not necessarily a good thing. But what it does mean is that the SDG-related risks of trade are lower and that such countries should not be excluded from trade deals or trade finance on the grounds of sustainability since, comparing like with like, their trade is less environmentally damaging.

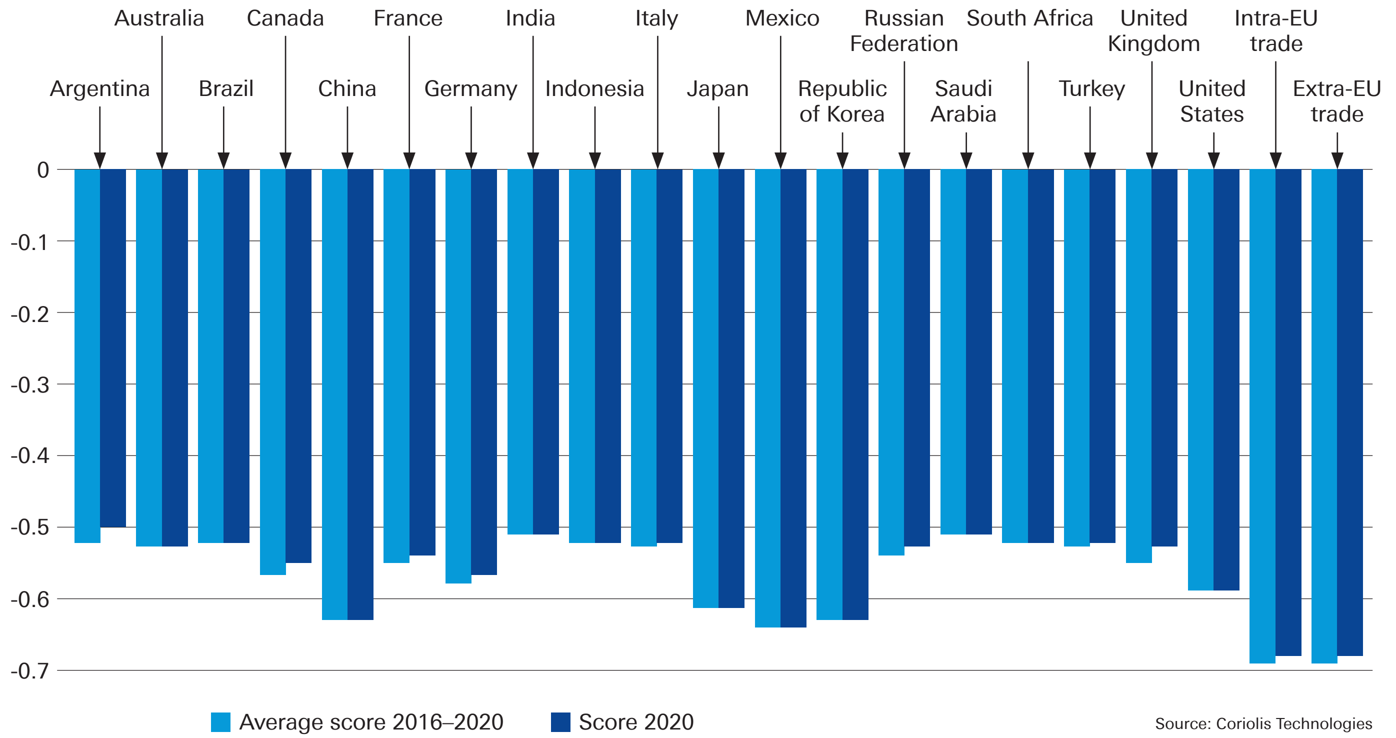
Implications for trade policy

This scoring system is a wake-up call for world trade and policymakers all around the world. Some of the most advanced economies have the least sustainable trade, the value of which is estimated at around US$18.5trn negative contributions, that eats into trade from responsible consumption and production (SDG 12). If we are to meet the ambitious targets laid out at COP26, we cannot afford to ignore the messages here – that the majority of world trade is unsustainable, and where it is not, it is often a symptom of under-development.

There is work to be done on this type of metric. For example, breaking down each SDG into its 'E', 'S' and 'G' contribution in trade terms is the next iteration of this model. Early indications suggest that it will reduce the scores further rather than improve them. Country scores also need to reflect the regulatory context of each country and the extent to which the tariff and non-tariff systems reflect sustainability objectives. This, however, will bias the results back in favour of countries with better regulatory regimes, so what has been presented here represents a neutral model based on the trade profile and patterns of any given country.

Its other advantage lies in its potential policy application. First, since we know where the worst contributions to SDGs are likely to be across world trade, we know the levers to pull. Too much of world trade contributes negatively either to zero hunger (making access to food worse), or to climate conditions like affordable and clean energy, clean water and sustainable cities.

Figure 3: G20 trade sustainability scores (-1 to +1 scale), 2016–2020 and 2020



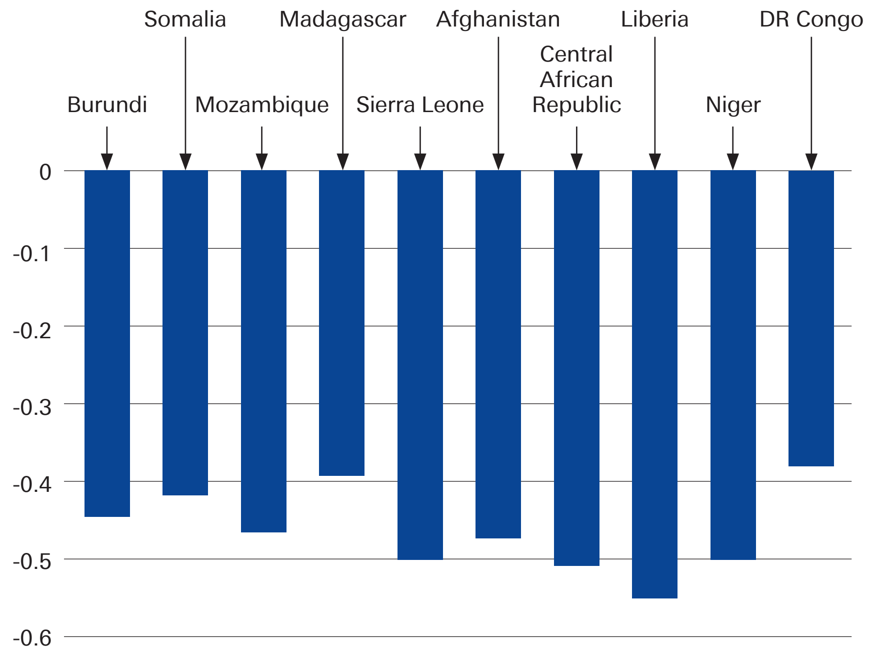
Source: Coriolis Technologies

Second, we also know the sectors that are to blame for the low scores of some countries: automotives, consumer electronics, machinery and components, plastics, iron and steel, and oil and gas. Oil and gas alone contributes some 10% to the value of world trade, so if we can reduce our dependency on it, we can also reduce the negative contributions to SDGs that trade makes. Similarly, the countries that have the worst scores all have automotives in their top five imports and/or exports. If policy incentives towards the use of electric cars and clean energy can be implemented, then this may address some of the negative role that automotive and fossil fuel trade play, at present.

These are age-old challenges that have neither quick nor easy solutions. However, if we know how to measure them, we can also measure progress towards addressing them. This feels like progress.

Rebecca Harding is an independent trade economist and CEO of Coriolis Technologies

Figure 4: 2020 trade sustainability scores (-1 to +1 scale)



Source: Coriolis Technologies

How treasury and procurement join forces at Knorr-Bremse

The Covid-19 pandemic has underlined the need for a company's treasury and procurement teams to combine their strengths. Kai Gloystein and Christoph Müller-Stahl tell *flow* why this has been common sense at Knorr-Bremse for years and explain how the crisis has impacted their work

Photography: Knorr-Bremse

German company Knorr-Bremse AG was established in Berlin in 1905 and manufactures braking and other safety-relevant systems for rail and commercial vehicles. The company's product portfolio also includes intelligent door systems, control components and air conditioning systems. Now headquartered in Munich, it is present in more than 30 countries.

Knorr-Bremse operates under several corporate brand names, including Bendix, Hasse & Wrede, Merak, Microelettrica, New York Air Brake, RailServices, Selectron, Sheppard, Sigma, TruckServices and Zelisko. It has established a strong reputation for safety over more than 115 years.

For 2021, Knorr-Bremse reported revenues of €6.7bn, EBITDA of €1.2bn and net income of €650m. In 1985, the late Heinz Hermann Thiele bought Knorr-Bremse from his then employer, and in 2018 he floated the company and raised €3.9bn. The family continued to have a majority stake of 59%. Following Thiele's death in early 2021, it was announced that this stake would, under the terms of his will, be transferred to a family foundation.

Departmental collaboration

Colleagues Kai Gloystein, the company's Head of Corporate Finance & Treasury, and Christoph Müller-Stahl, Director Global Purchasing Controlling, agree that the close relationship at Knorr-Bremse between treasury and procurement has been greatly

> We wanted to have our credit lines ready – effectively as a kind of fire insurance
>
> Kai Gloystein, Head of Corporate Finance & Treasury, Knorr-Bremse AG

assisted by having a single majority owner since the mid-1980s. It has also facilitated discussions with the company's relationship banks, thanks to the Thiele family's firm commitment to Knorr-Bremse.

A 30% stake in Knorr-Bremse was floated in 2018 – in what was Germany's second-biggest stock-market debut that year – securing the company's future as a steadily growing business. The company followed good governance by bringing some outside parties and other investors on board while the Thiele family maintained a majority stake.

Gloystein joined Knorr-Bremse in January 2018 and says that he was immediately struck by the excellent levels of cooperation and dialogue that existed between treasury and procurement, which contrasted with other companies, where convincing the respective teams to sit down together had proved more challenging. According to Müller-Stahl, this close collaboration was greatly helped in 2007 when the two departments worked together to implement Knorr-Bremse's award-winning supplier finance and purchasing programmes.

Meeting challenges together

In recent years, treasury and procurement have cooperated in meeting the challenges of growing geopolitical risk, fragile supply chains and commodity-price volatility. The last two years have also seen higher risks of production shutdowns among suppliers and resulting disruptions, says Müller-Stahl. While securing supply is very much the remit of purchasing/procurement, payments to suppliers is an issue that is regularly discussed with treasury.

Gloystein adds that treasury's task is to communicate the company's targets to the banks and debt capital markets, and to update regularly on whether these targets can and will be met. He says that 2020 "very much exposed the need for the company to carry higher inventories", and treasury held discussions with procurement on this strategic aspect. Having previously worked in the banking sector for several years, Gloystein was based in Frankfurt in 2007–08 when the global financial crisis swiftly developed, and in the first weeks of the Covid-19 pandemic in spring 2020, there were fears that the banks might once again be in a position where they were unable to provide funding.

"We made sure we were ready should the worst-case scenario ensue," he explains. "We wanted to have our credit lines ready – effectively as a kind of fire insurance." However, the company's business model proved to be one of the most resilient to the impact of the pandemic. Helped further by some early cost-containment measures, Knorr-Bremse was able to repay funding ahead of schedule.

Müller-Stahl adds that procurement reviewed the company's supply chains and, where needed, initiated proactive risk-management policies, having identified that not all of its suppliers were as resilient to the impact of Covid-19 as Knorr-Bremse. "We implemented tools and processes to give good visibility over potential risks that could result from the pandemic and possibly cause problems for our suppliers," he explains. "Fortunately, there were relatively few critical cases and our supply-chain teams mostly avoided disruptions." Knorr-Bremse was also helped by the fact that, unlike much of the automotive industry, it is not reliant on 'just-in-time' supply deliveries.

Linking finance to sustainability

Knorr-Bremse's purchasing policy has been shaped by its Global Purchasing Excellence (GPE) initiative, which establishes purchasing principles and procurement-quality guidelines with its suppliers. Environmental, social and governance (ESG) issues, which are of growing importance to all corporates, have long been high on the company's agenda. Today, Knorr-Bremse's commitment to ESG is reflected in initiatives such as its Conflict Minerals Policy, which, by constantly tracking its supply chains, aims to ensure that the company does not source from areas of armed conflict where the proceeds are used to finance fighting.

> **€750m**
>
> In January 2022, Knorr-Bremse issued its first ESG-linked syndicated loan

> We implemented tools and processes to give good visibility over potential risks that could result from the pandemic and possibly cause problems for our suppliers
>
> Christoph Müller-Stahl, Director Global Purchasing Controlling, Knorr-Bremse Rail Vehicle Systems

Most recently, Knorr-Bremse also issued its first sustainable-finance instrument. In January, the treasury team linked the company's first-ever syndicated loan of €750m to an ESG rating by ISS Corporate Solutions, which currently rates Knorr-Bremse at C+. Within the framework of a bonus-malus system, changes to this rating have a corresponding positive or negative impact on the loan spread. The transaction was coordinated by Deutsche Bank and UniCredit.

Further ESG initiatives, such as a Green Supplier Finance programme, are also being developed across the business. "These are discussed regularly at board level and extend beyond treasury and procurement," says Gloystein.

"On the flipside, it's still unclear for corporates and banks what the final outcome of the EU Taxonomy will be," he adds. "It's very much a moving target, as it hasn't been fully confirmed exactly what measures need to be implemented. Fortunately, at the present time Knorr-Bremse doesn't actually need to go to the markets but is doing its homework just in case. And in the absence of a crystal ball, this means expecting the unexpected."

THE BIG PICTURE

The critical commodities powering electric vehicles

According to EDF Energy, "EVs (electric vehicles) don't use a single battery like a phone, they use a pack comprising thousands of lithium ion cells working together. When the car is charging, electricity creates chemical changes inside its batteries. When it is on the road, these changes are reversed to produce electricity." These batteries rely on the following sources of critical commodities:

Image: Alamy

3 6.938 **Li** Lithium

Lithium

A rare element that does not occur in elemental form because it is highly reactive, it is extracted from ores and some brines. Almost 80% of the world's mine supply comes from Australia – 355,000 tons on a lithium carbonate equivalent (LCE) basis, in 2022. EVs use lithium ion (Li-ion) batteries – rechargeable ones where lithium ions move from the negative electrode through an electrolyte to the positive electrode during discharge, and back when charging.

27 58.933 **Co** Cobalt

Cobalt

Found in the earth's crust, the free element is produced by smelting, and has been one of the most common materials found in Li-ion battery cathodes. The Democratic Republic of Congo supplies two-thirds of the world's cobalt mine supply, with the vast majority going to China for conversion. Ethical production challenges, and concerns about long-term availability, have prompted thrifting and research into alternatives.

28 58.6934 **Ni** Nickel

Nickel

An electric vehicle battery comprises electrochemical cells, each of which has an anode, a cathode, and electrolyte. Nickel-containing cathodes are used in combination with cobalt and manganese or aluminium to deliver a high-energy density cathode.

29 63.546 **Cu** Copper

Copper

A highly ductile metal known for its high thermal and electrical conductivity. Chile is the world's leading producer, with a 25% share of mined output. Copper is used in every major EV component. A fully electric vehicle can use up to 80kg of copper, mainly in the form of wiring.

Source: Wood Mackenzie

Rethinking Europe's commodities strategy

Metals play a critical role in Europe's sustainable and digital transformation. Commodities procurement will therefore be a fundamental determinant of future economic growth. A new *flow* special white paper outlines why and how Europe needs to rethink its sourcing strategies

The Russian invasion of Ukraine in February 2022 has put a spotlight on Europe's uncomfortable dependencies. While many European economies have immediately reassessed energy security in the light of the conflict and looked for alternatives to Russian gas and oil, the procurement of key metals has not been the subject of equal focus in public debates.

This is quite surprising given that Germany in particular sources many raw materials such as iron ore, aluminium, copper, refined nickel and titanium from Russia – supplies that are no longer secure since the outbreak of the war in Ukraine. Moreover, it is not only Russia that leading European economies are dependent on when it comes to commodity imports: while mining is relatively diversified globally, and mainly in private hands, most final refining takes place in China (see Figure 1).

"These dependencies and concentration risks need to be understood and addressed, given that securing access to important commodities is key for Europe's sustainable and digital transformation," says Hauke Burkhardt, Global Head of Lending at Deutsche Bank Corporate Bank. Over the next few years, batteries, semiconductors, wind power plants, solar panels and electrolysis will massively increase the demand for key metals such as lithium, cobalt and rare earths.

So, how can access to these raw materials be ensured in times of geopolitical conflicts and decarbonisation commitments which affect mining and refinery output? In the *flow* special white paper 'Commodities security in a volatile world', which was published in April 2022, experts from Deutsche Bank Corporate Bank have analysed challenges to Germany's commodities security and suggested six new sourcing strategies.

No commodities, no transition

To develop new sourcing strategies, the paper starts out by identifying seven key commodities that have particular relevance for leading economies' ambition to become carbon-neutral and more digitised. According to the paper, these are: cobalt, germanium, heavy rare earths (HRE), iridium, light rare earths (LRE), lithium and ruthenium.

While cobalt, lithium and ruthenium are, for example, needed when it comes to producing batteries for energy storage, iridium and rare earth metals are required for green hydrogen applications. At the same time, all seven of these metals are essential for automating and connecting industrial processes ('Industry 4.0') as they are needed for sensor technology, chip performance or 3D printers, the report outlines.

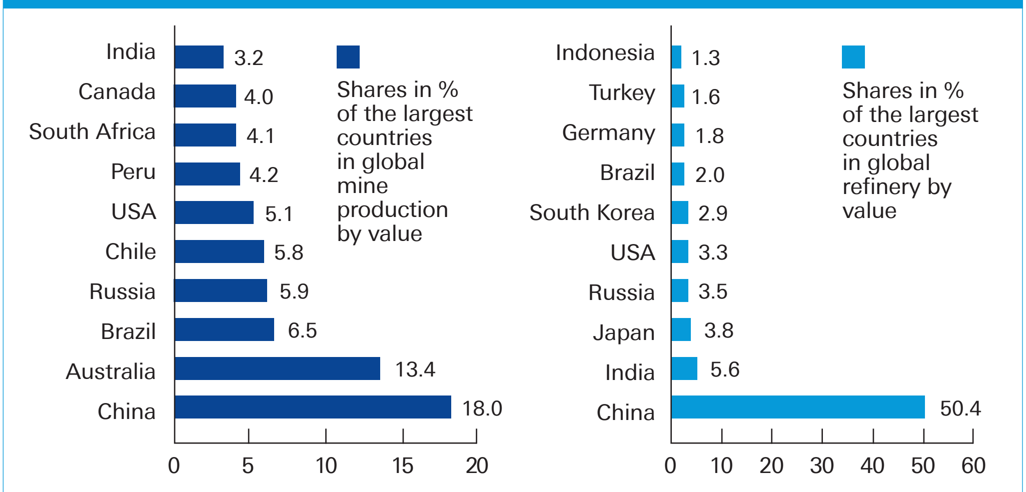
Given the importance of these seven metals for enabling a digital and decarbonised industry, global demand for these commodities is expected to spike significantly over the next two decades – with the gap between supply and demand becoming bigger if countries ramp up their sustainability goals ('ESG path', see Figure 2).

As the paper stresses, the sustainability agenda is changing the commodities market from both sides – increasing demand and lowering supply for certain raw materials. China, for example, is aiming to reduce energy and emissions intensity (per unit of GDP) by 3–4% per annum over the next five years, which will be supported by the reduction of metals refining and concentration on domestic consumption rather than exports. According to Deutsche Bank Research, "these targets should still limit output growth over the medium-term" as steel, metals, minerals and chemicals account for approximately 25% of electricity consumption and related emissions.

Six suggestions for new sourcing strategies

The increasing demand for geographically concentrated commodities requires a strategic approach to ensure long-term supply. "Such a commodities procurement strategy should bring together

Figure 1: Comparison of the globally leading mining and refining countries



Source: Data taken from Deutsche Rohstoffagentur, Rohstoffliste 2021; illustration by Deutsche Bank stakeholders in the German economy, political decision-makers and parties such as trade associations," the paper states. It suggests six measures:

1. Diversification of refined and semi-finished metals

On the one hand, the EU could support the build-up of metals refinery capacities in other countries by enabling viable business plans. This enablement can have different forms, one being prepayment or loans to finance the infrastructure capital expenditure, which would be repaid by the metals' delivery. Alternatively, equipment could be financed with (export credit agency-backed) export finance.

On the other hand, refinery capacity in Germany and in Europe could be enhanced as well. However, as metals refining has a high energy consumption with a potential negative sustainability impact, this would require further acceleration of renewable and alternative energy production.

2. Raw material sourcing outside the EU

Germany and other EU members should secure commodity partnerships with countries in South America and Africa, as well as with Australia, to diversify the supplier basis for raw materials. These partnerships could either be set up via traditional long-term supply agreements, via financing the build-up of infrastructure for commodities in the partnership region, or via directly investing in foreign commodities producers.

3. Raw material sourcing within the EU

Europe also has metals reserves which have not been mined over recent years, the paper states. Apart from commodities security, ramping up local mining could also substantially reduce transportation distances, and therefore reduce CO_2 emissions. On the other hand, labour and energy costs, as well as bureaucracy levels, are usually higher in Europe.

Figure 2: Global demand to production quota for selected key commodities in 2018 vs 2040 outlook

Raw material	Demand 2018/ Production 2018 quota	Demand 2040/Production 2018 quota		
		ESG path	Middle path	Fossil path (unlikely)
Cobalt	0.4	3.9	2.9	1.2
Germanium	0.4	1.7	1.7	1.9
Heavy rare earths	0.6	5.5	6.9	6.4
Iridium	0.0	5.0	2.9	0.3
Light rare earths	0.3	2.2	2	2.2
Lithium	0.1	5.9	4	0.9
Ruthenium	0.4	2.4	5.9	19

Source: Deutsche Rohstoffagentur, Rohstoffe für Zukunftstechnologien; illustration by Deutsche Bank

4. Build up strategic reserves

Commodity off-takers should consider the possibility of building up reserves for critical input materials, the paper suggests. However, since this accumulation comes with significant storage, transportation and insurance costs, which result in additional financing needs, clear priorities for which raw materials and refined products should be stored are needed.

The paper names two role models: in the US and Japan, public-private partnerships organise the commodities storage based on national surveys. Those surveys identify which commodities are needed and track the quantities of the top 50 products bought and stored by both state and private companies that are needed to withstand supply chain disruptions for up to 90 days.

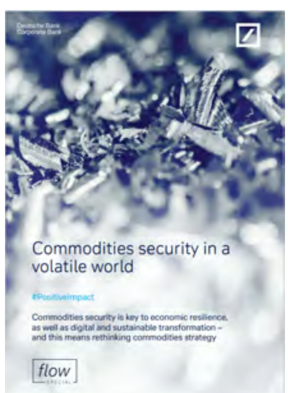
5. Enhance recycling capabilities and recyclability

To facilitate the increase in recycling capabilities, the paper names several initiatives – from increasing regulatory mandated recycling quotas, to creating a legal framework that facilitates local recycling capacities. Moreover, products need to be designed in a way that enables them to be split up again, back into original materials. This starts with a thorough control of input materials and their compositions, and could be strengthened if minimum recyclability standards per sector or product category can be agreed.

6. Replace key commodities in the value chain

The report states that only a few commodities are currently replaceable. To find more, economically viable substitutes for critical input materials and additional R&D investments are needed. R&D projects should focus on finding ways to use lower quantities but more readily available commodities. Also, research clusters – bringing together producing companies and academics – could be an important tool to drive R&D.

Taking all of these considerations on board, the paper concludes that securing access to commodities in times of geopolitical conflict and decarbonisation commitments will be challenging. But there are measures Europe can take to foster economic resilience, provided that governments, corporates, capital markets and banks can collaborate.

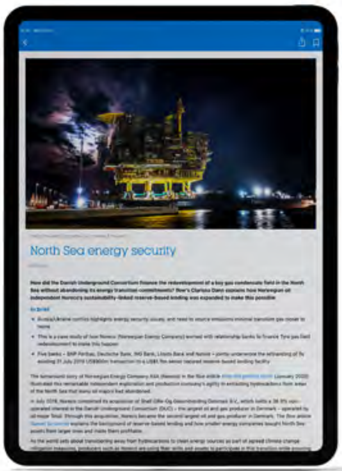


Download the full white paper

Use your smartphone to scan the QR code and download 'Commodities security in a volatile world' here

Editor's selection

It's been an exciting year in trade finance and lending. Don't miss the top three articles from the *flow* website that we consider essential reading. Here are our editorial picks



North Sea energy security

As the world is transitioning away from hydrocarbons to clean energy sources, producers such as Norwegian Energy Company ASA (Noreco) ensure that there is enough oil and gas to keep the lights on during the transition period. To do so – while improving its carbon footprint at the same time – Noreco is currently redeveloping its Tyra field in the North Sea, a central hub for gas exports. Replacing the old infrastructure and installing new jackets and topsides will need an estimated investment of more than US$3.3bn. In addition, plans are under way for Noreco to introduce renewable power via electrification projects, reduce flaring off in gas fields and phase out chemicals.

This case study looks at how a sustainability-linked reserve-based lending (RBL) facility with five banks – BNP Paribas, Deutsche Bank, ING Bank, Lloyds Bank and Natixis – is financing the redevelopment of the Tyra field.

Transition metals: in the fast lane?

With the automobile industry shifting up a gear on accelerating average selling prices and electrification, what does this mean for transition metals? For copper in particular, Deutsche Bank Research forecasted in January 2022 that by 2030, "electric vehicles alone could boost copper demand by around 2.5 million tonnes per annum, or 11% of global refined copper demand in 2020".

The red-gold metal is a core component in electrics because of its conductivity properties and its malleability for wiring. Electrics make up around 60% of global demand and copper is found in wiring, cables and connectors, including vehicles and consumer electronics. Around 20% of output is used in construction due to its resistance to corrosion. Where is copper sourced from and how does this affect inflation? This article provides answers.

EU tightens the ESG reins in supply chains

The European Commission has proposed a new regulation to foster sustainability in corporate supply chains. If it is enacted, companies will be required to ensure that human rights are respected and environmental impacts are reduced in their own operations and value chains. "Directors of companies will be held responsible for putting in place and overseeing the company's supply chain due diligence programme," explains Lavinia Bauerochse, Global Head of ESG Corporate Bank, Deutsche Bank.

The regulation will initially apply to companies that have upwards of 500 employees and global turnover exceeding €150m. Two years later, companies operating in "high-impact sectors" such as textiles, agriculture and extraction of minerals, and that have more than 250 employees and a global turnover of at least €40m, will also be subject to the law.

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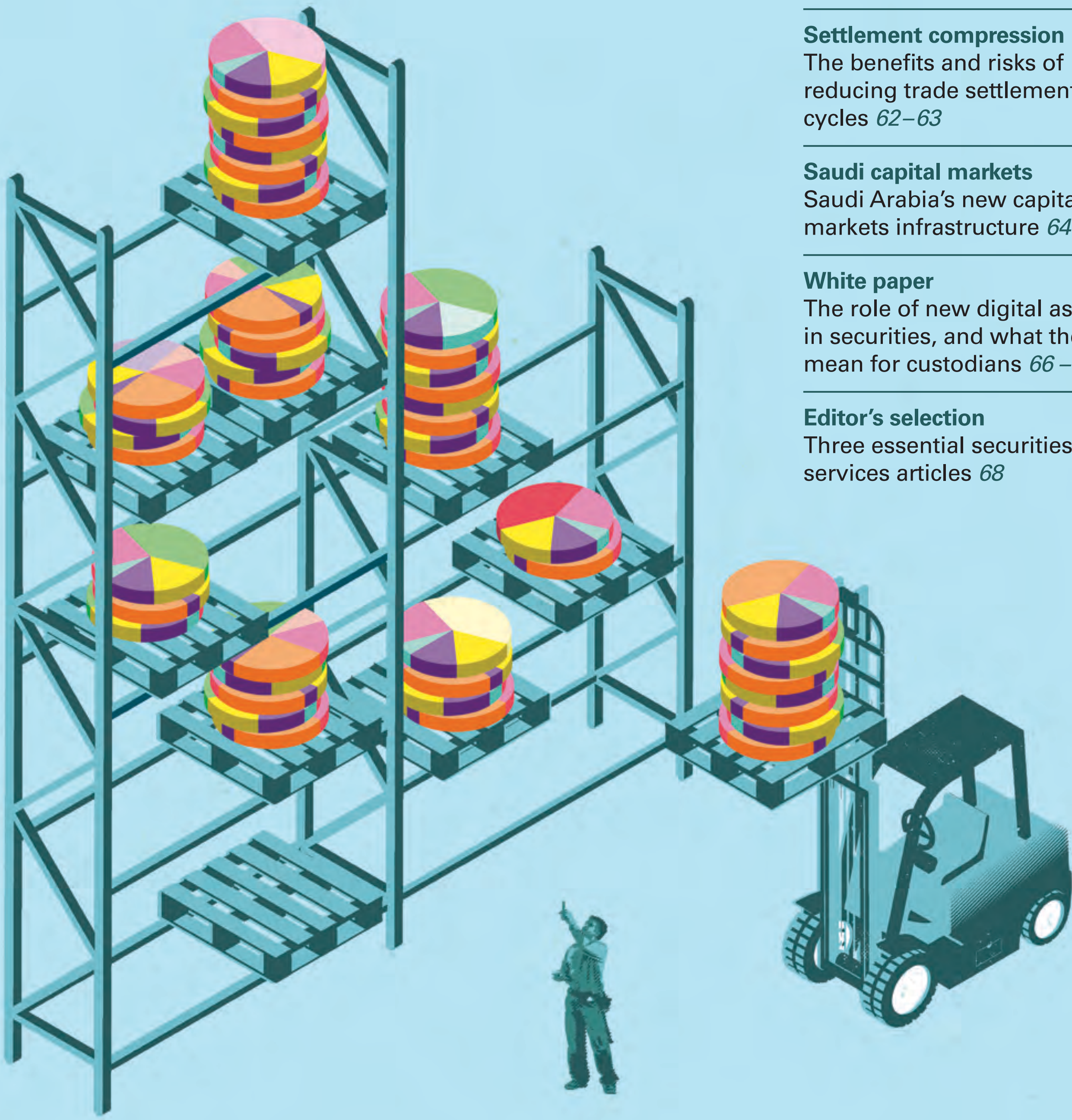
Securities Services

A deeper dive into what is driving seismic market infrastructure change in securities services



Regulatory outlook in securities services

Regulation is a key driver of change across the securities services industry, and it has powered the journey towards cross-market harmonisation. Regulatory reform, including Central Securities Depositary Regulation (CSDR), Target 2 Securities (T2S), Markets in Financial Instruments Directive II (MiFD II), and European Market Infrastructure Regulation (EMIR) have rearranged the post-trade landscape. In this article, Deutsche Bank's Boon-Hiong Chan and Britta Woernle summarise the defining developments that have global impact, as well as those that are region-specific

Global

Shortening settlement cycles

In recent years, there has been a global trend towards accelerated settlement cycles. However, the transition to a T+1 (settlement within one day of the trade) and potentially a T+0 cycle (settlement the same day) requires implementing new technological, operational and industry processes on a large scale.

Asia is a market of accelerated settlement cycles, with China Interbank Market's (CIBM) government bonds on settlement cycles of T+0, T+1 and T+2. T+3, and a special service where settlement on the trade date plus four or more days, where four days is the minimum ((T+n (n >=4)), were subsequently rolled out to allow sufficient funding time for global investors, especially those unable to settle due to local holidays. In 2021, India made a determined push for a T+1 settlement cycle for listed equities, and that has been live since February 2022. The new settlement cycle started with the bottom 100 stocks, and with a phased approach towards the goal of 5,000 equities by January 2023. The initiative has been heralded as a highly positive development from a domestic and regulatory perspective. However, foreign portfolio investors (FPIs) into India continue to face challenges, including in foreign exchange, which is currently under discussion to ensure seamless implementation.

Accelerated settlement cycles are also being discussed in the Philippines (to move to T+2). Challenges to the value chain caused by system outages in the country have accelerated discussions with migration testing, which is expected to come in Q4 2022. The US is also intending to transition to a T+1 settlement cycle, with rollout scheduled in the first half of 2024.

Transition to accelerated settlement cycles can create operational challenges for cross-border investors when there are significant time zone differences, for example between Asia and the US. In June 2022, the ASEAN+3 Bond Market Forum (ABMF) and the Cross-Border Settlement Infrastructure Forum (CSIF) organised a webinar outlining accelerated securities settlement, and emphasised the need for industry-wide engagement, collaboration and support.

Digitalisation and digital assets

Increasing digitalisation impacts the industry since greater regulatory scrutiny falls

Photography: Alamy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on new digital asset classes. Regulatory developments have mirrored the evolution of cryptocurrency – or 'crypto asset' – which means a digital asset that is secured and operated using a set of cryptographic keys.

The importance of regulating digital assets was evident when the European Commission published its digital finance package in 2020. This included a new digital finance strategy, a proposal for a regulation on markets in crypto assets (MiCAR) and a proposal for a regulation on a distributed ledger technology (DLT) pilot regime for market infrastructure, among others. MiCAR will be an anchor regulation for other initiatives that aim to provide legal certainty as it aims to create a holistic regulatory framework for the crypto-asset industry. We expect MiCAR to enter into force in the course of 2022 with a general application date 18 months later, whereby some provisions will already apply from the date it comes into force.

As regulatory certainty improves and mainstream users enter the market, the participants of traditional finance are more likely to enter the crypto asset space. This raises regulatory concerns about the risks of digital assets on traditional financial institutions, and heightened investor protection needs. Regulatory authorities are revisiting their existing legislations with a focus on modernisation and compliance to international standards. Regulations concerned with market integrity like Know Your Customer (KYC), Anti-Money Laundering (AML) and sanctions are being implemented across the globe, driven by guidance from the Financial Action Taskforce (FATF).

> Participants of traditional finance are more likely to enter the crypto-asset space

However, open questions remain, such as what the scope is of custodial liability according to MiCAR. The current EU Parliament and EU Council compromises, flowing from EU trialogue negotiations, predict that liability does arise unless the crypto custodian can prove that a loss did not result from an operational incident attributable to the custodian, such as a malfunction or hack. This is a diametric shift from the existing market standard, where custodians are generally free to limit their liability contractually to cases where a loss was caused by the negligence, fraud or wilful default of the custodian. In March 2022, the US Securities and Exchange Commission (SEC) published Staff Accounting Bulletin (SAB) No.121 that provided an interpretation related to financial reporting of crypto assets. Expressing concerns surrounding technology, legal and regulatory risks, SAB No.121 said that if an entity is responsible for safeguarding crypto assets held "for its platform users, including maintaining the cryptographic key information necessary to access the crypto assets…", then that

Europe

The European landscape is driven by a harmonised approach across member states in the EU. As such, the bank sees a combination of regulatory and European Central Bank (ECB) driven initiatives across the region.

ECB-driven initiatives

The ECB is driving initiatives to promote market harmonisation. This includes the Eurosystem Collateral Management System (ECMS), which aims to harmonise current collateral management processes, where differences in business processes and messaging create operational barriers to efficient management. The ECMS will replace 19 different collateral management systems with a single system capable of managing the assets used as collateral in the Eurosystem credit operations for all jurisdictions. With go-live in November 2023, this is expected to increase efficiency in the management of collateral and level the playing field among Eurosystem counterparties. This is critical to the further integration of a pan-European market.

To facilitate the ECMS, the ECB Advisory Group on Market Infrastructures for Securities and Collateral (AMI-SeCo) endorsed standards for a Single Collateral Management Rulebook in Europe (SCoRE). SCoRE standards apply to debt instruments, equities and investment funds issued via European (I)CSDs, and should be implemented by all relevant actors in the AMI-SeCo markets (the EU, the UK and Switzerland). The compliance date for the SCoRE standards on Triparty Collateral Management, Corporate Actions and Billing is November 2023, and for seven other harmonisation activities the standards and compliance dates are yet to be confirmed. The compliance date of corporate action standards for debt instruments is November 2023, and the compliance date for equities and investment funds standards is November 2025, although CSDs may indicate an earlier application date.

Capital Markets Union

The Capital Markets Union (CMU) intends to ensure the success of a single capital market across the EU to increase competitive investment and financing opportunities. The CMU Action Plan, published by the EU Commission in November 2021, includes legislative proposals relating to the following areas:

1. European Single Access Point (ESAP)
2. Review of the European Long-Term Investment Funds (ELTIFs) regulation
3. Review of the Alternative Investment Fund Managers Directive (AIFMD)
4. Review of the Markets in Financial Instruments Regulation (MiFIR)

The CMU provides an opportunity to harmonise market practices and enhance technical integration of market participants. There will be the potential to resolve previous implementation challenges from the Shareholder Rights Directive II (SRDII), such as introducing a uniform 'definition of a shareholder' and introducing a harmonised framework for withholding tax, which will promote cross-border investment.

MiFID II/MiFIR Refit

In 2021, MiFID II Quick Fix was entered into force, with implementation by all EEA countries by 28 February 2022. This introduced changes related to the annual cost and charges settlement, quarterly should be reflected as a liability on its balance sheet.

Regarding investor protection, Thailand's Securities and Exchange Commission refined its regulation on 'digital assets' custody, reflecting a strong focus on client asset segregation and proper authorisation prior to transfer of fiat currencies. Australia and Singapore also published investor protection guidelines. For example, the Australian Securities and Investments Commission now requires social media influencers to be appropriately licensed before giving financial advice, and Singapore's MAS has discouraged cryptocurrency trading by the public.

statement of client financial instruments and electronic client reporting.

In November 2021, the European Commission published two proposals for the review of MiFID/MiFIR. The proposals will be subject to ordinary legislative procedure, with the final text expected between the end of 2022 and mid-2023. The European Commission focused on three priority areas:

1. Improving the transparency and availability of market data
2. Improving the level playing field between execution venues
3. Ensuring EU market infrastructures remain competitive internationally

Refits on the horizon

The bank also expects revisions, or 'refits', to the Settlement Finality Directive (SFD), Financial Collateral Directive (FCD), Central Securities Depositary Regulation (CSDR), and potentially to the Undertakings in Collective Investment in Transferable Securities V (UCITS V).

Asia

During the pandemic, Asia Pacific securities regulators focused on ensuring industry operational resilience, facilitating global investors' market access and repatriation via electronic means of administration and processes. This has been successful. And, with Covid-19 gradually treated more as an endemic, the building of Asia Pacific securities market infrastructure, and market access and repatriation, is gaining momentum again.

Market liberalisation

Securities market liberalisation is happening across Asia. South Korea requested to be included on the MSCI's developed market classification status watchlist. As part of this request, South Korean authorities have committed to improving the KRW FX market, moving to electronic infrastructure for greater efficiencies and reviewing related areas, like the Investment Registration Certificate scheme, to facilitate foreign investors' access.

In a securities infrastructure modernisation drive and as part of its New Law of Securities, enacted in January 2021, Vietnam is implementing a new securities central counterparty (CCP) model to be established as Vietnam Securities Depository & Clearing Corporation (VSDCC). This change will encompass major revisions to registration, depository, clearing and settlement of securities transactions. New industry workflows are expected to be finalised by VSDCC, with a targeted live date of the end of 2023. The industry is working with the State Securities Commission and VSDCC to address asset safety and operational areas among others.

In April 2022, the People's Bank of China issued a draft Financial Stability Law to improve financial risk management, enhancing market stability, risk resolution and clarifying the responsibilities in coordinating national financial stability and development. This law will represent a significant modernisation of the recovery and resolution regime in China's growing capital market. China's authorities also voted to adopt the PRC Futures and Derivatives Law to regulate the trading, clearing and settlement of futures and derivatives at the national level. Effective from August 2022, it is expected to contribute to a better operated and more open capital market. Furthermore, China unveiled a national pension reform, with a voluntary private pension scheme, that allows individuals to invest their pension into, for example, bank wealth management products that meet regulatory standards. While details are still to be outlined, these pension reforms can increase institutional investment flows and deepen China's capital market.

In India, the Securities and Exchange Board of India (SEBI) launched a new Business Responsibility and Sustainability report for the top 1,000 listed entities, introducing the mandatory disclosure of ESG-related information and improving transparency in the market. The introduction of electronic gold receipts through the framework for gold exchanges, and the Vault Managers Regulations 2021, also indicates efforts to modernise. The framework for 'Accredited Investors' (AIs) has been approved by SEBI, allowing more investment flexibility by well-informed investors, further encouraging India's market to open up.

In the Philippines, tax reform continues with 'Revenue Memorandum Circular 20–2022', issued in February 2022 to guide the filing of Request of Confirmation, Tax Treaty Relief Application and Tax Sparring applications. It clarified and eased the documentary requirements of Non-Resident Foreign Investors/Corporations who have already been issued with a Certificate of Entitlement by the Bureau of Internal Revenue. Overall, the Philippines is improving on the ease of market entry and repatriation for cross-border investors.

Market transparency

Efforts have also been made to improve market transparency. In Malaysia, under Malaysia Bursa's Reclassification of Investor Segment project, a client needs to provide the business registration number of corporate underlying clients that open segregated securities accounts. Deutsche Bank, together with other foreign custodian banks, asked Bursa to accept Legal Entity Identifier (LEI) and the proposal was accepted. This will facilitate more efficient compliance by reusing accepted and already available identifiers.

Boon-Hiong Chan (Asia) and Britta Woernle (Europe) lead the Securities Market & Technology Advocacy team at Deutsche Bank's Securities Services

Settlement compression – where next?

Now that India, the US and Canada have confirmed they are reducing trade settlement cycles from T+2 to T+1, what are the risks and what are the benefits? *flow* takes a closer look at accelerated settlement

Most securities transactions currently settle within a couple of days of the actual trade date. So, for stock bought on a Wednesday, the buyer would have paid for the shares and the seller would have delivered them by the Friday, with the buyer becoming the holder of record of that security (T+2).

A combination of better technology, the sheer volume of securities trading and regulatory momentum is making this window smaller. The *flow* article 'Accelerated settlement – the move towards T+0' (Sep 2021) examined the trend of market volatility driving compression of the securities settlement cycle and outlined the benefits and risks of shorter settlements.

Despite the ongoing global transition towards a harmonised T+2 settlement cycle, some market participants believe that improvements are still needed. Following unprecedented market volatility in 2020 and 2021, there are growing calls for a further compression of the existing T+2 settlement cycle to either T+1 (trade date + one day) or T+0 (same day). However, such a shift will not be a straightforward exercise.

India, the US and Canada make the leap

To date, three major markets – India, the US and Canada – have each confirmed they will transition their trade settlement cycles from T+2 to T+1. India has been phasing in T+1 for publicly traded equities since February 2022. Starting with the bottom 100 stocks by daily market capitalisation, it has since added 500 stocks each month, so that all of India's 5,200 stocks will be settled on T+1 by January 2023. Most Foreign Portfolio Investors (FPIs) have not been affected by India's transition yet, as their exposures are mainly to blue chip equities, which are not currently settling on T+1.

Turning to the US, after its relatively trouble-free transition from T+3 to T+2 in 2017, the Securities and Exchange Commission (SEC) confirmed in February 2022 that the market would shorten the settlement cycle from T+2 to T+1 by no later than Q1 2024.

The SEC's decision comes in the wake of a high-profile campaign pushing for T+1 adoption led by a number of market participants in the US. This includes the Depository Trust & Clearing Corporation (DTCC), the Securities Industry and Financial Markets Association (SIFMA) and the Investment Company Institute (ICI), together with market makers such as Citadel Securities and Virtu Financial.

As Canada's financial markets are so deeply interwoven with those of the US, the country has also pledged to adopt T+1 in 2024, in lockstep with its southern neighbour. Market participants have commented that it is likely other markets with close financial links to the US will also introduce T+1 in due course.

5,200

Total of India's stocks to be settled on T+1 by January 2023

Source: BSE India

Explaining the sweeping away of T+2

While a handful of experts have been arguing the case for T+1 for some time, it was the equity market volatility triggered by Covid-19, and the meme stock trading turmoil, which highlighted to the world the risks of having to wait two full days for a trade to properly settle. Supporters say a compressed settlement cycle will help negate settlement, counterparty and operational risk.

The principle benefit of leveraging T+1 – as opposed to, say, T+2 – is that the former has a shorter settlement duration, meaning there is significantly reduced operational and counterparty risk between different trading counterparties.

This can enable firms to lower their Central Counterparty Clearing House (CCP) margin requirements, leading to meaningful capital and collateral savings. The DTCC notes that shorter rolling settlement cycles could help unlock vast sums of untapped liquidity once market participants no longer need to post as much margin on trades to cover counterparty exposure.

While the DTCC concedes there might be some implementation costs to adopting T+1, it expects financial institutions to ultimately achieve net savings and benefit from infrastructure modernisation and the standardisation of industry processes. This could bring about greater straight-through-processing (STP) and help the industry shift away from manual-based activities, which in turn should improve accuracy and resiliency.

In India, where retail trading is dominant, local brokers – many of whom have suffered from margin contraction over the last few years – believe that T+1's introduction could help stimulate trading volumes once again. "The key benefit is that capital can be deployed more efficiently. Imagine being able to buy a stock today and sell it off tomorrow – this might actually be possible under T+1," says Sriram Krishnan, Head of Securities Services, India and Sub-Continent, Deutsche Bank.

T+1: no change without risk

For all the anticipated benefits, there is a tacit acknowledgement that T+1 could also pose logistical challenges. For financial institutions operating in different time zones, settlement compression can create inefficiencies, especially around trade matching, end of day reconciliations and foreign exchange (FX) management.

This is because the traditional two-day settlement window helps global investors manage FX, but a shift to T+1 would force FX to be booked on the same day/T+1, meaning all parties in the settlement chain will need to confirm trades on the trade date – potentially resulting in issues around pre-funding.

Despite the potential risks, market participants anticipate the T+1 transition will be smooth, provided the industry makes the technology changes that are required in advance of the deadlines. "As long as the industry continues to implement new technologies to address accelerated settlement, then T+1 should be achievable," reflects Kamalita Abdool, Head of Securities Services, Americas, Deutsche Bank.

Past precedent in the US also suggests that T+1's adoption will be pain-free. For example, experts warned that settlement fails would skyrocket ahead of T+2's adoption in 2017, yet these issues never materialised.

T+0: the future beckons

While there is scepticism about the merits of introducing a T+1 settlement cycle without impacting the value chain, market practitioners are also open to T+0.

Again, the benefits of shorter settlement cycles (e.g. less counterparty risk, capital and liquidity savings) ring true for T+0 just as they do for T+1. It is also clear that many of the barriers inhibiting T+1 are likely to inhibit the future adoption of T+0 as well.

> The end goal for settlement compression must be T+0
>
> Mike Clarke, Global Product Manager, Securities Services at Deutsche Bank

But Mike Clarke, Global Product Manager, Securities Services, Deutsche Bank, explains, "The end goal for settlement compression must be T+0 and this can be facilitated through the adoption of disruptive technologies, such as distributed ledger technology (DLT), smart contracts and central bank digital currencies (CBDCs) or digitalised versions of central bank-issued money." He explains that by leveraging such technologies, cross-border transactions could potentially be settled more quickly, culminating in T+0 or even atomic settlement (the instant exchange of two linked securities).

This could help market users procure massive operational and cost savings, especially as instantaneous settlement would remove the need for CCPs.

Similarly, the emergence of CBDCs could play a role in bringing about T+0. CBDCs – digital iterations of fiat currencies issued by central banks, which are stored on a DLT – engineer efficiencies in securities settlement by using central bank money. As investment into these technologies increases, the possibility of delivering on T+0 will grow.

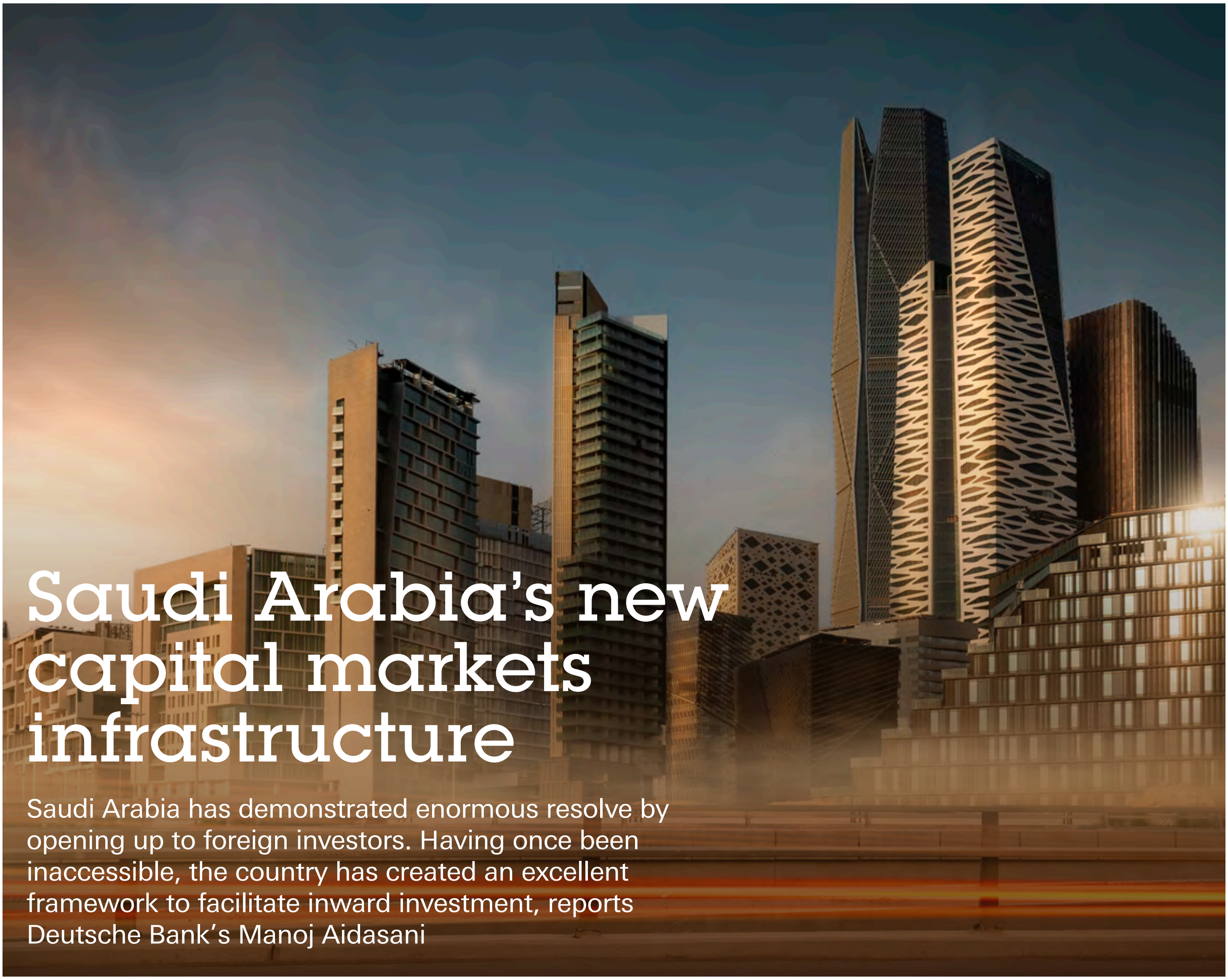
Markets such as India are already exploring the viability of such technologies, with the Reserve Bank of India poised to introduce a digital rupee in 2023.

However, technologies such as DLT, digital assets and smart contracts are not subject to uniform industry standards or common regulation. Without basic harmonisation, the ability for market participants to operate with each other in post-trade processes, such as settlement, risks being undermined.

More fundamentally, T+0 will never be achievable unless other activities in the investment value chain become real-time or instant as well. For example, if payment settlement systems and FX processing continue to rely on antiquated or legacy technologies, then T+0 will be harder to achieve. Only if there is meaningful digitalisation across the entire transactional lifecycle will T+0 become a reality.

Where do we go from here?

Having introduced T+2 smoothly, the industry is confident T+1 will be seamless, especially as there is ample time until implementation. If T+1 provides the risk management benefits claimed by its proponents, then calls for further settlement cycle optimisation will inevitably grow.



Saudi Arabia's new capital markets infrastructure

Saudi Arabia has demonstrated enormous resolve by opening up to foreign investors. Having once been inaccessible, the country has created an excellent framework to facilitate inward investment, reports Deutsche Bank's Manoj Aidasani

Seven years ago, the ability to trade Saudi Arabian securities was still only accessible to international investors indirectly via swap arrangements and mutual funds. Saudi Arabia also lacked an independent custody model – meaning assets were often held at local brokers, exposing institutions to potential counterparty risk.

In addition, the market operated on a T+0 settlement cycle (the same day the trade is made), so trades had to be pre-funded. Fast forward to 2022 and the market is unrecognisable from what it once was. A series of liberalising measures introduced by the Capital Market Authority (CMA) from 2015 onwards has enabled qualified foreign investors (QFIs) to freely trade listed securities, with certain conditions. These post-trade reforms, most notably the adoption of T+2 and establishment of an independent custody model, have eliminated many of the risks that previously discouraged global investors from participating in the local market.

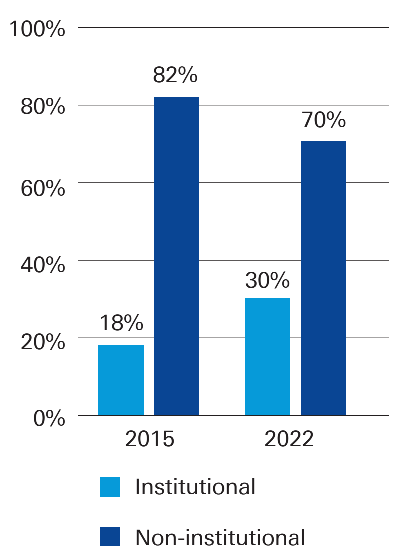
Market liberalisation yields positive results

Over the years, the CMA has simplified access channels to Saudi Arabia for foreign institutions by entrusting the QFI approval process to custodians, or so-called Authorised Assessing Persons (AAPs), expediting the entire procedure. Elsewhere, the regulator established a functioning derivatives industry so investors can properly hedge their market exposures. Beyond derivatives, the CMA has launched other investment tools, including securities lending, securities borrowing and short-selling – all welcomed by foreign investors. Saudi Arabia has further enhanced its market infrastructure with the creation of four new subsidiaries:

- Saudi Exchange – Saudi Arabia's dedicated stock exchange
- Muqassa – a domestic central counterparty (CCP)
- Edaa – Saudi Arabia's Securities Depository Center Company, a Central Securities Depository (CSD)
- Wamid – a technology and data-focused solution for the market

Photography: Getty

Figure 1: Growth in institutional trading in Saudi Arabia



Source: Weekly stock market ownership and trading activity report – Tadawul

Each of these positive reforms ultimately resulted in significant foreign investment into the country.

While Saudi Arabia's market remains overwhelmingly retail-dominated from a trading perspective, the Tadawul Periodic Report reveals a notable increase in institutional trading. In December 2015, institutional trading accounted for around 18% of overall trading volumes, a figure that had risen to 30% by April 2022. Regarding ownership, as of April 2022 QFIs held around US$87bn of Saudi Arabian securities, marking a notable shift. The figure exceeds forecasts – experts had initially anticipated that between US$40bn and US$45bn of capital would flow into Saudi Arabia following its Morgan Stanley Capital International (MSCI) upgrade in 2018. Despite these impressive inflows, the brakes have not been applied to the Saudi liberalisation agenda.

Post-trade reform gains momentum

In March 2022, the Saudi Tadawul Group announced several modifications to its post-trade infrastructure to help attract further international investment into the country. The changes will be felt across the Saudi Exchange, Muqassa and Edaa. Reforms to the Saudi Exchange include:

- The introduction of a more efficient handling of order flow by market participants through an enhanced mechanism for short-selling
- Same-day settlements (T+0) for buy-in trades which are executed on the Exchange
- A more flexible settlement cycle for negotiated deals, enabling buyers and sellers to agree on a settlement cycle from T+0 to T+5 depending on their requirements. This will benefit clients with liquidity as it is now possible to repatriate sales proceeds on the same day

For Muqassa, there will be an extension of clearing services to cover all securities traded on the Saudi Exchange, including equities, sukuks and bonds, together with the adoption of a comprehensive risk management framework. Additional post-trade services, including the ability to rectify trades before settlement and average or split price trades, have also been unveiled.

Several changes being implemented at Edaa are quite transformational. These include the introduction of straight-through-processing (STP) via ISO 15022 messaging – something which will bolster post-trade settlement and market-wide efficiencies. In addition, providing daily position reporting will aid the reconciliation mechanism and provide flexibility for CSD users, while enriched ad-hoc reporting will be vital when sharing downstream information to end-institutional investors. Some other notable benefits for the custody process include:

- Corporate action reporting from Edaa, which is now received via STP in ISO 15022 messages
- Status updates of trade are carried out in real time, enabling swift matching and reporting
- Elimination of rejection procedures and access to the system's user interface

The impetus to further strengthen the domestic market shows no sign of decelerating, and it does seem that many of the challenges which faced the Saudi Arabian market have been left behind.

In addition, structural reforms to Saudi Arabia's asset management industry are still required, and in-house fund administration continues to be ubiquitous despite having been phased out in most other major markets.

For this reason, there is a real need for specialist, third-party fund administrators to drive costs down and provide independence and transparency to investors.

> The brakes have not been applied to the Saudi liberalisation agenda

An eye on the future

Over the months ahead, digitalisation of financial services looks set to sweep through Saudi Arabia and across the GCC region, which is not far behind the world's pacesetters in terms of Web 3.0 progress.

The bank is watching distributed ledger technology (DLT) and the crypto space with interest. Saudi Arabia has announced investments in digital technologies which will aid the growth of projects using DLT and artificial intelligence (AI). Asset tokenisation is likely to start developing in the region too, especially as it relates to illiquid instruments such as real estate. Overall, the GCC region is now examining the merits of digital asset custody as investor appetite for digital assets, such as cryptocurrencies and security tokens, continues to grow.

The pace of change in Saudi Arabia since 2015 has been phenomenal and the country's ambitions are being rewarded with ample capital inflows. Having implemented a series of wide-ranging liberalising measures aimed at promoting inward investment, the country is making further reforms to bolster its already robust post-trade infrastructure. The bank anticipates listings of government-owned assets and by private companies in the technology, healthcare, finance and infrastructure sectors, which will create more liquidity in the market. By doing so, further inflows can be expected.

Manoj Aidasani is Head of Securities Services for GCC (Gulf Co-operation Council) at Deutsche Bank

The digital asset revolution in securities post-trade

New digital asset ecosystems are the drivers for a complete transformation of securities post-trade, but what does this mean for the custodian and what is the best way to prepare? Deutsche Bank's Boon-Hiong Chan provides a summary of his latest white paper explaining challenges and opportunities

Three years ago, the Deutsche Bank white paper ‘Transitioning into the future of securities post-trade’ focused on a pincer movement squeezing the post-trade industry, with structural margin compression and declining fee levels coupled with increasing costs.

At the same time, it offered hope that Distributed Ledger Technology (DLT) could pave the way for the industry towards a digital future, in which new tokenised or digitalised assets could introduce new revenue sources while shrinking legacy costs. Industry post-trade workflows would give way to a more modern, concurrent system with greater automation and built-in intelligence.

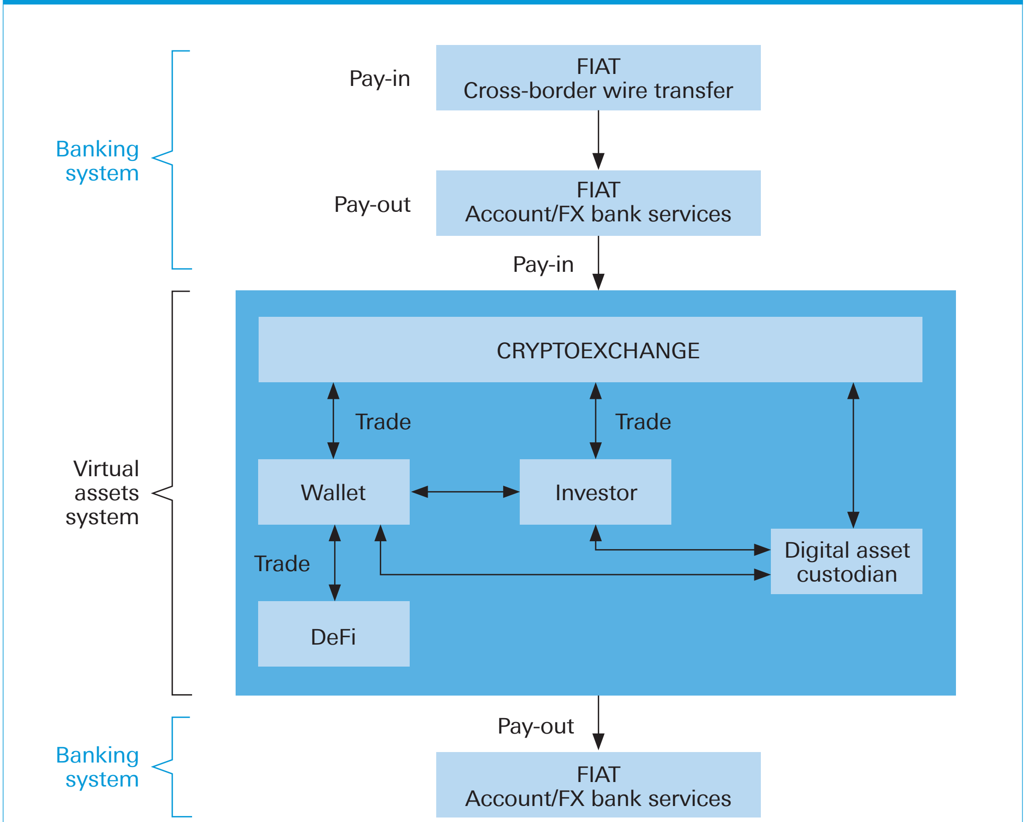
This article summarises the follow-up paper ‘The triple revolution in securities post-trade’, which updates the journey. It outlines how the digital asset ecosystem has since grown, its convergence with traditional finance, and the growth possibilities now available to the digital asset custodian. The entire report can be downloaded using the QR code on the opposite page.

Foundation of today’s digital assets

While complex, and made up of distinctive yet interconnected parts that form a continuous ecosystem, today’s digital assets world has three rich and large ecosystems for new participants and market structures to build on:

- Cryptocurrencies
- Tokenised financial assets
- Central bank digital currencies (CBDCs)

Figure 1: Cryptocurrency value chain and where the crypto/digital asset custodian fits



Source:Deutsche Bank

Bitcoin, as the progenitor of these ecosystems, started as a disruptive payment method and a medium of value. They have been joined by stablecoins, which have stepped in to adopt the latter role – although volatility in May–June 2022 has seen their stability questioned – while Bitcoin and other public cryptocurrencies have become more asset-like. Another cryptocurrency, Ethereum, provided the foundations for the decentralised finance (DeFi) space. Utilising smart contracts as agents to reinterpret how borrowing, lending and market-making activities can be conducted without principals, it is providing both new references for growth and new risks.

Tokenised financial assets, as the second digital assets ecosystem, grew with the abstraction of key characteristics from cryptocurrency’s underlying DLT to apply in the traditional financial sector. Its characteristics, including programmability, automation, concurrency and digital environment, offer innovations such as an ‘intermediary-lite’ model to directly integrate primary market issuance to investor activities and those on the secondary market.

CBDCs, the third segment, are national digital currencies being launched, piloted or developed by central banks around the world. These currencies are designed to introduce digital payment methods, programmable payments, central bank trust and a future channel for monetary policies. Their potential is about more than just efficient digital payments and will be the subject of a separate paper (see also the CBDC debate on pages 32 to 36).

The digital assets custodian

Each ecosystem is encouraging the formation of new market structures, with new roles and new workflows. The growth of cryptocurrencies, including DeFi, has attracted a new breed of crypto-savvy asset managers and hedge funds to meet the needs of yield-seeking investors. How the digital assets are safekept and administered can be different, although a digital asset custodian's leading role remains centred on control over an asset to prevent its unauthorised use or loss.

DeFi and the custodian

The paper explains that, so far, there have been few visible DeFi intersections with traditional finance, although Project Dunbar – a Bank for International Settlements (BIS)-led initiative with the central banks of Australia, Malaysia, Singapore and South Africa for common platforms for multiple CBDCs – mentions automated market makers (AMM), and there has been a leading proposal to collateralise stablecoin borrowing with native digital financial bonds issued on blockchain.

However, as investment goals underlie DeFi borrowing-lending-staking-yield farming themes, one of DeFi's main future disruptive and innovative potentials could be in asset management and hedge funds. The need to manage leverage, liquidity and systemic risks, and transparency of performance returns in these new segments, is similar to that in the traditional industry, and a digital asset custodian can be a trusted intermediary to facilitate access and protect assets to future permissioned DeFi opportunities.

> These new digital assets are gradually re-ordering the competitive dynamics

Tokenised assets and the custodian

Tokenised financial assets have seen DLT enable the digitalisation of assets and workflows, with smart contract automation, programmability and concurrent flows among the new competitive characteristics. Their benefits extend further, and include simplifying process flows to shrink market structure footprints, creating more versatile, compact and cost-effective operating models.

The report looks forward to a future in which the custodian takes custody of asset services and tokenised financial assets, using one of three models:

- The sub-custody model: The investor's custodian appoints a tokenised asset platform as its sub-custodian, if the private keys cannot leave the platform and the investor is active on that platform. The platform will use APIs to update the traditional custodian's IT systems.
- The account operator model: The custodian takes on an account operator role via a node to access the platform to safeguard and operate the private keys to digital assets.
- The crypto-inspired model: The investor's custodian may exchange the platform's tokenised asset for a 'wrapped' version that it can directly hold. Acting as a digital depository receipt, the wrapped token will represent the unit of the underlying tokenised assets.

The ability to interoperate accessibility into the choice of permissioned platform opens a host of new roles to a digital asset custodian. These include acting as: a centralised traditional custodian, appointed by the issuing platform to hold the underlying traditional securities that back the digitally tokenised issuances; an asset tokeniser in a depository receipt model where there is already an underlying traditional asset being tokenised; and as the DLT platform operator on which issuers and investors would participate.

Tokenised financial assets can lead to a list of services that resemble traditional requirements but are delivered in different digital means.

The digital asset supercycle

The closing section of the report assesses the forces shaping the digital asset supercycle, concluding that the opportunities are shaped as much by regulatory maturity and ecosystem adoption as they are by technology innovations.

In the cryptoasset ecosystem including DeFi, regulation will continue as the major force in shaping its evolution. In the tokenised financial asset ecosystem, it will be the pace and level of industry adoption of DLT and/or DLT-inspired infrastructure that determines success. And, while development of CBDCs is still at an early stage, it appears likely that a potential future challenge will come from national security issues spilling over.

"Each stakeholder group needs new perspectives so that progress avoids the mistake of being guided by rear-view mirrors," the report concludes. "As the supercycle continues, participants will need deep multi-disciplinary views to ensure bold and informed decisions on the new values, risks, costs, roles and responsibilities they take on, if they are to prosper as this brave new future unfolds."

Boon-Hiong Chan is Global Head, Fund Services Product Management; APAC Head, Securities Market & Technology Advocacy, Deutsche Bank Securities Services

Download the full white paper

Use your smartphone to scan the QR code below and download *The triple revolution in securities post-trade* here.

Editor's selection

The post-trade function has undergone a metamorphosis, fuelled by digitalisation, the emergence of new asset classes and industry reform. Here are our editorial picks from what has been a roller-coaster year

Managing evolving networks

The Network Forum (TNF) series of events are high points of the securities services community year, but during Covid-19, discussion could only happen virtually. After a three-year enforced hiatus, TNF convened in London on 13 and 14 June 2022, on the business day following the S&P 500's descent of 3.5%, dropping to almost 20% from its peak. In short, the operating environment, as noted in one of the early panels, was "challenging".

This article provides a useful barometer, with links to source materials of where infrastructure participants see some of the most dynamic changes. Examples include post-trade settlement acceleration towards T+1 and T+0, implementation of the EU's Central Securities Depositories Regulation's (CSDR) Settlement Discipline Regime (SDR), the role of big data in providing meaningful business intelligence, and the potential of tokenisation enabled by distributed ledger technology.

A brave new SDR world?

On 1 February 2022, the Central Securities Depositories Regulation's (CSDR) Settlement Discipline Regime (SDR) finally came into force, following two major changes to the deadline – which together amounted to a delay of nearly two-and-a-half years.

The SDR affects all actors in the securities lifecycle, from investors to central securities depositories (CSDs), aiming to improve the safety and efficiency of securities settlement in the European Economic Area (EEA). To achieve this, the SDR introduced a set of measures to prevent and address failures in the settlement of securities. This article explains the new regime, and the postponement by the European Securities and Markets Authority (ESMA) of the mandatory buy-in regime under CSDR for market participants that fail to settle their trades within a set period. A later release from ESMA confirmed the postponement was for three years.

What will be the shape of digital custody?

The most commonly traded digital asset is cryptocurrency, and although sentiment around this had changed considerably by mid-2022 following market plunges, underlining the asset class's volatility, some institutions, including hedge funds, family offices and wealth advisers, have been incorporating cryptocurrencies into their portfolios. Custodian banks are building digital custody solutions to help them.

In some jurisdictions (for example, China and India), the authorities have been swift to outlaw cryptocurrencies to safeguard investors. Meanwhile, the US is undertaking a review into whether stablecoins threaten financial stability, in what could be a precursor to tighter regulation. Others are not banning cryptocurrencies outright, but they are introducing protections to bring order to this largely unsupervised corner of the market.

This article provides more details about digital assets, the risks, regulatory treatment and what custodians need to prepare for.

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Trust and Agency Services

Trust and agency services touch most areas of Deutsche Bank. Here, we show two pivotal examples

Safe as houses

What holds 21 million mortgage files with a follow-the-sun team that can handle as many as 30,000 to 40,000 loan reviews in one day? *flow* takes a closer look at Deutsche Bank's document custody service located in Santa Ana, California, and its central role in supporting the US mortgage market

Photography: Alamy, Deutsche Bank

The US real estate market has seen significant change since the 2008 downturn that translated into a broad financial crisis. From significant government action to industry reformation and better underwriting standards, to instituting guard rails through legislative reforms like Dodd-Frank and the Housing and Economic Recovery Act of 2008, various initiatives have gone a long way to restoring confidence in this asset class for investors.

A changing landscape

As Gary Vaughan, Deutsche Bank's Head of Corporate Trust Americas, reflects, "As a result of the credit crisis, the mortgage market changed dramatically, with GSEs (government sponsored entities) taking a much larger role in the mortgage industry to stabilise things. This model has proven to be successful and is why these agencies exist."

This article provides further insights into the secondary mortgage market, and what is involved in managing loan documents across the range of parties involved in origination, warehouse lending (funding facilities for non-bank mortgage originators) and securitisation, over the life of these loans. The role of the document custodian is a critical one, and it remains pivotal as it facilitates the secure storage and retrieval of loan documentation on behalf of stakeholders.

Deutsche Bank has built a commanding presence in the US document custody market over the past three decades, where buy-side and sell-side communities dealing in loans look to Deutsche Bank to independently review, report and safeguard their physical and electronic loan documents. One indicator of the document custodian's importance to the US mortgage market was the fact that during the pandemic, when most people were working from home, more than 700 operations staff physically processed around 4,000 overnight packages from FedEx and UPS each day, on average. "This is a paper-intensive business with thousands of packages arriving daily that require same-day review. We were physically on the premises for our clients during the pandemic when it mattered the most to them. This really solidified our standing in the space," says Vaughan.

US primary and secondary mortgage and asset-backed securities markets

Generally, when a US borrower applies for a first home loan purchase or refinancing from a lender, this liability winds up as part of a bond offering (pool of mortgages) to the primary securitisation market. The sale of mortgage bonds, mortgage servicing rights, repurchases, etc., makes up the secondary market, which is very liquid.

The secondary market arises when, as explained in a US government paper called 'An Overview of the Housing Finance System in the United States' (Congressional Research Services, January 2017), the originator of the mortgage sells it or securitises it. When a mortgage is securitised, it is pooled into a security with other mortgages, and the payment streams associated with the mortgages are sold to investors. Thousands of contracts can therefore be bundled together and marketed as a bond offering to investors. Other loans, such as automotive lending and credit card debt, are also securitised; asset-backed securities (ABS) occupy a smaller yet meaningful proportion of Deutsche Bank's document custody business overall.

The US housing market is largely supported by three agencies operating under one central charter to foster home ownership throughout the country. Fannie Mae (FNMA) and Freddie Mac (FHLMC) are categorised as GSEs under the conservatorship/guardianship of the Federal Housing Finance Agency. Ginnie Mae (GNMA) is seated within the Department of Housing and Urban Development (HUD), where its mortgages are insured and guaranteed by the federal government.

None of these agencies originate or service the mortgages in their securitised pools. However, these agencies do set standards, provide oversight and manage service providers, as well as issuers and other service providers associated with these securitisations. The three agencies comprise around 90% of the secondary marketplace. According to the Congressional research paper: "What happens to a mortgage in the secondary market is partially determined by whether the mortgage is government-insured, conforming, or non-conforming. Depending on the type of mortgage-backed security (MBS) or mortgage purchased, investors will face different types of risks."

While the lender retains the direct relationship with the borrower or homeowner, they often finance their lending through other financial institutions, often referred to as 'warehouse lenders' or 'interim funders'. The mortgages are then securitised and/or sold to third parties, providing the mortgages qualify and there are no exceptions against the criteria established in agreements. Securitised loans wind up either in agency pools or non-agency (private) deals.

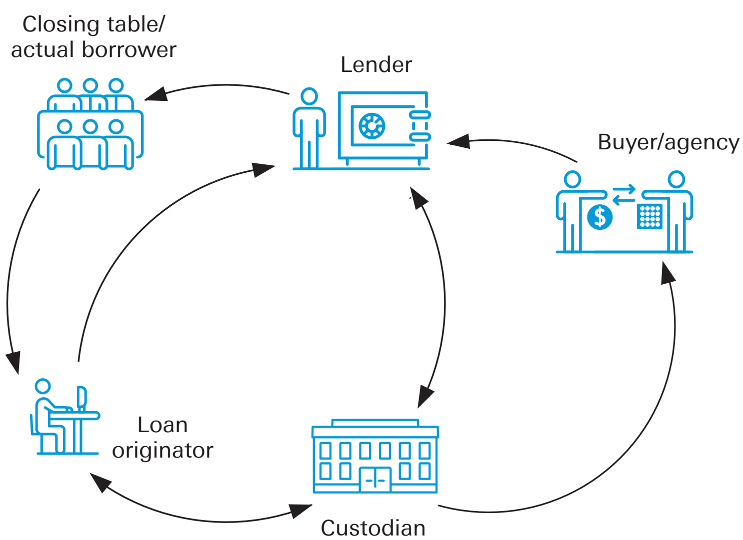
> Now, lending is a well-disciplined market and underwriting standards are solid
>
> James Macmillan, Co-Head, Document Custody Services, Deutsche Bank

Total outstanding mortgage debt is broadly estimated at around US$17.6trn in the US. Elevated inflation and higher interest rates are expected to weigh on economic growth and home sales in 2022, according to the Fannie Mae (FNMA/OTCQB) Economic and Strategic Research Group forecast. "Substantially higher mortgage rates are now the housing market's primary constraint. The ESR Group expects total home sales to fall to 13.5% in 2022… and, correspondingly, for mortgage originations to move downward to US$2.6trn in 2022 and US$2.2trn in 2023," the forecast outlines. Refinancing is a significant driver of the document custody business, yet refinancing origination activity continues to slow. As an offset, document custody is onboarding a wave of new clients, as specific competitors no longer meet agency requirements and Deutsche Bank proves its unrivalled capability and size. "We have come a long way from the pre-crisis," says the bank's Document Custody Client Services Co-Head, James Macmillan. He adds: "Now, lending is a well-disciplined market and underwriting standards are solid. Furthermore, the housing market will remain strong, primarily because of historically low delinquencies, low inventory and high ownership demand, especially from millennials."

Managing the documentation

Handling loan documents across the range of parties involved in origination, warehouse lending and securitisation, over the life of the loan, is not straightforward. Not only does each underlying loan have its own contract or file (a home loan produces a file of key documents such as a note, mortgage and title, for example), the physical possession of the collateral file is also fundamental to the financing of the loan. Each time a security changes hands, further documentation is generated, and layers are added to the chain-of-custody and secured interest assignments. Despite significant moves towards digitisation, the US real estate industry nevertheless generates vast quantities of paper documentation. It operates across more than 3,000 County Recorder offices, allowing for varying degrees of electronic documentation,

Figure 1: Summary of documentary custody interactions



Source: Deutsche Bank

and is governed at the state level by separate bodies, resulting in inconsistent rule-making across the US.

Since 2014, Deutsche Bank's document custody has modernised and invested in a suite of technology platforms. These include:

- Providing clients with secure web portal access to their accounts through DB Autobahn into Document Custody Manager
- The roll-out of Deutsche Bank's licensed eVault in 2018 to allow full participation in the expansion of the eNote adoption in the marketplace
- Investment in high-speed scanning and electronic image processing
- Use of intelligent character recognition (ICR) and optical character recognition (OCR) technologies, with an emphasis on machine learning (ML) and artificial intelligence (AI) to perform data analytics and document classification within its operations group

In addition, newer initiatives have included client-by-client application programming interface (API) web services, radio frequency identifiers (RFID) for file tracking and the ongoing expansion of the ML and AI, and the expansion of eVault services for certain uses. Alongside these technology investments, document custody has expanded its physical footprint by increasing its Santa Ana file room capacity, and acquiring a second facility 50 miles away with many more file room chambers.

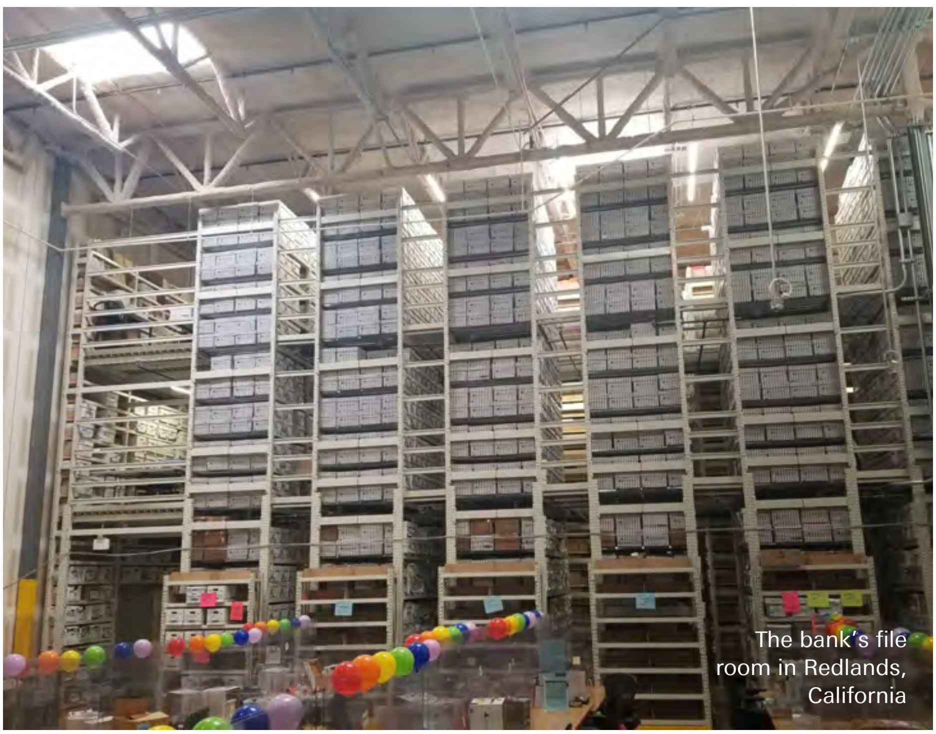
21 million

Number of files held in safekeeping on Deutsche Bank's document custody premises

Source: Deutsche Bank

Following the eVault launch in 2018, Deutsche Bank now handles the majority of eNotes in the US, and partners with large lenders and agencies that have made eNotes part of their overall strategy. The bank's online Document Custody Manager tool allows clients to query the status of their collateral, generate reports, and source and download images of their documents: increasingly an industry-wide requirement.

The combined pillars of a loyal workforce and intuitive technology have put the business in a good position.



The bank's file room in Redlands, California

Deutsche Bank Corporate Trust Director Chris Corcoran reflects: "Our seasoned, knowledgeable staff and our embracing of eNotes have strengthened our relationships with Fannie Mae, Freddie Mac and GNMA, making us the largest third-party custodian for all three entities."

Trusted repository

All participants, from loan originators to warehouse lenders, need evidence that each underlying loan complies with the underlying custodial agreement shared between all parties. "In the mortgage world right now we exist to provide review, certification, safekeeping, wire disbursement and securities settlement services, so that warehouse lenders can finance the mortgage companies," says Deutsche Bank's Vaughan.

While some banks that lend directly to borrowers may retain their own documentation, Deutsche Bank is the largest service provider to non-bank lenders, servicing around 40% of the US housing market that is securitised. "Our file room in Santa Ana, together with the sister facility in Redlands, California, currently holds more than 21 million loan files in safekeeping," says Macmillan.

Outlook for document custody business

"The technology required to develop initiatives such as Deutsche Bank's eVault file tracking allows us to process significantly more loans on a daily basis than we were able to before, and we are continually looking at how to expand the technology to make the process even more efficient," says Vaughan. The technology focus is one of the three pillars of this business – the other two are its people and facilities – that have supported 25% year-on-year average growth from 2009 to 2021.

Vaughan believes that being a successful document custodian requires fostering a client-centric culture, establishing a proven track record built on longstanding relationships and networks, and technological innovation, as digital and automation solutions emerge. It remains an institutional banking solution, given the need to safeguard and preserve the original note/contract, as well as other important documents.

He adds: "It is not and will never be a storage solution. It requires the custodian to know and understand the documents and their provenance and adhere to warehouse lender criteria and agency guidelines. This is accomplished by following policies and procedures with proper audit trails and maintaining client chain-of-custody."

Collateralised loan obligations explained

Against a backdrop of geopolitical and economic volatility, collateralised loan obligations (CLOs) continue to navigate uncertainty and hold net asset values. *flow* explains the role of this remarkable asset class in Deutsche Bank's Trust and Agency Services portfolio

Collateralised loan obligations (CLOs) sit at the pinnacle of various financial processes, in terms of both their sophistication and magnitude. CLO managers buy half of all leveraged loans issued, more than any single counterparty demographic, and for this reason are a vital component of the loan markets. This article unpacks CLOs, examining their building blocks, context, magnitude, merits, processes and prospects.

Syndication and securitisation framework

The key role for a bank (or lender) is to recycle capital efficiently, safeguarding capital for, and providing returns to, its investors, while also providing investment opportunities for others. A variety of financial mechanisms build upon each other to finesse the efficiency of this process, thereby enhancing capital provision, security and returns for the stakeholders involved. In this process, syndication is progressed by securitisation, which comes to life through CLOs.

Syndication

Syndicated loans see a group of lenders pool their resources to make a loan to borrowers, who are usually privately held companies, but sometimes also a special purpose vehicle (SPV) relating to a project. This both enables borrowers to raise greater sums and lenders to reduce their risk exposure. The syndicate of lenders will include the originator bank and will have the relationship with the underlying corporate. However the syndicate will also include other banks, funds and other participants.

Such syndication can occur regarding loans to investment-grade borrowers; but it also occurs regarding leveraged loans – both those which are 'broadly syndicated loans' (the most common form of leveraged loan) as well as those made to the mid-market. Leveraged loans are typically defined as:

1. Senior secured bank loans to sub-investment-grade corporates rated BB+ or lower; or else are
2. Loans that yield over 125 basis points above a particular benchmark interest rate and which are also secured by a first or second lien

Securitisation

Taking syndication a step further, securitisation merges the worlds of credit markets and capital markets, and in the process achieves a number of goals for both lenders and investors. Securitisation is the process of converting such loans into marketable securities, which can then be sold to investors. These marketable securities are 'structured credits', and thus are a sub-type of fixed-income securities.

CLOs, like other structured credits, fulfil this securitisation process by organising, pooling and structuring the syndicated collateral (in the case of CLOs, loans) into a single security, and then issuing to investors tranches of:

1. Bonds by maturity and risk; and
2. Equity

Leveraged loans are well suited for securitisation. This is because they pay regular income into the CLO and, given the large number of borrowers participating in the leveraged loans space, also provide a diverse source of assets for the CLO manager to choose from.

Function of CLOs

The main aim of CLOs is therefore to take loans (syndicated and/or leveraged) made to corporate or private equity borrowers, and to securitise them by slicing them up into 'tranches' of interest-paying bonds, thereby redistributing them from the lenders' balance sheets to investors.

These CLO pools are considerable, comprising typically 150 to 250 loans. Economically, holders of debt tranches are providing term-financing for the pools, whereas the equity investors own the managed pool – and therefore bear the upside but also the downside and default risk of the underlying loans.

Most CLOs are 'arbitrage CLOs', which try to capture the excess between (a) money coming from payments relating to the interest and principal on the underlying loans, and (b) money going out on costs, management fees, etc. The second type of CLOs are 'balance sheet CLOs', which are as the name suggests.

A history of investor-friendly innovation

CLOs have certainly evolved since the pre-2008 transactions (known as a CLO 1.0) and the direction of travel has generally been to enhance investors' protections and interests. After the 2008 financial crisis, notable developments in the more recent versions (CLO 2.0 and 3.0) have included increased credit support, Volcker rule compliance and a further diversified assets portfolio (subject to various tests and limitations to prevent high concentration or overexposure to certain sectors, for example).

The unique features, lifecycle and advantages of CLOs

Whilst syndication and securitisation reduce lenders' risk exposures, the issuance of a CLO provides investors with exposure to the underlying pool of corporate loans, enabling them to select securities within the CLO structure that match a risk–reward level of their own choosing.

Two key features of CLOs that distinguish them from other types of securitisations include the creation and lifecycle of the CLO, and the involvement of a CLO manager in actively managing the CLO.

Lifecycle and structure of a CLO

A CLO manager establishes an SPV, and then creates a capital structure comprising various tranches, ranging from debt tranches rated AAA down to BB, with the sole equity tranche sitting below this (see Figure 1).

Having raised capital from investors, the CLO manager then participates in syndications, carefully researching and buying tranches of assets that match the risk–return expectations of their investors, known as the 'warehouse period'. The 'ramp-up period' sees the CLO manager buy further assets using the issuance proceeds. The subsequent 'reinvestment period' sees the CLO manager trade assets (active management being a key distinguishing feature of this asset class, and is examined directly below), and the 'post-reinvestment period' or 'amortisation period' sees the CLO manager pay down the outstanding notes. Throughout the lifecycle of the CLO, interest and capital repayments received from the asset's underlying obligors are then used to pay the CLO managers' investors in line with the structure's cash flow waterfall.

Role of the CLO manager

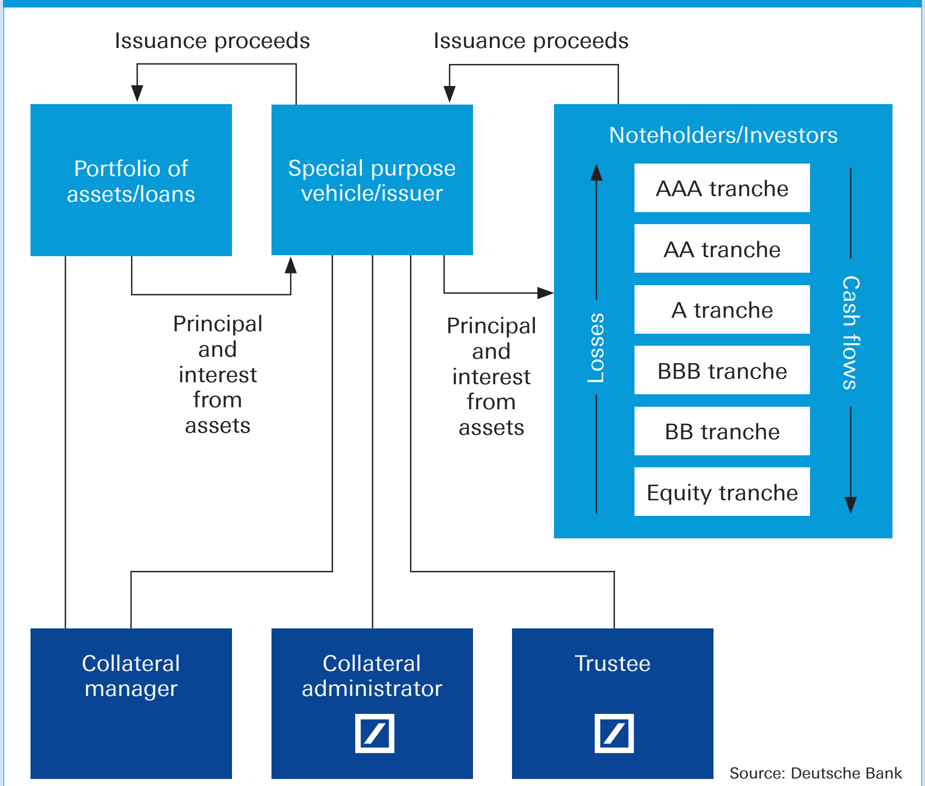
Most securitised products are pooled by investment managers at two extremes, ranging from a static portfolio to a dynamic portfolio, the latter seeing new assets added to the portfolio only when other assets have had their principals redeemed. CLOs sit in the middle of this spectrum: their active management helps maintain (and can improve) the yield of the portfolio of loans within the CLO. The CLO manager will mitigate any risk to the overall structure by continually performing various coverage tests on the portfolio. This crucial mechanism allows the manager to identify and correct any deterioration to the collateral. If the coverage tests are not meeting the necessary requirements, cash flows will be redirected from the lowest debt and equity-tranche holders to the more senior holders within the capital stack. While the CLO manager will decide which trades to make, these will be undertaken by the collateral administrator.

Role of the collateral administrator and trustee

The role of the collateral administrator and the role of the trustee are typically carried out by the same firm. This is usually a large commercial bank like Deutsche Bank. The role of the trustee is to represent the noteholders in the transaction and to hold certain issuer covenants and the security package (for example, the accounts and loans) for the noteholders' benefit. Should there be an event of default, the trustee can take control over the assets and bank accounts to protect the noteholder interests. If the CLO manager wants to change the terms of the CLO, then the trustee is there to represent the noteholders' interests.

The role of the collateral administrator is vital to the day-to-day running of the CLO. It books and settles trades and acts as a check/balance on the manager's obligations to act in accordance with the governing CLO documentation. It obtains valuations of the underlying assets, calculates, and performs compliance tests including performance and hypothetical trade testing, administers the bank accounts, makes payments and issues monthly investor and interest payment date reports on the underlying assets. It will work closely with the CLO manager to make certain the CLO has been managed according to the underlying documentation. It also provides an important role if the CLO hits an event of default, as it will switch from taking direction from the CLO manager to running the CLO at the request of the trustee.

Figure 1: Typical CLO structure



Source: Deutsche Bank

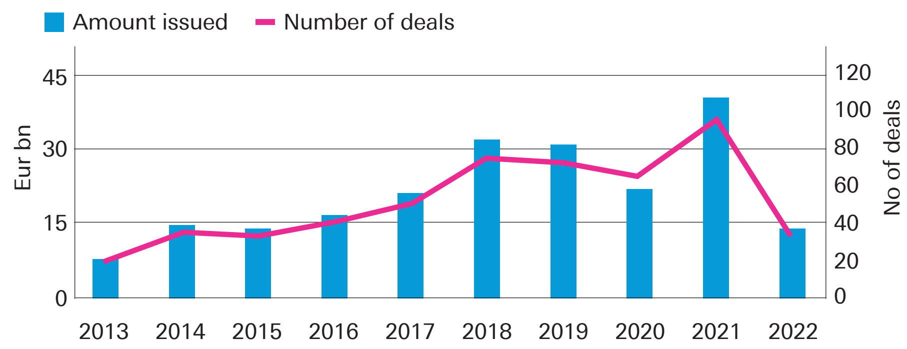
Benefits of CLOs

Thanks to the continuing improvements made from CLOs 1.0 to 3.0, CLOs today provide investors with several advantages.

They can offer higher returns (over the long-term) than other corporate debt types and can do so on a relative risk basis. The risk–reward balance is particularly favourable given the higher tranches in the CLO capital stack are typically over-collateralised, and today have both more stringent collateral eligibility requirements and higher levels of subordination. Higher subordination provides credit enhancement (that is, more protection should coverage tests or other performance tests not be met) to holders of senior debt tranches, for example by redirecting cash from debt tranches and equity.

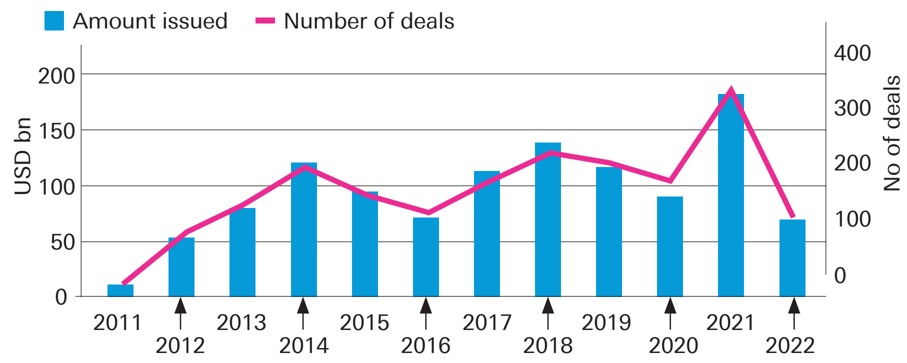
The active management of CLOs allows (subject to the specified and fixed 'reinvestment period' and factors such as the prepayment of loans) trades to be made to further protect the portfolio from losses and/or enhance returns. The final returns of a CLO for investors are therefore impacted by the skill of the CLO manager at every stage of the lifecycle, from structuring, analysis and selection of the credits, as well as in the active management of the portfolio. Even here, structural improvements brought in by CLO 2.0 have been made that enable the upside of active management while also providing safeguards, such as shorter call periods and shorter reinvestment periods.

Figure 2: Annual EU CLO issuance



Source: Deutsche Bank Research

Figure 3: Annual US CLO issuance



Source: Deutsche Bank Research

Long-term capital in a vast (and growing) market

These structural protections have pulled new investors into the asset class, while regulatory protections (such as the demise of proprietary trading by investment banks) have pushed old categories of investors out of the asset class. The result is that the pre-financial crisis 'hot money' that could be found investing in CLOs has disappeared, replaced by a return of strong and stable investors with longer-term horizons, such as pension funds, insurance companies, private equity houses and family offices.

CLO issuance, on the back of record levels of leveraged lending – hit record highs in 2021 in both the EU and the US (see Figures 2 and 3).

Regulation

Among the key regulations governing CLOs are:

- In the US, the Dodd-Frank Act (which implemented the Volcker Rule)
- In the EU, the Capital Requirements Regulation, the Securitisation Regulation, and the Alternative Investment Fund Managers Directive

It is worth noting that, although the UK has left the EU, its own regime closely follows that of the EU, which is becoming the global standard. These involve aspects such as whether high-yield bonds can be included, and how (and how much) risk should be retained by lenders and CLO managers (so-called risk retention, the compromise reached being 5%, albeit with increased reporting requirements). Such reporting initiatives include those aspects of the 'Simple, Transparent and Standardised' (STS) criteria within the EU's Securitisation Regulation which are applicable to CLOs.

ESG

On the subject of taxonomy challenges, from a somewhat slow start (the first CLO incorporating 'ESG' principles launched in 2018), ESG CLOs have become a very hot topic. A study by ratings agency Moody's assessed that 85% of all new CLOs issued in Europe in 2020 and 2021 incorporated, explicitly or implicitly, sustainability factors. ESG definitions for investment purposes continue to evolve, although efforts are being made to standardise this through the EU Taxonomy Regulation, for example. This moving picture obviously also affects what is deemed an ESG-compliant approach to CLO investment itself, ranging from 'light green' CLO products which simply use industry-based negative screening at one end, through to 'dark green' CLOs at the other, which have sustainable investment as their core objective.

Proven resilience

The CLO structure has proven itself having weathered the global financial crisis (GFC), and two subsequent down-cycles (if one factors in commodities and oil). Bar a slight pause in March 2021, as everyone tried to get their bearings, Covid caused barely a blip in the market's demand, supply or functioning. While the market took a couple of years to recover from the GFC, it only took a couple of months to bounce back from Covid. Each such challenge, from 2008 to 2021, has served to help tighten up the standardisation of CLO documents, creating a virtuous cycle which gives participants further comfort in the investment structure and market.

Editor’s selection

Trust and Agency Services is the glue holding many different areas of Deutsche Bank's wider product and service offering together. Here are our editorial picks from the *flow* website.

Paving the road to net-zero

Finance for critical ESG-aligned infrastructure is under way, but the journey has only just begun. In an interview, Deutsche Bank’s Claire Coustar, Emily Kreps and Thalia Delahayes share insights on how carbon pricing, the focus on natural capital and regulation are shaping project finance. Delahayes, who heads the bank’s Project Finance Agency Americas team, observes, “We have seen some interesting examples of how the momentum of energy transition can bring investors together from around the world. For example, last year we worked on a debt financing for three Finnish wind farms being developed by Luxcara.” The Deutsche Bank Trust and Agency Services team acted as financing intercreditor and security agent in a deal involving lenders from both Germany and Canada. Once operational, the project will power more than 140,000 Finnish homes.

CLOs – a continued growth trajectory

Further to the CLO explainer article in this section (see pages 73 to 75), this article provides a deep dive into the European CLO and leveraged loans market following the 9th Annual Investors’ Conference on European CLOs and Leveraged Loans.

We include some useful insights on investor attitudes and how European CLOs compare with the more mature US CLO market, drawing on Deutsche Bank Research analysis. Although CLO issuance hit record highs in 2021, surpassing even pre-pandemic levels, there were concerns about the geopolitical and macroeconomic headwinds. But, as Jason Connery, Head of Trust and Agency Services EMEA at Deutsche Bank, says, “the CLO 2.0 structure has proven itself, having weathered the global financial crisis and two subsequent downward cycles when commodities prices plunged”.

REITs in Asia – a resilient asset class

Why are real estate investment trusts (REITs) attracting investors in Asia? REITs have done for property ownership what mutual funds did for stock ownership. As helpfully explained by Deloitte China Real Estate Investment Trust Advisory Services, REITs offer corporates the opportunity to monetise their income-producing real estate assets (through selling them to a REIT, which then manages the property). They also offer investors the chance to own and earn from a share of real estate without requiring the wherewithal to buy and manage those assets outright. This article explains the structure, and includes insights from REIT trustee market leaders at Deutsche Bank in Hong Kong and Singapore about the post-pandemic opportunities for investors, both in the Greater Bay Area and beyond.

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How to manage the transition to net-zero

As economies around the world pledge their commitment to net-zero emissions by 2050, companies need to step up their decarbonisation plans. Deutsche Bank's Lavinia Bauerochse reflects on how this is changing the role of banks and why transition is becoming a core element in client conversations

Tackling climate change is one of the biggest challenges of our generation. Policymakers, companies and individuals need to take urgent and coordinated action to achieve net-zero emissions by 2050. The momentum has, encouragingly, ramped up since the COP26 summit in Glasgow in November 2021. While many businesses and market participants have focused on 'dark green' activities over the past couple of years, managing the transition is now becoming essential for corporates and financial institutions alike.

The term 'transition' refers to the time period during which an organisation transforms its high-carbon business model to adapt it to a low-carbon world. For many industries, this shift to net-zero requires fundamental changes, so organisations need to act now in order to mitigate transition risks. This is undoubtedly more challenging for sectors with a high climate impact, such as power, coal mining, upstream oil and gas, auto manufacturing, cement, steel, aviation and shipping – collectively accounting for approximately 75% of greenhouse gas emissions globally.

Some industries have already started their journey – for example, certain oil and gas companies are using the knowledge and experience gained from developing offshore oil production to create offshore wind energy infrastructures. Others have just begun the journey and require more support in defining a clear pathway towards meeting the goals

Deutsche Bank plans to increase the volume of ESG financing to more than

€500bn

by year-end 2025

of the Paris Agreement on climate change, which include limiting global warming to well below 2°C, preferably to 1.5°C, compared to pre-industrial levels. Ultimately, every business will be on its own path to net-zero, with specific financing, strategic and operational priorities.

The role of banks

In any case, transition requires unprecedented levels of investment and innovation. In May 2021, the International Energy Agency (IEA) pointed out in the report, *Net Zero by 2050: A Roadmap for the Global Energy Sector*, that by 2050 almost half of CO_2 emission reductions will come from technologies that are currently only at the demonstration or prototype phase. "This demands that governments quickly increase and reprioritise their spending on research and development – as well as on demonstrating and deploying clean energy technologies – putting them at the core of energy and climate policy," said the IEA. However, the responsibility does not just fall to governments and policymakers: the corporate sector and banks will be key – with the role of banks being two-fold. On one hand, they will act as growth enablers, helping to redirect capital flows to a lower-carbon economy. On the other hand, they are risk managers, and need to make sure they align their loan portfolios according to financial risks that are associated with environmental, social and governance (ESG) risks. In this respect, banks are guided by regulatory frameworks and their own commitments to reaching net-zero.

A core part of Deutsche Bank's sustainability strategy is the commitment to act as a reliable partner in financing and advising clients on the road towards achieving the goals of the Paris Agreement. The bank wants to ensure a just and orderly transition to a lower-carbon economy without causing unnecessary negative social effects and widening inequality. As a significant milestone towards more transparency, in March 2022 Deutsche Bank disclosed data on its corporate loan portfolio and announced it would deploy different levers to decarbonise its financing activities. These include:

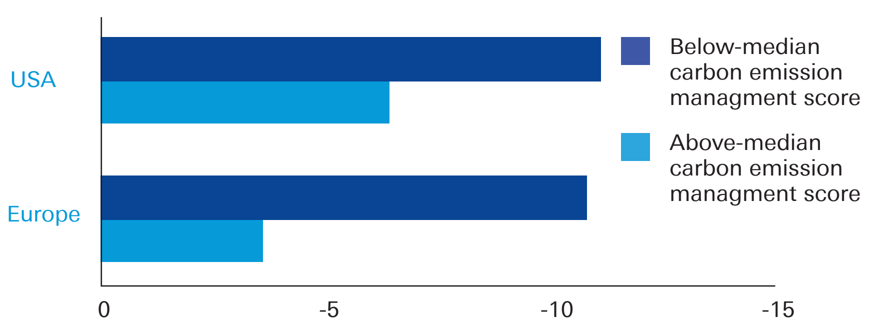
- Provision of transition financing to clients, reducing their carbon footprint
- Rebalancing loan portfolios towards clients with a greater focus on developing decarbonisation plans and on using fewer carbon-intensive technologies, such as renewables
- Reducing exposure to clients with limited capacity or willingness to decarbonise

By using the IEA's Net Zero Emissions by 2050 Scenario (NZE) as its benchmark, the bank is developing net-zero pathways for our loan portfolio overall while concentrating on four energy-intensive sectors driven by the following metrics:

- Oil and gas: kg of CO_2e per gigajoule (GJ) of production;
- Power generation: kg of CO_2e per megawatt hour;
- Steel: kg of CO_2e per tonne of steel produced;
- Automotive: g of CO_2e per vehicle kilometre travelled (emissions in the value chain of the company, so-called 'Scope 3')

Figure 1: Median total returns per carbon emissions management score, Jan–Apr 2022

This score measures how well a company manages its ESG risk. Higher management scores indicate a greater capacity to manage risk



Source: Emissions in focus on Earth Day, Deutsche Bank Research (22 April 2022)

This article shares how this strategy is working on the ground, in day-to-day conversations with clients and in transactions that support their journey. It isn't important how far down the path to transition companies are today, but it is essential they start the journey and have a clear plan of how they will get to net-zero.

Better ESG, better results

Before we look at how financing structures can help, it is important to remember that there is a clear economic rationale behind steering capital to companies with better emissions management strategies. Evidence published by Deutsche Bank Research suggests that companies that have strong ESG risk management in place score better results than their peers. In the US, the effect is even more visible (see Figure 1).

Improving carbon emissions management does not happen overnight. In this sense, every company is different: while some will require transition financing to invest in more energy-efficient machinery and manufacturing techniques, others may be more focused on increasing recycling shares of their end product and managing Scope 3 emissions in their wider supply chains.

Transition infrastructure and commodities

In general, it all starts with energy transition. One angle for Deutsche Bank's vital contribution is to finance commodities and products that support the overall net-zero transition journey. Redeveloping oil and gas assets so that they lead to lower greenhouse gas emissions per barrel at design stage is one way that we have put this into practice. For example, Deutsche Bank's Natural Resources Finance Team recently secured a US$1.1m reserve-based lending facility with Norwegian energy producer Noreco, providing a shining example of positive lending structuring.

The race is on to ensure there is enough installed renewable capacity to meet rising global demand for energy without increasing emissions. "Renewables face a range of policy uncertainties and implementation challenges, including those relating to financing, permitting, social acceptance and grid integration. Current increases in commodity prices have put upward pressure on investment costs, while the availability of raw materials and rising electricity prices in some markets pose additional challenges for wind and solar panel manufacturers in the short-term," says the IEA. It looks to government export credit agencies and lenders for the funding needed to overcome this.

Photography: Alamy

The current geopolitical climate is of particular relevance to Deutsche Bank's clients. The question of how to become more self-sufficient with regard to energy supplies, in light of spiking energy prices, is particularly pressing for companies, and we are able to support these efforts.

For example, we recently assisted BASF Group in the acquisition and construction of the world's largest offshore wind farm off the Dutch coast, and structured the financing of this complex project. This transaction was groundbreaking in many respects. At a time when energy security is being discussed everywhere, the company has invested significantly in a wind farm itself in order to reduce its dependence on third parties. At the same time, it is an important step for BASF to become climate neutral by 2050.

Among the renewable energy transactions that Deutsche Bank has supported is the export finance partnership with China's Sinosure for three onshore wind farms in Australia, with installed capacity of around 480 megawatts. As recently as 2016, only 175 megawatts of the country's electricity came from renewable sources, while 22 years ago 83% of its power production came from coal.

Supply chains enter into focus

When it comes to transitioning towards a net-zero economy, supply chains are of particular importance, given that up to 90% of an organisation's environmental impact lies in its value chain – either upstream (in the supply chain) or downstream (e.g. the product use phase). At the same time, the geopolitical environment has done much to concentrate the corporate mind on bringing supply chains closer to home. As near-shore production would also shorten transportation distances, this could positively impact ESG alignment of suppliers.

As the pressure for companies to track Scope 3 emissions and decarbonise their supply chains will continue, value chains of global retailers and original equipment manufacturers (OEMs) will be under scrutiny, pushing companies to seek green products, such as green steel or aluminium. This duty doesn't end with the environmental considerations – social and governance factors are also moving into the spotlight, as the EU plans to hold to account companies responsible for forced labour, child labour, inadequate workplace health and safety, or biodiversity loss in their supply chains. This is where Deutsche Bank works with corporates looking to onboard sustainable supply chain finance (SSCF) programmes, in order to incentivise their suppliers to enhance their ESG performance through preferential pricing. Therefore, SSCF programmes are a powerful tool to improve sustainable environmental and social practices across the entire client supplier ecosystem.

> Supporting our clients in defining clear pathways towards net-zero is core to our sustainability strategy, which is why we actively engage in transition dialogues with our clients

Yet, monetary incentives only act as a signal: once the systems are in place, suppliers need to demonstrate how they are or are not achieving the required KPIs – with data providing hard evidence of sustainable behaviour. This allows buyers to cluster suppliers according to their ESG performance and adjust procurement strategies. Suppliers unwilling to start their ESG journey may no longer be used.

Partnering with Deutsche Bank, German consumer goods company Henkel is one of the first companies to have linked an existing supply chain finance programme to the suppliers' ESG ratings. By improving their ESG rating, suppliers can reduce financing costs in the supply chain. The prerequisite for this is that they have a corresponding ESG rating. Initially, Henkel suppliers in Europe, which are integrated into the existing supply chain finance programme with Deutsche Bank, can benefit from the new structure. Next, the programme will be expanded to include suppliers outside Europe.

Transition dialogues

As the world steps up its efforts to meet climate objectives, it raises a further question: what will happen to assets where no transition is possible? In the past, we saw divestment strategies, but given the need to also get traditionally 'brown' sectors onto transition paths, it is expected that engagement and responsible ownership will play a more important role in public debate.

As such, essential questions need to be addressed. Could divestment alone decrease emissions? Who might be the best owner of harmful assets? Do governments need to intervene? It is a controversial debate, but one that needs to take place. The world might be better off with a responsible run-down overseen by transparent reporting and stakeholder pressure.

Supporting our clients in defining clear pathways towards net-zero is therefore core to our sustainability strategy, which is why we actively engage in transition dialogues with our clients. While we want to learn what their transition strategies look like, our clients want to hear more about how we can support specific sustainability initiatives and empower them to provide transparency to investors. As outlined above, corporates' access to capital will be increasingly bound to credible sustainability strategies and measurable outcomes.

In this regard, accurate data will be key for corporate decision-making and imperative for the risk management of financial institutions. So far, however, the lack of standardised and consistent ESG data presents a challenge. To tackle this issue, Deutsche Bank has, for example, teamed up with SYSTEMIQ, TLGG Consulting and SINE Foundation to sketch a potential solution on how to improve access to, and sharing of, high-quality ESG data along companies' value chains – which is the foundation of an ESG data commons. The bank plans to increase the volume of ESG financing to more than €500bn by year-end 2025, as announced at our Investor Deep Dive in March 2022. In this way, Deutsche Bank is not only making a contribution to fending off environmental and human catastrophe, but also, on a more immediate note, forging the way towards more sustainable businesses and more resilient communities around the globe.

Lavinia Bauerochse is Global Head of ESG at Deutsche Bank Corporate Bank, and a member of its Divisional Executive Committee. She is responsible for the Corporate Bank's sustainable finance dialogue with corporate clients, as well as defining the Corporate Bank's ESG strategy and offering. Lavinia is a Standing Committee member at the Green and Sustainable Finance Cluster Germany.

Bernau City Hall,
Berlin, 2020

Photography: Pfleiderer

Good wood

German wood panel producer Pfleiderer wants to further increase the share of recycled material used in its production. This is not only an essential part of the company's ESG strategy, but also relevant for its first sustainability-linked bond, as Mani Herold, CFO, and Carsten Linker, Head of Treasury, tell *flow*

It would be hard to find a company these days that doesn't consider the environmental impacts of its business. Yet few, such as German wood panel producer Pfleiderer, can claim that "sustainability has always been part of our DNA", to use the words of its CFO, Mani Herold. He adds, "In the past, we just didn't talk so much about it with banks and investors."

Lately, this has changed. On the back of the increasing importance that sustainability now enjoys amongst investors, employees and the public, Pfleiderer recalibrated its sustainability strategy over the course of 2021. To start, in April 2021 the company issued its first sustainability-linked bond of €750m, with Deutsche Bank being one of six banks that arranged the deal.

More recently, Pfleiderer mandated Sustainalytics, an agency designed to help investors understand the risks companies face with respect to environmental, social and governance (ESG) factors. "Our goal is to provide more transparency to our investors, and we are very proud of the outcome of our ESG rating," says Carsten Linker, Head of Treasury. Sustainalytics ranks Pfleiderer third amongst the 135 companies in the building products industry that the agency evaluates.

"Nowadays, we are not only acting sustainably, but we are also talking about the good we are doing," adds Herold. According to Herold, who joined Pfleiderer in early 2021, this change in communication is driven by the new mindset of investors and other stakeholders, and by the company's new ESG strategy, presented at the end of 2021.

Using recycled wood

But let's start from the beginning: in 1894, Gustav Pfleiderer founded a timber trading company and a rafting business in Heilbronn, Germany that used wood-based products. As early as 1993, the company started utilising recycled wood in its main facility, and four years later, Pfleiderer installed its first combined heat and power (CHP) plant that significantly reduced the energy needed in production processes. Nowadays, 84% of the company's energy is fuelled by biomass, on average.

Pfleiderer produces premium wood and laminate products for applications in kitchens, furniture and construction markets, as well as industrial resins for the packaging, construction and building materials industries. According to the company, "no trees are deliberately felled to make Pfleiderer's wood-based panels."

> Our banks told us that investors were showing great appetite for sustainability-linked bonds. This proved to be very good advice
>
> Mani Herold, CFO, Pfleiderer

Instead, the largest part of the wood mix (about 40%) comprises sawmill residues such as chips, sawdust, or edgings – so-called pre-consumer recycled material. Another 45% (roughly) comes back from the end consumer. This material includes broken pallets from the packaging industry, for example, or old kitchen cabinets fed back into the production cycle. A small proportion (around 15%) of the wood Pfleiderer uses comes from forests and is typically a by-product, such as thinning or residual wood (see Figure 1). By following this approach, Pfleiderer enables a win-win situation from a purchasing point of view too, as the company becomes more competitive and flexible on the wood-supply side.

While Pfleiderer has made significant progress on its sustainability agenda, the company defaulted on its debt in 2012 before successfully restructuring. Following this turnaround, Pfleiderer went public on the Warsaw Stock Exchange in early 2016. After the delisting in 2019, the wood specialist now completely belongs to the private equity investor Strategic Value Partners and employs around 2,200 staff, generating net sales of about €1bn in 2021.

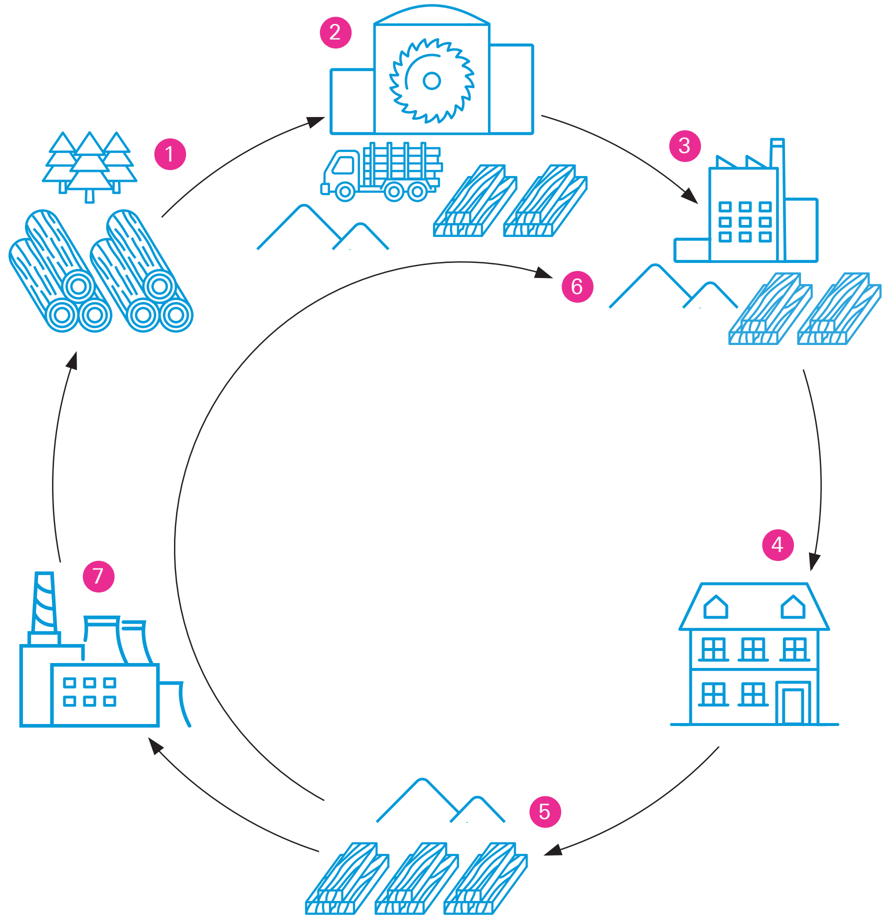
Setting up an ESG framework

While Pfleiderer's sourcing strategy reduces waste and promotes a circular wood ecosystem, the company's management feels it can get even better. By 2025,

Figure 1: Circular wood ecosystem at Pfleiderer

1. The potential of wood products for climate protection is high. CO_2 storage of wood:
   - 1kg wood stores 1.8kg CO_2
   - $1m^3$ wood stores 1,000kg CO_2

   CO₂ stored in wood remains bound after harvesting for the entire service life.
2. Logs are delivered to sawmills – cutting of bars and planks. Thinning and residual wood flows into the production of wood-based materials.
3. Chips, sawdust and edgings are residues that can be used for the production of wood-based materials.
4. Finished wood and wood-based products are supplied to consumers via trade, craftsmen and industry.
5. At the end of their service life, used wood and wood-based products are dismantled and processed in accordance with Waste Wood Ordinance rules. Disposal and processing of mineral and metallic components takes place, as well as chemical and organic pollution tests.
6. Only tested wood of the highest quality classes A1 and A2 is re-used as recycled material for the production of wood-based materials.
7. Wood that can no longer be recycled is used thermally in CHP plants. By dispensing with fossil fuels as far as possible, Pfleiderer gets the energy and heat it needs in a climate/CO_2-neutral way.



Source: Pfleiderer's ESG Framework Report 2021

Pfleiderer wants to increase the share of post-consumer recycled material to 50%. This is one key performance indicator (KPI) that the company has promised to deliver.

"We have thought long and hard about the ways we can build on the sustainable foundations of our business," writes CEO Dr Boris Gorella in his introduction to the ESG framework. "Ultimately, we want to ensure that we play a more active role in transitioning to a lower-carbon economy and do our part to help solve global challenges. Our stakeholders demand a response from us and we are determined to meet their growing expectations." The outcome of this thinking was Pfleiderer's 'naturally sustainable' strategy, comprising three priority areas: materials, climate and people. For each of these areas, the company has defined two or three measurable targets (see Figure 2).

Linking strategy to finance

These KPIs also provide the foundation for the sustainability-linked finance framework that Linker and his treasury team set up in early 2021. However, for simplicity reasons, they didn't include all KPIs, opting for two only. "We didn't want to create too much complexity for our investors," Linker explains. "Therefore, we decided to combine a target that everybody understands immediately – reducing CO_2 emissions – and one that is Pfleiderer-specific, which is increasing the share of recycled wood."

The idea of linking financing instruments to the company's sustainability targets in the first place was driven by the market. Herold recalls: "Our banks told us that investors were showing great appetite for sustainability-linked bonds. This proved to be very good advice." When Pfleiderer issued its first sustainable bond in April 2021, it was three times oversubscribed. "This was a positive surprise to us since we were new to the market and our approach – refinancing our existing €450m debt, that we had taken on in 2019 as part of the delisting, by a new bond with a volume of €750m – was quite aggressive. Moreover, uncertainty around the Covid-19 pandemic was still shaping markets," he says.

The bond is split into two tranches: Pfleiderer raised €400m with a fixed coupon of 4.75%, and a floater of €350m at three months Euribor plus 4.75%. If the company fails to adhere to one or both ESG targets that the bond is linked to, investors will receive a step-up. However, according to Herold, the company "is well under way to reach its 2022 interim goals for both KPIs".

The fact that Pfleiderer is committed to sustainability was also underlined recently by the ESG rating provider Sustainalytics, which assigned a 'low risk' status to the wood panel producer in March 2022. The agency differentiates three ESG risk rating categories for investors: negligible (0–10), low (10–20), medium (20-30), high (30–40) and severe (40+). With a score of 13.1, Pfleiderer commands the third position amongst the 135 companies in the building products industry ranked by Sustainalytics. It is also placed in the sixth percentile amongst more than 14,000 companies worldwide currently rated by agency.

"We are proud of these strong results for our debut ESG rating by Sustainalytics," says Herold. "The outcome is a clear recognition of our efforts to promote a circular wood ecosystem, which has been at the heart of our business for many decades, as well as to become a net zero-carbon business."

Figure 2: Pfleiderer's sustainability KPIs

MATERIALS	CLIMATE	PEOPLE
Increase the proportion of post-consumer recycled wood used to 50% by 2025	Reduce Scope 1 and Scope 2 greenhouse gas emissions by 21% by 2025	Reduce accidents involving employees and contractors; achieve a lost time accident (LTA) rate of 0.5 by 2025
Maintain at 100% the share of forest-derived materials from suppliers verified as operating in alignment with FSC and PEFC requirements	Reduce the indirect greenhouse gas emissions intensity relating to purchased chemical products used in our wood-based panels by 21% by 2025	Expand human capital management to diversify the pipeline of potential recruits, retain skilled employees, and improve career opportunities
At least 10% of chipboard products (by volume) will be manufactured using bio-based resins by 2025		

Source: Pfleiderer's ESG Framework Report 2021

Evaluating ESG policies and processes

But why has the company decided to solicit an ESG rating in the first place? After all, Pfleiderer had already defined KPIs for its sustainable finance strategy prior to issuing its sustainability-linked bond, as outlined above. These KPIs were classified as "ambitious, relevant and material for the issuer's business model" by the ESG rating agency, the Institutional Shareholder Services. So, why engage in another certification process which binds resources in company treasurer Linker's small team? As Linker manages relationships with banks, investors and rating agencies, he also coordinated the ESG rating process.

"We wanted to obtain further independent validation of our achievements in the area of sustainability," he explains. "First, this reassures our bond investors that we are on the right track when it comes to ESG. Second, the process also helped us internally to understand policy and reporting requirements even better."

The rating process began at the end of 2021 and took approximately three months, Linker recalls. In each of the three ESG dimensions the agency looks at policies, processes and reporting. "With respect to environmental risks, this, for example included reviewing our waste, water and CO_2 policies that were signed by our board. For evaluating our social performance, Sustainalytics looked at diversity and anti-discrimination policies while assessing governance, including (for example) if and how whistleblower systems are put in place," Linker explains.

According to Linker, there were no surprises in the rating process. However, he admits that the process helped to reveal minor gaps that still existed with respect to monitoring ESG processes: "One of the lessons learnt was that certain internal KPIs, such as employee training, need to be better documented." To ramp up sustainability reporting and simplify internal data exchange, Pfleiderer plans to invest in new software tools over the next couple of months. This is also happening against the backdrop of upcoming ESG regulation in Germany and Europe.

Regulation ahead

Germany, for example, passed a supply chain act in June 2021 which stipulates that companies will be responsible for complying with human rights and environmental requirements in their supply chains. Companies with more than 3,000 employees will be subject to the law from January 2023, and those with more than 1,000 employees must comply with these requirements from January 2024.

Herold says: "We feel comfortable with respect to this new law, as we are only sourcing from certified forests in Germany and recycled materials. Our wood travels a maximum of 250km to be processed in one of our five production plants." Furthermore, he adds, Pfleiderer already has certification and audit processes in place to ensure its suppliers adhere to standards for responsible forest management: "The wood industry in Germany is already very much regulated."

A new challenge for the company will be to fulfil the reporting requirements under the EU taxonomy and the associated Corporate Sustainability Reporting Directive (CSRD) regulation, says Linker. The new directive will require companies with more than 250 employees, a net turnover of more than €40m and a balance sheet of more than €20m (two of three criteria fulfilled) to disclose data on their sustainability performance. It will therefore impact Pfleiderer as well.

Although this rule won't come into force until 2024, for the financial year 2023 and onwards, a first set of sustainability reporting standards is expected to be published by mid-2022. "We have already started a project to ensure that we have processes in place to meet the requirements in time," Linker says. When the reporting standards are published, the company wants to be prepared – to prove that sustainability really is part of its DNA.

New ways of working

Agile working promises to make companies more dynamic. *flow* reports on how this is happening on the ground, providing insights from Deutsche Bank Corporate Bank's own agility journey together with that of the treasury team at software provider SAP

As geopolitical and economic shocks such as the Covid-19 pandemic and the Russia/Ukraine conflict become more frequent, nimble reactions to new market conditions have become a hallmark of successful companies. Firms that can quickly relocate supply chains, adjust investment decisions and adapt their offerings to changing customer needs (such as expanding online sales channels during lockdowns) gain competitive advantage.

In general, this is nothing new. In 1988, US business management author Tom Peters observed, "Unprecedented volatility … demands continued quick response, since the average enterprise no longer knows who its future competitors will be, next month's exchange rate or what new use of technology is about to make obsolete half its product line and/or distribution system."

However, Covid-19-accelerated digitalisation of transaction flows and the emergence of start-ups have increased the pressure on incumbent market players. The 'just do it' approach of the former can make the latter appear slow and cumbersome.

Enterprise agility gains traction

Given this new landscape, more firms are questioning traditional project management methods and 'enterprise agility' is gaining traction among human resources teams and organisational behaviour consultants. A global survey conducted by McKinsey in October 2020 showed that only 25% of the 2,190 organisations that responded had no plans to implement agile working in their organisation, while 44% are currently engaging in agile transformation.

So, why do agile methods outplay traditional ways of management? "Agile at scale is a way of working – and thinking – that can take organisations from rigid to resilient. It's more collaborative, more open, more creative, and more efficient than other models," notes the Boston Consulting Group (BCG). On its website, BCG asks, "What if you could unleash that power, release what's inside, talent, teamwork, creativity, the courage to experiment and learn and get better?"

The concept of enterprise agility originated in the software industry to speed up development and launch times of new releases. But nowadays, agility initiatives can be found right across industries – from companies such as Dutch beer brewer Heineken to American pharma giant Pfizer – that are embracing this. In short:

- Agile fundamentally changes the whole organisation – to transform successfully it needs support from top to bottom
- Agile affects cultures and behaviours – people in charge need to change the way they think and lead, but leaders need to show the way
- Agile takes time – leaders need to stay on track and not slip into old habits

Nevertheless, even though agility has gained popularity over recent years, "few companies have been able to implement enterprise agility." highlights BCG. While hybrid models and pilots are all very well, unless there is enterprise-wide scaling up and consistent support from the top, there is a risk that the benefits will not be realised. Figure 1 summarises some common pitfalls.

Photography: Alamy

Implementing agility at Deutsche Bank

Within non-tech corporate structures, agility initiatives can get stuck in IT departments, explains Julia Rutsch, Global Lead Agile Accelerator, Deutsche Bank Corporate Bank. This, she says, "is a missed opportunity" and "you need the business in the driving seat". When she pitched a change in delivery methodology to the senior leadership of the Corporate Bank in 2021, it was grasped with alacrity, even though it turned traditional command-and-control organisational culture upside down. It allowed people to experiment with ideas and learn without fear of failure, showing that the whole point is the open exchange of information and ideas across the business, operations and technology.

The next step was for the Deutsche Bank HR team to develop an 'Agile leadership manifesto'. This formed the basis for an in-house 'Agile leader' report and is now part of the bank's selection process for key agile roles, and part of the performance and rewards process, as it supports the 'how' and not the 'what'. Executive coaching was put in place in groups and on a one-to-one basis, followed by roundtable 'lighthouses', where agile leaders and coaches worked with groups on the agility agenda.

"Managing agile actually is demanding and rewarding at this same time – you benefit from smarter subject-matter experts to find ways to reach goals without a top–down directive," reflects Ole Matthiessen, Deutsche Bank's Global Head of Cash Management. Nevertheless, he admits that "stepping back and giving up control still feels tough at times".

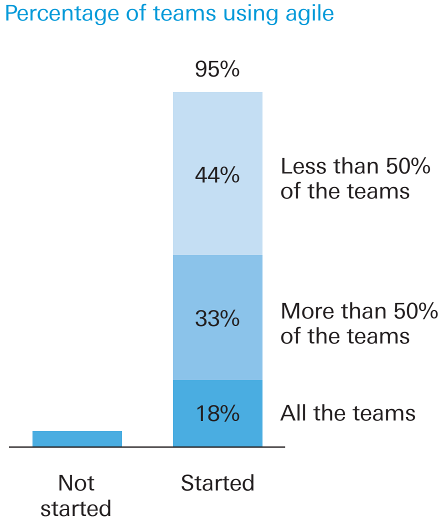
How did the Corporate Bank make agile happen throughout the enterprise? Four development phases were agreed for building agile leadership and behaviours:

- Ignite and inspire senior leaders to create a base for culture change – starting with the leaders themselves
- Articulate the top agile success behaviours and areas for improvement
- Activate by building new and visible behaviours embedded into daily leader routines and 'drumbeats'
- Embed new ways of working in the organisational context to monitor and sustain the change

Quarterly 'pulse' surveys were set up to keep track of how the roll-out was going and a 'tribe' structure with non-hierarchical leaders was set up, using the surveys as well as an agile learning journal as assessment tools.

Figure 1: Many companies embark on an agile transformation but most struggle to 'do Agile right' and leave money on the table

95% of companies have started their agile journey



Common pitfalls

1. Lack of alignment around stack-ranked priorities at the senior leadership level
2. Incentives not aligned with goals/business outcomes
3. Insufficient change in leadership style and behaviour
4. Measure and reward 'output' rather than business outcomes
5. Launching agile projects without changing the operating model and context
6. Focusing on the mechanics, such as scrum process or new tools

Source: Annual state of Agile reports 2020 (14th edition)

By the time Deutsche Bank CEO Christian Sewing told shareholders in March 2022 that "we want to increase speed, with less complex structures, leaner hierarchies and agile teams across the bank", the Corporate Bank's 'Agile Organisation' programme was well under way. Some 3,500 colleagues had been trained in the fundamentals of agile. There was good engagement with the German Workers Councils, and the routine of a quarterly pulse check to highlight areas of improvement was firmly in place.

Corporate perspective

Agile ways of working also seem to be welcomed by the bank's clients. As Steffen Diel, Head of Global Treasury at software provider SAP, said in the *flow* InCorporateTreasury Podcast, "It is not a must that banks and other third-party providers embark on the same agile journey as SAP treasury, but what we wish for is an open mindset on the side of our partners… to jointly discuss non-traditional solutions to problems in terms of digitalisation, for example when it comes to electronic signatures." For Diel, it is not important which working methods banks apply to achieve these goals, but he believes that reacting quickly to new market conditions is key, and that agile working allows for this.

> Agility needs the business in the driving seat
>
> Julia Rutsch, Global Lead Agile Accelerator, Deutsche Bank Corporate Bank

At SAP, several members of Diel's team already engage in agile ways of working by supporting the company's IT department in co-developing SAP's own cash management and treasury solution portfolio. But the wider agile transformation programme has only just started. Diel explains that to address the concerns of employees, SAP treasury started out with a few earlier adopters "who were really keen to engage in new ways of working". Then, over time, more team members were pulled in by showing the success of agile projects.

"It takes time to develop an agile mindset and leadership around it," he reflects. Deutsche Bank's Rutsch agrees. "To thrive in a competitive environment, the Corporate Bank must adapt to changing market trends and customer needs," he concludes. "This lies at the heart of our identity."

It's never too early

"Money makes the world go round" goes the song from *Cabaret*, yet teenagers learn surprisingly little from school about managing personal finance. *flow* reports on an initiative in Germany that is addressing this education gap

Can I afford to buy this new video game with my pocket money? Is it worth putting money aside and, if so, what's the best way to save for old age? Many 15-year-olds struggle to answer questions such as these, an OECD survey on financial literacy, published in 2020, found.

Around 117,000 teenagers from 13 countries took part in a test to evaluate their knowledge and skills relating to money matters. The assessment addressed topics such as dealing with bank accounts and debit cards, understanding interest rates on a loan and choosing between a variety of mobile phone plans. The results were sobering: one in seven 15-year-olds was unable to make even simple decisions on everyday spending. Moreover, on average across OECD countries, only about one in three students had the skills to interpret a bank statement, the report showed.

While Germany did not participate in this test, it is unlikely that it would have scored much better. This is because the country lacks a national strategy for financial literacy, as Dirk Loerwald, Professor for Economic Education at the University of Oldenburg, pointed out in a January 2022 guest contribution for the Association of German Banks.

"Possibly, this reservation is due to the widespread misunderstanding here that financial education is a special form of education that is relevant only for people working at investment banks, in wealth management, at accounting firms or for other financial market participants. But this is a fallacy," he wrote. According to Loerwald, financial education is "a basic competence" that "allows for a reflected participation in society, economy and politics".

Talk, don't teach

This is where the initiative 'So geht Geld' (translated as 'How money works') comes in. The project helps young people to acquire financial proficiency and gain a better understanding of economic connections. When invited by teachers, Deutsche Bank employees go into schools to talk to teenagers about the history of money, raise awareness of what affects their purchase behaviour and explain how everything from individual loans to the global financial system works.

"Going forward, we'll put even more emphasis on the financial education of the next generation," pledged Christian Sewing, CEO of Deutsche Bank, in May 2021 during his Sustainability Deep Dive. "From this year on we will ask senior managers to liaise with schools of their choice and offer them lessons on financial literacy: 350 of our colleagues in Germany have already registered for our initiatives on financial education – let's double our ambition to 700 colleagues by the end of 2022 and aim for each of them to give at least one lesson on financial literacy per year."

> We want to empower teenagers to make suitable financial decisions right now and as adults
>
> Ingo Ottmann, Regional Head Commercial Clients Hessen South, Deutsche Bank

"A lack of financial knowledge can become a real problem for young people," adds Suzana Schäfer, who is responsible for financial literacy programmes at Deutsche Bank within the Corporate Social Responsibility (CSR) department. "A lax handling of money and credit can lead young people into a debt trap."

Therefore, Deutsche Bank experts help to organise school lessons that teach pupils how to be responsible with money. To reassure schools and parents of its neutrality, Deutsche Bank has developed the programme in cooperation with the education agency YAEZ, which – together with the Association of German Banks – has also prepared the teaching materials. Launched in 2019, 'So geht Geld' is aimed at pupils starting from Year 5 at all types of school. Since the beginning of 2021, around 380 lessons took place in Germany.

"It's great to see how teenagers start to think differently about topics like savings or banks when it relates to their lives," says Ingo Ottmann, Regional Head Commercial Clients Hessen South, Deutsche Bank. "It's important to let the pupils talk about topics that matter to them – like buying a smartphone or the latest video game – rather than us doing dull teaching of economic issues."

Ottmann is one of the 950 Deutsche Bank employees who have signed up to the programme so far. "I believe it is necessary to learn how to deal with money as soon as possible. I have two kids and I recall my own time at school when financial education didn't really play a role," he says. "We want to empower teenagers to make suitable financial decisions right now

Photography: St. Marien Gymnasium Regensburg, Germany

Pupils at an online financial literacy class

and as adults. Therefore, we need to pick up everyone in their everyday life, show the relevance and implications for their future phases of life. Let it feel like fun to discuss finance issues."

Having worked in banking for more than two decades, Ottmann struggles with the declining reputation of the industry within society. "By going to schools, I want to show a different picture of what working for a bank could look like." Ottmann joined Deutsche Bank in the private clients' business around the turn of the millennium for a dual-study programme – at a time when working for a bank was considered a more attractive proposition by young people than it is now.

Home schooling rethought

Ottmann's first pupils were a ninth grade class, aged 15 to 16, at a school in Darmstadt, whose teacher had reached out to him via a local business contact. In his main job, Ottmann manages relations with commercial clients in the south of Hessen.

Despite making careful preparations, he faced a challenge from the outset. As his project kicked off in spring 2021 – as the second year of the Covid-19 pandemic began – Ottmann had to give most of the lessons from his desk at home. Together with his colleague Sarah Theuerkauf – a trainee at Deutsche Bank – he made the online classes as interactive as possible by using the Doodle Poll tool, digital point clouds or group work on case studies.

"For example, we asked the pupils what comes to mind when they think about money," he recalls. In a second step, the teenagers were then asked to consider how their parents and grandparents would have answered this question. "Changing perspectives helps to raise awareness of why saving is important or under which circumstances taking up debt might be reasonable," Ottmann believes.

However, several topics that were addressed focused less on banking. Ottmann and the schoolteacher also talked to the class about why streaming companies like Netflix, Amazon and Spotify offer part of their products free of charge – explaining the concept of data as a new currency.

Moreover, the teenagers were invited to ask all the questions that came to mind. Ottmann recalls one pupil asking whether a marriage settlement would make sense: "I thought this was a pretty pragmatic question for a 15- or 16-year-old," he laughs.

In general, he was surprised by how informed and enthusiastic many of the pupils were during the discussions. "Yet, it was a challenge to keep everybody on board, given the different social and economic backgrounds of the teenagers," he says. In total, he gave six lessons spread over two months – with the last class taking place in June 2021 at the school: "After weeks of home schooling, it was great to meet everybody in person."

For him, the first project was a runaway success, and he is now looking for a follow-up class on 'So geht Geld' in Darmstadt: "Some of the kids are still calling me and ask questions, like my top tips for writing a job application." Two of the teenagers have applied for an internship at Deutsche Bank, and one is even interested in starting a bank traineeship.

Towards COP27: the financial sector as a key driver of change

John W.H. Denton, Secretary General of the International Chamber of Commerce (ICC), explains why COP27 must deliver on climate finance and the vital role of the financial sector in achieving the Paris Agreement goals

The conflict in Ukraine has set in motion a multi-dimensional crisis – on food, energy and finance – impacting a global economy already battered by Covid-19 and the impact of climate change.

The latest Intergovernmental Panel on Climate Change (IPCC) reports underscore yet again that any further delay in urgent and concerted global action to limit global temperature increases to 1.5°C means we will miss a brief and rapidly closing window to secure a sustainable future.

Therefore, getting the world on track for net-zero emissions by 2050 and delivering on the Paris Agreement goals means countries must cooperate to mobilise increased levels of finance for investments in the low and net-zero emissions economy. All forms of finance are required: public and private, domestic and international. While private finance is not a substitute for the increased public finance flows, it will be critical in scaling up and extending climate change mitigation and adaptation efforts, thus delivering the transition to a net-zero economy. Reports by the Climate Policy Initiative, the International Energy Agency and the IPCC show that clean energy investments must immediately increase between three and five times. In dollar terms, investment levels need to rise to US$4trn by 2030 – and an estimated 70% of that must come from the private sector.

The Glasgow promise

The issue of finance was a constant fissure throughout COP26 in Glasgow in 2021. Developing countries conveyed their profound disappointment that the promise made more than a decade ago by wealthy nations to mobilise US$100bn per year by 2020 remained unfulfilled. COP26 also produced some impressive pledges from both governments and business. Financial leaders managing US$130trn in capital committed to align their operations with meeting the Paris goals, and thousands of companies in the ICC's own network committed to align their business models with net-zero emissions by 2050.

> Clean energy investments must immediately increase

We welcome the progress made in some key areas, but the deployment of private capital for climate finance remains limited – in particular for climate adaptation and natural climate solutions (such as reforestation, sustainable agriculture, ocean conservation and land restoration).

A roadmap for systems change

To shift markets at the speed and scale needed, governments must get the underlying economics and policies right. In the wake of the 2008 financial crisis, governments and regulatory bodies came together to address the failings of the financial system. A comparable decade-long action agenda is now required to enable the financial system to decisively align financial flows with our global sustainability imperatives.

Areas for policy change include: broadening central bank and regulatory mandates to include sustainability objectives; embedding sustainability in credit and regulatory risk calculations; exploring innovative financial vehicles, such as climate and nature-linked debt swaps; expanding and harmonising sustainable finance taxonomies; empowering consumers to make sustainable investment decisions aligned with their values; and finally, promoting sustainable finance partnerships and accelerating the deployment of public–private investments.

Critically, developed countries must now deliver on their US$100bn per year promise to rebuild trust among countries, and implement the rules agreed in Glasgow – in particular, decisions on cooperative approaches and market-based instruments.

Moreover, governments will need to develop a transparent mechanism to record, track and report carbon credits transactions as a key tool to ensure environmental integrity, support market formation and build public confidence. Research by the International Emissions Association and the University of Maryland has shown that successfully implementing Article 6 of the Paris Agreement on international emissions trading could generate US$300m per year by 2030, and exceed US$1trn per year by 2050.

Role of trade

International trade and trade finance is widely seen as an engine for inclusive economic growth and poverty reduction, and now it has a pivotal role in achieving our common climate and sustainability objectives.

Together with more than 200 banks and corporate sustainability leaders, the ICC is currently developing the first industry taxonomy to define what constitutes a sustainable trade finance transaction – filling a major gap in existing practice. Our objective is to present an initial framework in the second half of 2022. We see a remarkable opportunity to align the trade finance market – currently valued at US$5trn annually – with the Paris goals and sustainability objectives.

To deliver on these, we need the collective cooperation of the private sector and financial institutions with governments to mobilise much-needed climate finance and to scale up efforts to mitigate and adapt to climate change.

The ICC represents 45 million businesses across all sectors in more than 150 countries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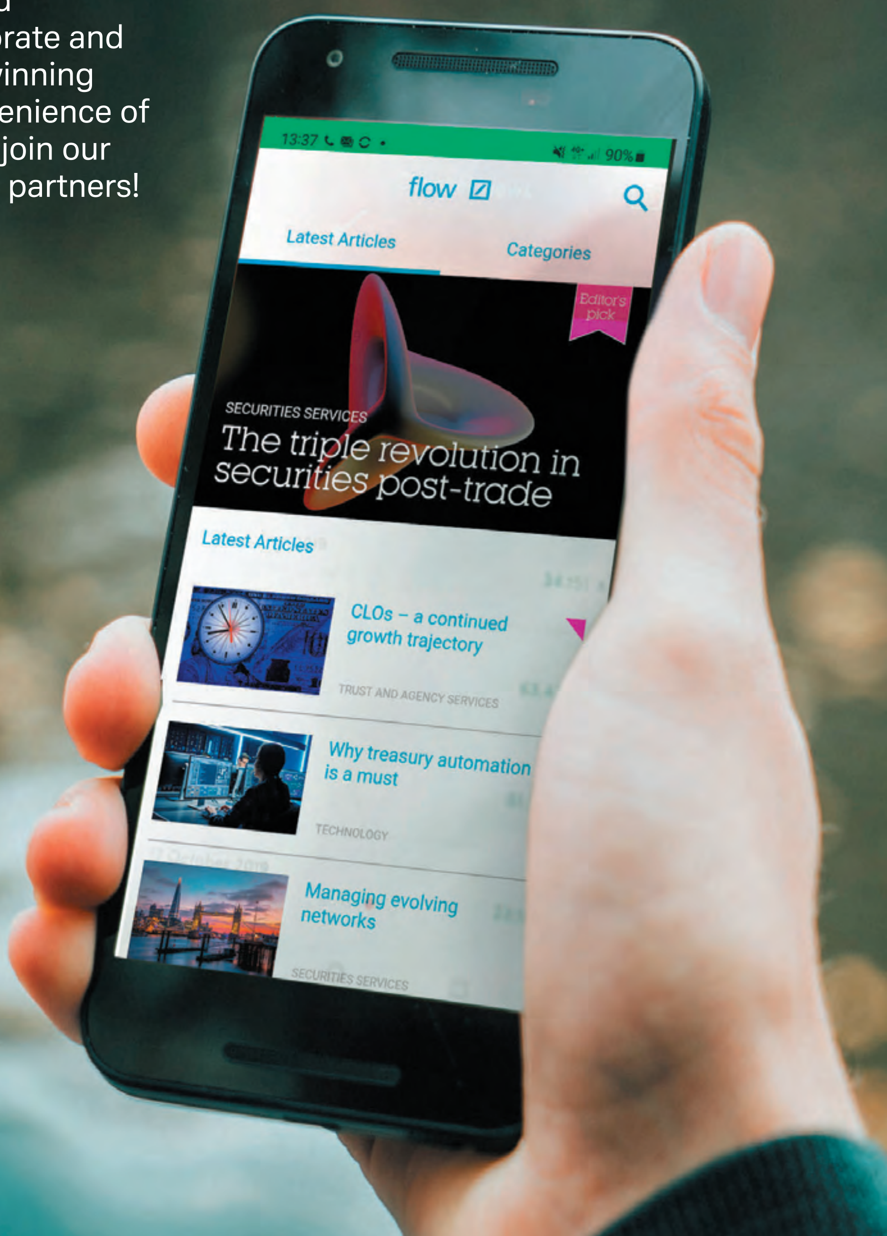

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