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EXECUTIVE SUMMARY

Our 'ACTS for 2025' white paper provides an economic lens to the key sustainability issues driving decision making across markets and economies, covering the four strategic themes shaping investor and corporate actions in 2025. This includes:

- 1. ADAPTATION:** Climate adaptation has become a strategic imperative for economic resilience and presents potential long-term value for all regions across various sectors. We delve into the pressures facing the global food system, analysing how innovations in sustainable agriculture tackle food security. Water is another prevalent issue for investors seeking to address negative jaw effects of less water and increasing demand, due to its crucial importance for many sectors across economies and its relevance for communities. Adaptation pressures facing the global economy are an opportunity for creating more resilient built environments, including greater infrastructure investment to manage physical climate risks.
- 2. CONSERVATION:** Conserving resources through energy efficiency, circular business models, and increasing investment into natural ecosystem services supports cost savings, value creation, and business model innovation. Energy efficiency is an essential enabler for reducing carbon emissions and accelerating the low carbon transition, while circular business models minimize waste and emissions by reusing and recycling materials. They also have become a necessity for goods producers committed to net zero. Investment in natural ecosystem services, including the protection and restoration of biodiversity, could improve agricultural productivity, drive resilience investment, and create ecosystem services benefits to stabilise the most vulnerable populations and manage migration challenges.
- 3. TRANSITION:** Scaling low carbon economy-wide transition is vital for implementing the Paris Agreement, with investment in renewables, energy storage, electrification of transport, cleaner industries, and sustainable supply chains becoming ever more relevant for companies and investors. These transition themes tackle energy security, spur greener growth, and create jobs at a local level across sectors. In the fixed income space, the momentum for sustainable capital markets remains strong for financing low carbon solutions, given the growth in green and sustainable bond market issuance in recent years.
- 4. SOCIETAL RESILIENCE:** Ensuring equitable and resilient societies will become an economic resilience driver. This focuses on progressing prosperity and inclusivity in a fast-changing global labour force, understanding the climate health nexus and aging population demographics, promoting gender equality, and balancing social aspects of responsible AI deployment. Blended finance directs greater finance flows to developing countries, stabilising local communities to ensure they feel safe and resilient. This could be crucial in achieving an equitable and inclusive transition, while avoiding civil unrest and subsequent societal consequences. Meanwhile the responsible deployment of AI remains important in the year ahead, given the developments of regulations and technology evolution in recent months.



ADAPTATION

A modern building with a lush green rooftop garden, symbolizing sustainable growth and climate adaptation. The image shows a multi-story building with a glass facade, and the rooftop is covered in a dense, multi-level garden of green plants. The perspective is from a central walkway on the roof, looking down the length of the building. The sky is visible through the glass windows, and the overall scene is bright and vibrant.

Investing in Climate Adaptation: A Strategic Imperative for Sustainable Growth

As climate change intensifies, the imperative to invest in adaptation and resilience has never been more critical. Adaptation can increase economic resilience, improve insurability, and address critical community primary needs: water to drink, food to eat, and safe living conditions. Adaptation finance represents only around 5% of total climate finance flows¹, and the UN estimates that within the next five years, USD387 billion per year is required to address the adaptation financing gap globally². Insufficient action on adaptation will likely trigger migration consequences, social unrest, and broader impacts on society. Conversely, investing in adaptation not only manages these increasing risks, but also presents substantial economic opportunities for all regions.

The Global Commission on Adaptation reports that every US dollar invested in adaptation yields up to USD10 in benefits, underscoring the financial prudence of such investments³. Recent MSCI research found that products and services from more than 800 publicly listed companies (circa 11% of listed companies globally) contributed to climate adaptation and resilience⁴. Our BNP Paribas Exane analysts also found that adaptation has risen up the ranks of Corporate, Social Responsibility (CSR) reports and investor calls, with insurance, utilities, and pharmaceuticals ranking in the top sectors discussing adaptation topics (as per figure 1)⁵. In the case of the materiality score, this corresponds to the sustainability issues companies are talking about in their CSR or integrated reports and their quarterly results calls, whereby results are scaled between 1 (least discussed) to 10 (most discussed) to show relative materiality of the topic.

Fig 1: Top sectors by discussions on climate adaptation by companies & investors
(ascending by results call materiality)

Sector	CSR Report materiality	Results call materiality
Automotive	2.5	1.5
Building Materials	5.2	1.8
Food & HPC (home & personal care)	2.6	1.8
Beverages	3.3	2.1
Consumer Goods	2.9	2.2
Aerospace & Defence	3.9	2.4
Mining	3.0	2.6
Pharmaceuticals	3.0	3.2
Utilities	3.7	3.9
Insurance	6.9	5.0

Source: BNP Paribas Exane research - 'Materiality Mapped', November 2024⁵

Furthermore, companies are seeing climate related impacts on their supply chains, with adverse weather and natural disasters ranking in the top three causes of supply chain disruption in 2024 due to disruption on shipping routes, and from storm damage and crop failures⁶. These supply chain impacts, and therefore resilience, is likely to remain a key business issue over the medium term due to the effect of climate change on production, delivery times, output and overall costs to operations from extreme weather events.

When it comes to how finance can pragmatically scale up adaptation action, there are four key areas to watch this year:

- water management
- agrifood systems
- resilient cities and infrastructure
- comprehensive adaptation solutions.

Tackling water management

Water scarcity and flooding are among the most immediate threats posed by climate change. The United Nations projects that by the end of 2025, 1.8 billion people will live in regions with absolute water scarcity⁷. Investing in companies that develop innovative water management solutions — such as advanced irrigation systems, more effective wastewater treatment, and desalination technologies — addresses these challenges. It also taps into a market projected to reach USD12.6 trillion by 2034 in terms of capital deployed in water security investment themes, according to Global Water Intelligence⁸. Investment in water not only strengthens water security, but also provides potential long-term value, as demand for sustainable water solutions escalates.

Investors are increasingly aware of the opportunities in the water thematic. Recent BNP Paribas Exane analysis in Q4 2024 of 9,000 sustainable equity funds found that investors had dedicated USD 80 billion of AuM (from 159 funds) to tackling water-related issues within their investment objectives⁵. Water was also ranked one of the highest appealing environmental investment themes in a recent BNP Paribas Asset Management & Coalition Greenwich global survey of 180 thematic investors⁹.

Optimizing water systems is especially relevant, with action needed on addressing leakages, and accelerating technology developments for smarter water management. A 2024 industry survey of over 2,400 water companies in the US found that watershed and source protection, and financing for capital improvements were ranked as the top issues facing the sector¹⁰. Other sectors with exposure to water usage and investing in water efficiency measures include technology (notably semiconductor manufacturers and data center operators), energy, apparel, agri-food and beverage. Therefore, supporting such capital expenditures through harnessing sustainable capital markets to tap funding sources for blue bonds, for example, could become a growing segment of the market in the months and years ahead across a range of sectors.

Ensuring resilient agrifood systems

Climate change and water scarcity threatens global food security by disrupting agricultural productivity. The number of days with extreme heat causing crop loss has increased over the last four decades, and crop loss days are projected to rise by a staggering 58% by 2030¹¹. This trend poses a significant threat to food security and agricultural economies worldwide.

The UN predicts that investing in agri-adaptation measures such as solar powered irrigation, new crop varieties, and weather alert systems, alongside other agri-resilient measures could help to avoid a 30% fall in global agricultural yields by 2050¹². There is potential to harness sustainable finance in this space, as the recent International Finance Corporation (IFC) Biodiversity Finance Reference Guide and Impact Metrics supplement (in which BNP Paribas was a contributor) highlights several examples of eligible activities for biodiversity bonds within climate smart agriculture, including drought resistant seeds, nutrient recycling, water storage, and floodplain restoration¹³.

The agritech market is expected to grow at a Compound Annual Growth Rate (CAGR) of 12.1% from 2020 to 2027¹⁴, reflecting the increasing demand for innovative agricultural solutions. Investing in agritech companies that develop climate-resilient crops, precision farming technologies, and sustainable supply chains not only bolsters food security and supply chain resilience, but also position investors to potentially benefit from an expanding sector.

Creating resilient cities and infrastructure

Urban areas are particularly vulnerable to climate-induced hazards like sea-level rise and extreme weather events. The World Bank estimates that investing in resilient infrastructure could save USD4.2 trillion over the lifetime of new infrastructure, with a benefit-cost ratio of 4:1¹⁵. Companies specializing in green building materials, smart grid technologies, and sustainable urban planning are at the forefront of this transformation. Investing in these sectors not only mitigates risks associated with climate change but also capitalizes on the growing demand for resilient urban development.

Specifically on flood risk for resilient infrastructure, we have seen the devastating impact of floods and storms across all regions of the world, with flooding accounting for USD51.6 billion in economic losses worldwide in 2023¹⁶. However, investing in resilient infrastructure to address this flood risk and avoid losses presents an opportunity, with Swiss Re estimating that grey infrastructure such as levees and dykes can reduce flood damage by up to 90%¹⁶.

Furthermore, according to MSCI analysis, 18% of green bond proceeds from utility companies' green bond issuances financed adaptation in 2023¹⁷. Therefore, the potential for capital markets to address resilient infrastructure investment through directing expenditures to adaptation projects is relevant for issuers across both the corporate and public sector segments.

Accelerating comprehensive climate adaptation solutions

Beyond sector-specific investments, there is a burgeoning market for comprehensive climate adaptation financing solutions, including insurance products that manage climate risks. The global climate risk insurance market is projected to grow, driven by increasing awareness and regulatory support. Investing in companies that offer innovative insurance products such as parametric insurance, climate analytics on weather impacts and early hazard warning systems, and risk assessment tools provides a dual benefit: it supports resilience efforts both globally and locally and offers investors exposure to a market poised for growth.

BNP Paribas supported Arbol; a physical risk adaptation solutions company specialised in parametric insurance, which is a type of insurance coverage that pays out based on predefined parameters. Their latest analysis highlights that the adoption of parametric insurance globally is rising by 20% annually¹¹. Parametric insurance can be relevant for addressing temperature increase impacts, as it goes beyond traditional insurance. For example, traditional crop insurance only recovers on average 51% of net income losses due to extreme heat in agriculture according to Arbol¹¹; therefore, progressing parametric solutions where payouts are linked to pre-defined temperature thresholds is relevant in the context of adaptation.

Beyond the investor and insurance space, adaptation investment through weather-related technologies that leverage AI may become increasingly important. There have been recent developments on geospatial mapping for resilience in emerging markets, with Multilateral Development Banks (MDBs) committing over US\$1 billion in financial support for AI based weather forecasting services to help farmers with resilient agriculture, and national meteorological and hydrological services¹⁸.

SUSTAINABLE FINANCE FLASH FOCUS

Sovereigns, MDBs and corporates sustainable bonds' scaling adaptation investments

Several development banks, sovereigns and corporates have issued sustainable or green bonds with frameworks that include adaptation project categories. This includes:

- In 2024, the African Development Bank launched a USD750 million global benchmark perpetual sustainable hybrid bond, representing the first ever hybrid capital transaction from a multilateral development bank (MDB). The bond included use of proceeds categories in several adaptation areas such as coastal adaptation projects, flood protection and irrigation projects addressing water vulnerability. BNP Paribas was Joint Structuring Agent, Joint Global Coordinator and Joint Bookrunner on the deal¹⁹.
- In 2023, the Republic of Slovenia updated its Sovereign Sustainability Bond Framework to include a climate change adaptation category which can cover expenditures such as anti-flood measures, flood forecasting, and resilient agriculture. BNP Paribas acted as sole sustainability structuring advisor on the update of Slovenia's Sustainability Bond Framework²⁰.
- On the corporate front, French utility Saur issued an inaugural EUR500 million Blue Bond, marking the first public benchmark-size blue-themed bond from an EMEA corporate²¹. The proceeds will support sustainable water management, including desalination technologies and treatment of wastewater amongst others. The framework also aligns to the International Capital Market Association (ICMA) and Loan Market Association (LMA) Principles, and the Guidelines for Blue Finance developed by the IFC. BNP Paribas acted as active bookrunner on the bond.

The escalating impacts of climate change necessitate a strategic shift in investment towards adaptation and resilience. By directing capital into sectors such as water management, agrifood systems, resilient infrastructure, and comprehensive adaptation solutions that address physical risks, investors can play a pivotal role in fostering a sustainable future. Moreover, these investments are not merely acts of corporate responsibility; they represent sound financial decisions, grounded in real economy fundamentals with long term value potential. As the global community rallies to address climate challenges, the financial sector has a unique opportunity to take a lead and align profitability with the imperative of building a more resilient economy.

CONSERVATION

Conserving resources sustainably to address the climate and biodiversity crisis

Conserving resources - from energy to natural materials - is a critical aspect of addressing the climate and biodiversity crisis. Accelerating energy efficiency, the shift to a circular economy and supporting ecosystem services to thrive all represent an opportunity for cost saving, value creation, and business model innovation across sectors and regions around the world.

The state of energy efficiency

Energy efficiency is a critical enabler for reducing carbon emissions and scaling the low carbon transition, and includes improving the energy efficiency of industrial processes, buildings, and transportation to optimize and manage energy effectively. The International Energy Agency estimates that improving energy efficiency could help deliver over a third of CO₂ emissions reductions needed up to 2030 for a net zero 2050 pathway alignment²². There has been some international progress on energy efficiency over the last few years, and globally at COP28 the world agreed to double the annual rate of energy efficiency improvements up to 2030.

From a fiscal perspective, the IEA calculates that between 2020-2030, over USD1 trillion of government spending has been earmarked to support energy efficiency, with 80% of this coming from the EU, US and China²². Energy efficiency is a significant part of the decarbonization investments of governments, and account for over 50% of all government support for clean energy investments²². From a sustainable finance perspective, supporting investments in energy efficiency through capital markets - including energy efficiency projects financed through green bonds - has been a prevalent theme in the sustainable bond market over the last five years, and is expected to continue.

SUSTAINABLE FINANCE FLASH FOCUS

Governments tackling energy efficiency through sustainable bond market issuance

In January 2025, the Italian government issued a EUR5 billion 20-year Green Bond as part of Italy's Sovereign Green Bonds framework. In 2024 the Italian government highlighted that the majority (48% - 53%) of the expenditure portfolio for 2024 issuance would be allocated to energy efficiency projects²³. This is up from the 25% of green expenditures of BTP (Italian sovereign bond) green issuances allocated to energy efficiency projects in 2021 and 2022. BNP Paribas supported as joint lead manager on the latest deal for Italy.

The concept of 'efficiency as a service' - whereby more energy efficient equipment is leased or pay per service models are used - could become more relevant to overcoming cost barriers, especially in an SME and developing country context. This is relevant for supporting more efficient heating, lighting and cooling equipment. Energy inefficient air conditioning (AC) is a key issue to address when it comes to cooling, as AC accounts for around 7% of electricity and 3% of carbon emissions globally²⁴. Ensuring that cooling equipment is more energy efficient is an imperative for heat adaptation in an inevitably warming planet, especially in developing country contexts where service-based equipment use models could also have socioeconomic co-benefits. In terms of the largest EM countries, currently fewer than 20% of households in India and 30% in Brazil are equipped with air conditioning²². However, demand for this cooling equipment will likely rise in the coming years, given rising temperatures expected ahead. Already in India, AC unit sales volumes rose 25% annually over recent years, with 11 million AC units sold in 2023²². The heat AC issue also has implications for human health, given the impacts of heat risk on citizens who do not have access to cooling technologies.

Circular business model opportunities & policy

Circular business models are crucial for goods manufacturers to achieve net zero. By reusing, recycling, and regenerating materials, they reduce waste and emissions, whilst minimizing the need for new resource extraction. In a world with limited resources, circularity conserves resources by keeping materials in use longer, reducing the energy required for production and environmental degradation.

However, latest global circularity levels, which are represented by the proportion of secondary materials in all material inputs into the economy, stood at only 7.2% in 2023. In fact, the world has become less circular since 2018 (9.1% in 2018)²⁵.

The circular economy represents not only an opportunity to reduce waste, recycle materials, but also to reduce costs and deepen relationships with suppliers and customers. There is also a strong link between circular economy, Scope 3 emissions and the biodiversity action plan roadmaps of corporates and investors, especially through a materials efficiency lens.

Regulation could be a notable factor in circular economy progress in Europe over the year ahead. In 2025 the first Corporate Sustainability Reporting Directive (CSRD reports will likely be published, and the disclosure regulation includes standards and requirements for European Sustainability Reporting Standard E5, which focuses on resource use and circular economy metrics. In addition, the adoption of the EU's Ecodesign for Sustainable Products Regulation and the European Critical Raw Materials Act are additional policy pushes for European corporates to address materials circularity. For example, the Critical Raw Materials Act targets EU recycling capacity to produce at least 25% of the EU's annual consumption of strategic raw materials (including rare earth metals, cobalt, lithium etc) by 2030²⁶.

Corporate investment in circular economy solutions through mergers and acquisitions across sectors has been an active market over the last year. From waste management companies diversifying their investments to tackle medical waste, to plastics manufacturers expanding their recycling portfolios to include solvent-based circularity businesses, these M&A activities reflect the increasing value companies are placing on circular economy business models. As recycling becomes more strategic for businesses and governments emphasize efficiency and resource security when legislating, there will likely be continued momentum on corporate investment and activity in the sector.

Sustainable finance approaches could also support scaling up materials recycling towards a circular economy. Leveraging existing work done by the ICMA may be relevant in the months ahead for issuers and borrowers, as ICMA has included several circular economy metrics in its a Key Performance Indicators (KPI) Illustrative Registry²⁷. This includes KPIs to address resource inflows and outflows such as durability, recycled content and waste within several categories. BNP Paribas has actively collaborated with ICMA on the registry since 2021.

SUSTAINABLE FINANCE FLASH FOCUS

Sustainable debt – including KPI linked and use of proceeds bonds - increasingly include a circular economy focus.

Some corporates have incorporated circular economy in their bond or loan financing structures, including:

- Pandora issued a EUR500 million sustainability linked bond in 2023 which included a scope 3 emissions KPI related to increasing recycled content of silver. BNP Paribas was joint bookrunner on the deal, whereby the KPI on the recycled content of silver was achieved the following year in 2024²⁸.
- L'Oréal included a KPI on the share of plastics used in packaging from recycled or biobased sources. BNP Paribas was structurer on the 2022 framework, and joint bookrunner and global co-ordinator on their inaugural EUR1.25 billion Sustainability Linked Bond which embedded the circularity KPIs²⁹.
- Dutch retailer Ahold Delhaize issued its first green bond in 2023. This included food waste recycling and waste prevention use of proceeds into the structure³⁰. BNP Paribas was bookrunner on the EUR500 million green bond.

Scaling investment into natural ecosystems services

A key part of conserving resources is the investment in natural ecosystem services, including the protection and restoration of biodiversity. The Global Biodiversity Framework agreed in 2022 sets 23 key biodiversity goals including to: restore 30% of all degraded ecosystems and conserve 30% of land, waters, and seas³¹.

Rapidly innovating across the financial system to scale up investments into these areas of the framework requires harnessing a broader financial toolkit. This includes a greater role for carbon markets, outcome bonds, and traditional sustainable finance mechanisms (such as use of proceeds and KPI linked bonds across the fixed income space for the protection and restoration of nature), as well as the integration of nature into equity investing approaches.

The recent agreement on Article 6 at COP29 is a major step in supporting funding to developing countries to scale nature-based solutions through carbon markets, whilst ensuring co-benefits for local communities. Our BNP Paribas Exane analysis found that in 2023, nature-based solutions accounted for the largest share of Voluntary Carbon Markets (VCM) issuance by project type (122 mt CO₂e)³². More broadly in terms of market size, MSCI predicts that the total value of the carbon credit market could grow from around USD1.5 billion in 2024 to circa USD35 billion in 2030 and USD250 billion in 2050¹⁷.


From an equity allocation perspective, nature has become a more important theme for investors. In an analysis of over 9,000 ESG funds in 2024, our BNP Paribas Exane team found there was USD113 billion AuM with investment objectives linked to biodiversity, ecology, nature and water⁵. This sustainable investing preference on water and ecosystem themes was also found in our recent BNP Paribas Asset Management survey conducted with Coalition Greenwich, where these two themes ranked highly amongst respondents⁹. The increased engagement of investors in nature related disclosures has also been a strong indicator of momentum ahead; at the end of 2024, the Taskforce for Nature Related Financial Disclosures (TNFD) had commitments from over 500 companies and investors, covering USD6.5trillion of capitalisation and USD17.7trillion of assets under management³³.

Startups are also driving some of the technological developments required for companies and investors to tackle the 'biodiversity data gap.' BNP Paribas has supported Nature Metrics, which has become one of the world's largest commercial providers of eDNA that can be used to measure, monitor and report on nature dependencies on biodiversity at scale³⁴.

Another area to address nature restoration is channeling finance to combat land degradation and desertification. The UN estimates that land restoration could deliver both environmental benefits, and investment returns of USD1.8 trillion annually³⁵. This represents a ratio of roughly 1:8 in USD return on investment terms according to the UN across environmental, social and economic gains, achieved through improved agricultural productivity, resilience and ecosystem services benefits for example.

TRANSITION

Scaling low carbon economy-wide transition



2025 is a critical year for progress on implementing the Paris Agreement international treaty on climate change, with governments due to submit their 2035 emission reduction targets in the first half of this year. According to BNP Paribas Exane analysis (fig 2), current climate pledges will only reduce emissions by 2.9% below 2019 levels³². This is far short of the 40% emissions cut needed by 2030, and the 60% cut needed by 2035 to limit global warming within the 1.5°C ambition of the Paris Agreement. Our analysts therefore expect a greater focus on overshoot scenarios this year, with an increasing urgency to ensure emissions targets lead to investments in tangible low carbon transition solutions.

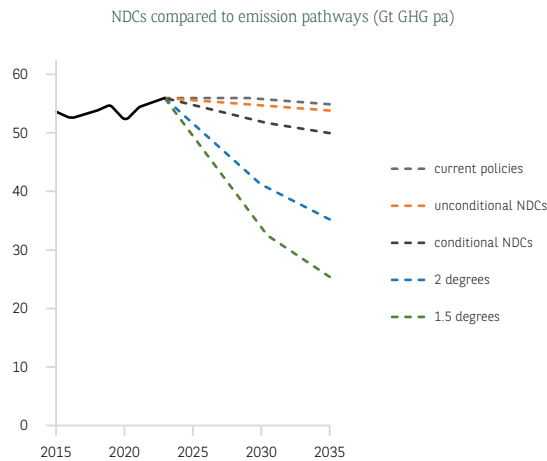
Given the urgency to reduce emissions, investment in the low carbon economy including renewables, energy storage, electrification of transport, cleaner industries and sustainable supply chains will all become critical in the transition ahead.

These transition themes all present an investment opportunity to create long term value for economies, support greener growth, and create jobs at a local level across sectors.

In the fixed income space, the momentum for sustainable capital markets remains strong for financing such low carbon solutions, given the growth in issuance in recent years (fig 3)³⁶. According to BNP Paribas Markets 360 research, global green bond issuance in 2024 stood at USD609.5bn, up 5% year-over-year and sustainability bond issuance rose by 27% year-over-year³⁷.

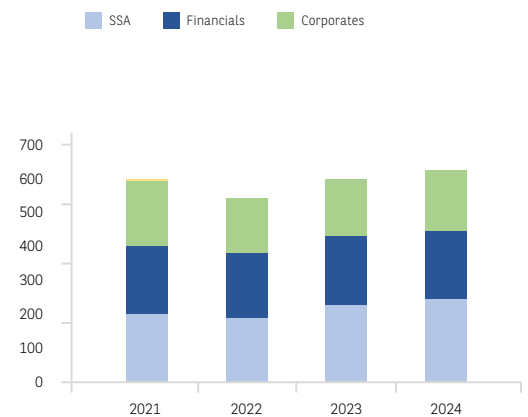
There have also been market developments on standards in the bond market to support such activities, and ICMA recently released its 'Green Enabling Projects Guidance' to help with the identification of green enabling projects that catalyse low carbon transition³⁸. On the equities front, our BNP Paribas Exane team estimate that around USD25 trillion of listed equity globally is currently in climate material sectors (circa one quarter of global market capitalisation)⁵. Of these investments, around USD5 trillion can be categorised as clean energy plays, based on EU taxonomy alignment or clean energy fund ownership⁵.

Nationally Determined Contributions (NDCs) vs emissions pathways (Fig 2)



Source: UNFCCC, IEA, Exane BNP Paribas estimates

Green Bond issuance (USDbn) (Fig 3)



Sources: Bloomberg, BNP Paribas

Practical pathways to scale energy transition

Both the developed and developing world are framing the energy transition through an energy security, clean growth and jobs triangle; with a clear link to global efforts to triple renewable energy by 2030, which was already agreed at COP28. Globally there are already 16.2 million jobs in renewable energy³⁹, and the International Labour Organisation predicts this will rise to 100 million green transition jobs by 2030⁴⁰. Therefore, the link between jobs, green growth and energy security will become more relevant in the year ahead.

Addressing energy value chains is an essential part of the transition to a low carbon economy. Scaling up renewable grid technologies will become a key enabler for low carbon transition over the next years, and energy companies in every region are investing a large proportion of their capex into developing the renewables grid. Our Markets 360 research team estimates that recent country pledges could install up to 1.5TW of energy storage capacity and add or refurbish 25 million km of grid globally by 2030³⁶. Energy companies and national electricity transition system operators (TSOs) are also major green bond issuers to date and could further tap both green bond market and loan market for scaling up investment in decarbonizing the grid.

SUSTAINABLE FINANCE FLASH FOCUS

Financing the largest clean energy project in US history

Project finance can be a key enabler in scaling up investment in renewable energy around the world. The USD11 billion project finance transaction for Pattern Energy has become the largest ever clean energy infrastructure project in US history⁴¹. It will bring clean power to three million Americans, and according to Pattern Energy has over USD20 billion in expected economic impacts. BNP Paribas acted as joint lead underwriter and joint lender on the deal, which aims to support finance for projects that will transport 3,000MW of clean, affordable and reliable electricity across the Western states⁴¹.

The decommissioning of coal fired power plants will be important for some regions in the year ahead too, notably in Southeast Asia and China where there is growing momentum on this issue. The latest UNEP Fossil Production Gap report found that China plans to reduce 5.3EJ of coal production annually to 2030, relative to 2021 levels, representing circa 17% reduction in coal fired generation⁴². This is also in line with China's commitment to peak emissions by 2030. Supporting this short-term need for fossil fuel phase out in line with countries' long-term net zero objectives will require new innovative financial approaches, including transition bonds, transition credits and other new transition financing mechanisms across the markets.

On nuclear, there has been increasing M&A activity and also increased engagement on nuclear Power Purchase Agreements (PPAs). According to data from the GlobalData Power Intelligence Center; in value terms in Q3 2024 nuclear related M&A deal activity increased by 1267% vs the previous quarter's total, and related deal volume was 40% higher than in Q3 2023⁴³. Nuclear energy market activity was especially prevalent in the technology sector, where technology companies are increasingly using nuclear energy to power their data centers with these renewables using PPAs, given increased energy demand from AI. These developments further create potential for financing and advisory to become enablers in the energy transition in this space for companies across the sector.

Beyond carbon, methane is the second largest source of greenhouse gas emissions after carbon dioxide and is responsible for around 11% of global emissions⁴⁴. Although methane emissions are lower than carbon, methane is over 80 times more potent than CO₂ on a 20-year timescale⁴⁵. There has been increasing interest from developed and emerging markets on tackling methane, including from organic waste - which is the third largest source of anthropogenic methane emissions, behind agriculture and fossil fuels⁴⁶. Incentivizing methane mitigation through sustainable finance solutions in the waste management sector - including accelerating the production of sustainable energy sources from organic waste (biomethane) approaches in mature, regulated markets - could potentially present a relevant pathway to further reduce methane emissions and would also align to the EU taxonomy. Outside of the waste sector, tackling methane emissions from the oil and gas sector is another area of potential development over the next year. The Methane Abatement Financing Taskforce (which BNP Paribas participates on) aims to develop criteria and recommend financing approaches to accelerating methane abatement financing in the oil and gas value chain, with a particular focus on national oil companies in low/middle income countries to ensure financing and technical hurdles can be tackled.

SUSTAINABLE FINANCE FLASH FOCUS

Methane KPIs in the sustainable bond market

Methane KPIs have been integrated into some sustainability linked bonds to date, notably in the energy sector, including:

- Italian energy company SNAM included a KPI on methane emissions reduction, as well as eligible categories focused on the reduction of methane leakage in its Sustainable Finance framework in 2021, which covered both use of proceeds and sustainability linked financing instruments⁴⁷. This includes addressing fugitive emissions from leaks and incomplete combustion for example. The KPI on methane reduction was included in their inaugural Sustainability Linked Bond issued in 2021. BNP Paribas acted as joint ESG Structuring Coordinator on the framework.

Accelerating the electrification of transport

Transportation is a significant source of emissions worldwide, representing close to 15% of total greenhouse gas emissions globally⁴⁸. We have seen a renewed focus on the electrification of transport systems across rail and freight, albeit with some headwinds in the Electric Vehicle (EV) space in certain markets.

On freight emissions, at COP29 we saw the Global Green Road Corridors Initiative launched to develop at least 10 green charging infrastructure corridors for zero-emission freight across Africa, Asia, Europe, and the Americas regions by 2026⁴⁹. Ensuring investment into such charging infrastructure will therefore be a key lever in enabling emissions reduction in the sector, whilst also helping companies with a high transport footprint to tackle their scope 3 emissions across the supply chain.

Charging infrastructure critically relies on scaling up investment in a greener grid and renewables. When it comes to specific market activity on financing charging infrastructure, financial advisory and lending support for innovative companies can be useful in accelerating the electrification of transport. In 2024 for example, BNP Paribas was advisor on the EUR304 million equity capital raising for Electra, a French scale up focussed on rolling out ultra-fast charging stations across Europe⁵⁰.

On the automotive front; in Europe, it should be noted that the EV market has faced some recent challenges due to slower than expected sales growth, supply chain dynamics of divergence in the battery sector in Europe vs China, and also changes to the fiscal landscape for EV subsidies. In 2024, although 17 million fully electric and plug-in hybrid cars were sold globally, year-on-year growth in annual EV sales was the slowest in four months in December 2024, according to Rho Motion, a specialist energy transition data firm⁵¹.

Catalysing cleaner industries

Technologies to support the decarbonisation of carbon intensive industries, such as carbon capture and e-fuels such as Sustainable Aviation Fuel (SAF), will be important for reducing emissions in hard to abate sectors including steel, shipping and aviation. Scaling these will require further collaboration across the transition value chain, including expert engagement across financial and advisory solutions to derisk nascent technologies and scale in an environment of varied industrial policy across markets.

On carbon capture, momentum is building on industrial clusters to support their development, with recent projects announced in the UK at the end of 2024. Industrial policy remains a core driver of this path ahead for Carbon Capture Utilisation and Storage (CCUS), and the EU region and UK have combined targets to capture and store 554 million tonnes of CO₂ per year by 2050, which represents circa 16% of combined 2023 emission levels⁵².

SAF is another area of development across cleaner industries value chain, with potential for further scale through financing and advisory, given the nature of expertise across sectors. Regulation is a core driver for SAF integration. Through the ReFuelEU Aviation Regulation, the EU has set a minimum supply mandate of SAF at 2% this year, increasing to 70% by 2050⁵³. The market for SAF is therefore set to develop further, and S&P forecast that globally demand for e-SAF could reach close to 17 MMt per year by 2050, with 66% of demand accounted for by European market driven mandates⁵⁴. Investment in SAF is also accelerating. In 2024, BNP Paribas co-invested in a Sustainable Aviation Fuel (SAF) financing fund to accelerate the production of SAF, together with several corporate partners including international airlines⁵⁵.

SUSTAINABLE FINANCE FLASH FOCUS

Decarbonising the steel industry

- The Stegra project (previously called H2 Green Steel) in Sweden closed a EUR4.2 billion senior debt financing in 2024 for one of the world's largest integrated low-carbon steel plants⁵⁶. Due to the utilization of green hydrogen, the project will be able to produce steel with up to 95% lower CO₂ emissions than steel made with coke-fired blast furnaces. The senior debt raise has state support backing through Riksgälden (Swedish National Debt Office) as a credit guarantee, and Euler Hermes as an export credit cover. Stegra was also awarded a EUR250 million grant from the EU Innovation Fund. BNP Paribas acted as Pathfinder and Senior Mandated Lead Arranger in the senior debt financing.

The scope 3 supply chain cost saver

Corporates are increasingly highlighting supply chain decarbonization measures as a useful approach to address their Scope 3 emissions. This includes investments into zero emission deliveries and renewables integration within supply chains.

Supply chain decarbonization can also be a cost saver. For example, Carbon Disclosure Project (CDP) estimates that companies cutting their scope 3 emissions have saved close to USD13.6bn in costs, and that collaboration between suppliers and buyers has delivered 43 million tonnes of greenhouse gas emissions (GHG) savings⁵⁷. The savings stem primarily from initiatives related to low carbon energy generation and energy efficiency. There is also an estimated USD165bn of potential financial gains from tackling supply chain climate opportunities, according to CDP⁵⁷. As companies seek to address supply chain emissions, there may be a greater role for sustainable supply chain finance to support decarbonization of supply chains, especially for companies with complex supplier engagement needs across different markets.

SOCIETAL RESILIENCE

Ensuring equitable and
resilient societies

As the world deals with climate change, ensuring an equitable and just transition towards resilient societies and empowering citizens is critical, and the social pillar of sustainability is important to address. This includes the need to ensure prosperity and inclusivity, awareness on the climate and demographics health nexus, progress on gender equality, and balancing social aspects of responsible AI deployment.

Progressing prosperity and inclusivity

Developing countries are often facing large ecological, economic and social burdens from climate change and face disproportionately higher loss and damage impacts. The UN predicts that developing countries need circa USD1.8 trillion by 2030 in climate finance to address climate mitigation and adaptation challenges⁵⁸, and ensuring a just and equitable transition is therefore critical. Considering more equitable socioeconomic benefits from transition, including new job opportunities, skills development for carbon intensive industry workers to transition to greener industries, and localized approaches where communities are a core part of climate mitigation and adaptation solutions. This will be a key aspect of the just transition.

Blended finance is critical in 2025. Supporting greater finance flows to developing countries is a core part of ensuring an equitable and inclusive transition and scaling up blended finance could be an important lever. Development Finance Institutions (DFIs) and Multilateral Development Banks (MDBs) have been key to supporting the blended finance market, and in 2023 commercial financing from DFIs and MDBs for blended finance mechanisms grew by 140%⁵⁹. More broadly over the last decade, the blended finance market has averaged 85 deals per year, with median annual financing totaling USD15 billion for the whole blended finance market⁵⁹.

Further to addressing loss and damage, climate finance should also be channeled to indigenous communities. Indigenous communities safeguard close to 80% of the world's remaining biodiversity, and a third of the remaining intact forests are on indigenous peoples' land⁶⁰. Therefore, ensuring indigenous people are part of the climate conversation is important, especially looking ahead to COP30 in Brazil at the end of this year. Considering indigenous people's issues within finance approaches is important, including in ESG risk assessments, which can build upon existing approaches such as the Equator Principles. On the social disclosures front, the development of the Taskforce on Inequality and Social-related Financial Disclosures (TISFD) which launches working groups in 2025 is a development to watch, and to date over 100 organizations, including large corporates and investors, have become early supporters of this Taskforce⁶¹.

The climate & demographics health nexus

Two key forces are due to shape the health resiliency space in the months and years ahead: climate change and demographics due to an aging population.

In the short to medium term, action on the climate health nexus remains an underrepresented area when it comes to the climate crisis. From an economic cost perspective, the World Bank calculates that the excess health costs in middle- and low-income countries from climate change amount to at least USD21 trillion by 2050, which equates to roughly 1.3% of their projected GDP⁶². Some of the key health implications of climate change include health impacts from extreme heat, vector borne diseases, water borne diseases, and air pollution. Investing in adaptation solutions that tackle heat risk impacts to communities, addressing air pollution through transitioning away from fossil fuel energy sources, and scaling up electrification of transport systems in cleaner cities (alongside preventing existing land-based pollution from industrial sources) and finally tackling sustainable water management could all support the long term resilience of economies. This would also ensure the social health impacts of climate change are tackled more effectively.

Policy makers are increasingly recognizing the need to support climate finance for health resilience. At COP29, the Baku COP Presidencies Continuity Coalition for Climate and Health was established including Azerbaijan, Brazil, Egypt, UAE, UK and the World Health Organization (WHO)⁶³. The initiative aims to support greater operationalization of climate-health financing and innovative financing mechanisms through public private partnerships on health resilience. There could also be a greater role for social bonds in this space, whereby proceeds of issuance tackle both preventive and remedial health impacts of climate change.

In the medium to long term, demographic changes across an aging population will become a more important social issue to ensure long term resilience of economies and support social impact. Our Markets 360 research team note that the world is aging at a remarkable speed, and that persons aged 55 and over are projected to outnumber all children aged 0–14 by 2035, and the entire population aged 0–24 by 2080⁶⁴. Although there are challenging macroeconomic implications of this aging such as a higher burden on healthcare spending and socioeconomic effects, targeted aging is found to bring potential economic value. It is estimated that a slowdown in aging that increases life expectancy by one year is worth USD38 trillion of economic value, and by 10 years, USD367 trillion⁶⁴. Investing in the ‘silver economy’ is also a potential opportunity to generate social and financial returns by addressing multiple sustainable development goals, and furthering new areas of innovation such as ‘age tech’ which includes smart wearables, smarter homes, and assistive robotics.

Many sectors and stakeholders across the economy are engaging more on this ‘silver economy’ theme and the IFC recently announced a ‘Silver Economy Initiative’ to innovate on new financial products and services tailored to include the 50+ population in South America⁶⁵.

More broadly across health and demographics, BNP Paribas recent thematic barometer - conducted with Coalition Greenwich - highlighted health and wellbeing and demographics/aging population as the top two social investment themes across portfolios in a sample of 180 investors globally⁹.

Value generation in accelerating gender equity

Advancing gender equality is another key area of importance when it comes to social impact and sustainable finance.

Research from McKinsey showed that organisations in the top quartile of gender diversity were 27% more likely to have a better financial performance compared to the bottom quartile⁶⁶. Furthermore, in the VC space, research results showed that women founded companies generated on average 35% higher investment returns and on average 12% higher revenues⁶⁷. Sustainable finance through gender bonds can play a targeted role in supporting gender equity. There is a growing trend of these types of sustainable bonds addressing use of proceeds to support gender equality, including projects that empower women in the workforce, reduce gender pay gaps and increase parental leave condition for example.

A key under-resourced area of climate finance is gender-responsive climate finance. Currently only 3% of climate financing is aimed at addressing gender inequalities stemming from climate change issues and supporting female-driven climate solutions⁶⁸. However more than 40% of the world’s agricultural labor force is female⁶⁹. Therefore, there is potential to support women’s access to climate finance in the context of scaling resilient agriculture.

SUSTAINABLE FINANCE FLASH FOCUS

Gender bonds & loans

The potential to utilize sustainable finance through social use of proceeds financing or gender linked KPIs within debt issuance has become an increasingly relevant aspect of the sustainable finance innovation space:

- In 2024, Iceland became the first country to issue a sovereign gender bond⁷⁰. The EUR50 million gender bond included eligible project categories such as increasing the supply of affordable housing for low-income women and increasing payments during parental leave for example. BNP Paribas was sole arranger on the deal.
- In 2024, Sicredi finalized a loan whereby USD162 million out of the total facility was labelled as Social Loans. This which enables one of the largest cooperative financial institutions in Brazil to support use of proceeds towards micro, small, and medium-sized enterprises (MSMEs) led by women. BNP Paribas acted as a Joint Social Loan Coordinator and B lender in the loan alongside CAF (Development Bank of Latin America and the Caribbean) and JICA (Japan International Cooperation Agency) as A lenders⁷¹.

The responsible AI imperative

Although AI can be an enabler for addressing several sustainability challenges such as energy efficiency, smart agriculture and physical risk mapping, amongst others, there is also a growing awareness of ensuring AI is deployed in a socially responsible way.

Our BNP Paribas Exane team note the increasing importance of AI on the agenda of ESG investors⁵. Their recent analysis based on the OECD AI incidents monitor showed that on average each month in 2023 there were 429 AI incidents, and in 2024 an average of 667 AI incidents; whereby AI incidents include harms such as disruption of critical infrastructure, violations of human rights under applicable labour or intellectual property laws, harm to property/communities or environment and harm to health of person(s). There are of course approaches to mitigate and manage some of these risks, including ensuring models are trained on non-biased data, introducing procedures to combat misinformation, ensuring better labelling and transparency of AI content, and investing in robust cybersecurity measures for greater protection against incidents and ensuring privacy concerns are addressed.

AI also presents many benefits to humanity including progressing R&D to address several sustainable development challenges. The improved information potential that AI brings and efficiency savings across supply chains, workforce productivity, and the role of AI predictive tools can be climate and social solution enablers if applied responsibly.

Investors are increasingly engaged on responsible AI. There are now over 55 investors in the World Benchmarking Alliance (WBA) ethical AI initiative (representing USD8.5 trillion in AUM), and the initiative aims to ensure ethical implementation of AI technologies⁷².

Over the next year there will also be an increased focus on AI regulation and governance, especially in relation to the EU AI Act. This takes a risk-based approach to requirements on AI developers and deployers and aims to be the first-ever comprehensive legal framework on AI⁷³. Within this regulation there are significant fines for companies that do not comply of up to EUR 35 million or 7% of annual turnover⁷⁴. Therefore, the governance aspect of AI will become more relevant for investors in the months and years ahead.

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