SustainaWeekly

Europe reacts with green industrial strategy

- **Economist: The EU has set out a new green industrial strategy following a summit last week. The new plan is widely seen as a response to the climate subsidies in the US and China. The size of additional funding and subsidies is unclear but existing funding is significant. However, Europe's regulatory environment is a break on the speed of the transition.**

- **Sector: Challenges caused by increasing electricity demand cannot be solved in the conventional way. The growing share of renewable energy introduces the challenge of intermittency problems. Solving the supply-demand mismatch requires a range of flexibility solutions. Solutions are energy storage, expanding networks, and flexible demand.**

- **Strategist: We have seen greeniums on bonds issued by VW and Mercedes Benz in the past. However, currently that the majority of these issuer's green bonds strangely trade at a pick-up to the regular bonds. Although BEV sales at both issuers have not surged, the carbon reduction impact vs petrol and diesel cars should resonate in bond pricing as well.**

- **ESG Bonds: Issuance of green, social, and sustainability bank bonds in euro rose in January by 174% compared to 2022, with covered bonds and senior non-preferred debt accounting for most of the increase. ESG bank bonds attracted larger demand than non-ESG peers, also resulting in lower new issue premia.**

- **ESG in figures: In a regular section of our weekly, we present a chart book on some of the key indicators for ESG financing and the energy transition.**

In this edition of the SustainaWeekly, we first focus on the EU's green industrial plan, which was launched at the summit at the end of last week. In this note, we set out the main features of the strategy, which is widely seen as a response to the climate subsidies in the US and China. We go on to assess the challenges caused by increasing electricity demand and some possible solutions to it. We wrap up this publication by taking a closer look at the disappearance of greeniums in automotive bonds and by analysing trend in ESG bank bond issuance and pricing at the start of this year.

Enjoy the read and, as always, let us know if you have any feedback!

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Europe's green industrial plan

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- **The EU has set out a new green industrial strategy following a summit at the end of last week**
- **New plan is widely seen as a response to the climate subsidies in the US and China**
- **The plan contains measures to improve four main areas: regulation; funding; skills and trade**
- **The size of additional funding and subsidies that will emerge is unclear**
- **Existing EU funding is significant and generally exceeds packages elsewhere**
- **Europe's regulatory environment is a break on the speed of the transition**

The peculiarly named Inflation Reduction Act (IRA) in the US caused a stir in the corridors of power in Europe. The act, which was signed into law by President Biden in August, launched a USD 370bn support programme for green technologies. This sparked concern on the other side of the Atlantic that these incentives would see business and investment gravitate away from Europe and to the US. European officials also claim the tax credits, which are based on 'domestic content' requirements, are inconsistent with WTO rules. At the same time, China's state support for industries – green and otherwise – is also a subject of great concern. Following a two-day summit at the end of last week, it seems that Europe has at least partially decided that 'if you cannot beat them, join them' as it has launched its own green industrial plan. In this note, we set out the main features of the plan.

Regulatory environment

Europe's plan contains measures to improve four main areas: regulation; funding; skills and trade. Starting with the first pillar, the EU aims to achieve a 'predictable, coherent and simplified regulatory environment'. The European Commission will put forward a Net Zero Industry Act, which would provide a simplified regulatory framework for production of products key for the energy transition, such as batteries, windmills, heat pumps and carbon capture and storage technologies. A key focus would be to reduce the length of permitting processes by setting time limits for different parts of the process and strengthening member states' administrative capacity. It would also look to accelerate permitting procedures for net zero supply chain projects of strategic interest, use public procurement to encourage greener industry and promote European standards to help accelerate the roll-out of key technologies. Furthermore, the Commission will propose a Critical Raw Materials Act to ensure the security of supply of these materials by strengthening international engagement and via recycling. Finally, next month, the Commission will present a reform of electricity market design (more on this in a subsequent note).

Access to finance

Large scale investment will be needed for the transition to net zero over the coming decades. Europe is concerned that 'subsidies abroad are un levelling the playing field' and that this calls for 'access to funding for net zero industry to be extended and accelerated'. The Commission points out that available cumulative funding for green investment under the Recovery and Resilience Facility (RRF) is already substantial. This is estimated by Bruegel at around EUR 240bn (see country breakdown in the chart on the next page on the right). Another EUR 100bn is available under Cohesion policies, and it is the intention to facilitate an accelerated mobilisation of these funds via standard reimbursement schemes for energy efficiency and renewable projects. Finally, EUR 40bn is available via Horizon Europe for green research and innovation.

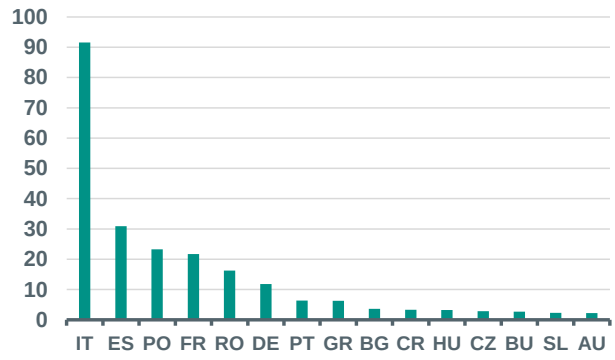
The EU intends to allow further flexibility for member states to grant state aid limited to 'carefully defined areas and on a temporary basis' up until 2025. This follows upon the existing state aid space to deal with the fall-out from the energy crisis. Indeed, the Temporary Crisis Framework (TCF) will now become the Temporary Crisis and Transition Framework (TCTF). The latest version would extend provisions to all renewable technologies, hydrogen and biofuel storage. Importantly, it allowed the 'possibility of granting higher aid to match the aid received for similar projects by competitors located outside of the EU' for strategic net zero sectors and technologies, including via tax benefits.

While the Commission hints at the need for additional EU level funding to supplement state support, heads of state decided to focus on the use of existing funds. One concern is that individual member states have varying capabilities to provide national support. On the other hand, the RRF is skewed towards countries who may have weaker capabilities, and those

funds can be repurposed to this end. The size of additional funding and subsidies that will emerge is unclear. Last year, the Commission approved green aid schemes worth EUR 51bn for the EU as a whole. One might expect this amount to be at least matched annually given the new initiatives.

Green investments by country under RRF

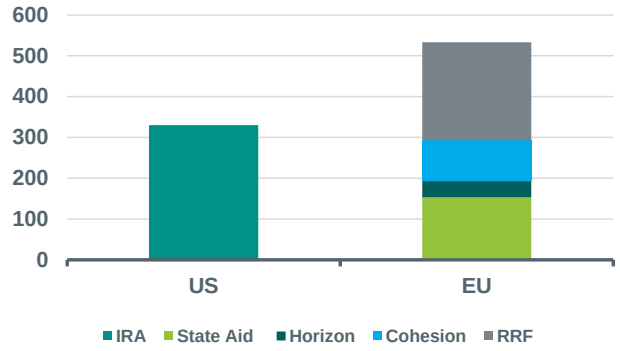
Cumulative, EUR bn



Source: Bruegel, European Commission, ABN AMRO Group Economics

Plans supporting climate investment

Cumulative EUR bn



Source: European Commission, ABN AMRO Group Economics

Enhancing skills

The energy transition will lead to a sharp increase in demand for labour with new skills across a wide number of areas. We have noted before on previous publications, that the labour market for transition jobs is much tighter than the overall labour market. The EC notes that the transition will therefore require 'large-scale up-skilling and re-skilling of the workforce'. A plethora of schemes is already available to support this process, while the Commission is proposing a number of additional programmes. For instance, targets and indicators will be developed to monitor the supply of and demand for transition jobs, while a number of schemes will be set up to facilitate the training of professionals in various green sectors. The European Social Fund (EUR 5.8bn), Just Transition Mechanism (EUR 3bn) and RRF (EUR 1.5bn) are already providing funding for enhancing green skills, though significant new funds do not appear to be in the offing.

Global co-operation and trade

The final pilar of the plan involves 'global cooperation and making trade work for the clean transition'. The idea behind this is net zero can be best achieved if the incentives for green investment is underpinned by the 'principles of open trade and competition'. The Commission proposes the establishment of a Critical Raw Materials club to bring together the consumers of these materials with resource-rich countries; industrial partnerships to promote the adoption of net zero technologies globally and an export credit strategy focused on green sectors.

However, at the heart of this pillar is to defend the EU from unfair trade practices like 'dumping and distortive subsidies' using trade defence instruments. The plan also points to the new Regulation on Foreign Subsidies, which became active at the start of the year. It aims to help investigate subsidies granted by third countries. Remarks by European Commission President Ursula von der Leyen at the summit made this clear. She asserted that China is 'giving massive subsidies' so the topic is much wider' than the IRA and that the EU was developing 'a much broader strategy to deal with that'.

Funding is significant, regulatory environment is a problem

Investment levels still fall short of what is needed for a net zero scenario. Having said that, the size of the EU schemes compare favourably with those in the US plan. For instance, taking together all the elements set out above, and assuming that national state aid continues at the 2022 level through 2025, the EU funding exceeds that in the IRA. However, the mix in the US is more skewed towards subsidies and tax credits, and in the EU more towards direct investment. Perhaps the biggest issue tackled in this plan in this regulatory environment. For instance, studies show that the planning and permitting duration for wind projects is much higher in most EU countries compared to the US and China (although there are ongoing efforts at EU level to change that). Similar barriers exist for other renewable projects as well as accessing funds. So the focus on improving the environment is positive, however it remains to be seen whether best practice spreads.

Electricity on the road to Net-Zero: challenges and solutions

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- **Challenges caused by increasing electricity demand cannot be solved in the conventional way, that is, by increasing supply and expanding the grid**
- **The growing share of renewable energy introduces an extra challenge in the form of intermittency problems**
- **Solving the supply-demand mismatch requires a range of flexibility solutions. Solutions are energy storage, expanding (Europe-wide) networks, and flexible demand**

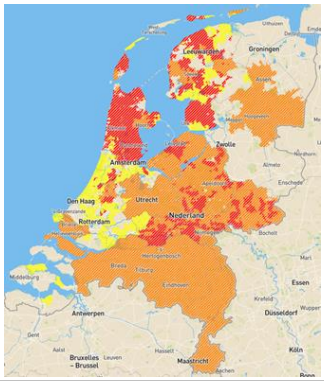
In this note we discuss the challenges arising from increasing electricity demand. The challenge is not only to increase the power supply and to expand grid capacity, but also a matter of balancing supply and demand. A range of solutions in the form of energy storage, expanding (Europe-wide) networks and more flexibility in demand, will play a key role in solving the supply-demand mismatch. This is the last of a three notes series on the electricity sector. In our first note we showed the differing trends in electricity demand for OECD countries and emerging markets over the last 10 years (see here). In our second note we concluded that energy demand will rise in the coming years because of decarbonization and prioritizing energy security (read our second publication here).

Grid congestion

The growing demand for electricity is not without challenges. If electricity demand outpaces the expansion of the electricity grid, then this will cause grid congestion. When the load on the grid exceeds its capacity, the cables and transformers can deteriorate due to overheating, transportation losses become bigger and there will be a higher risk of blackouts. The mismatch between demand and supply is already evident in the Netherlands where more and more places face waiting time for a new connection to the grid. The left figure below shows the current status of the grid capacity in the Netherlands. Areas in red indicate a structural congestion, meaning that new requests for heavy connections (bigger than 3x80A) are not approved. This is not only a problem in the Netherlands. For example Germany and the UK are also facing congestion problems.

Electricity grid demand capacity

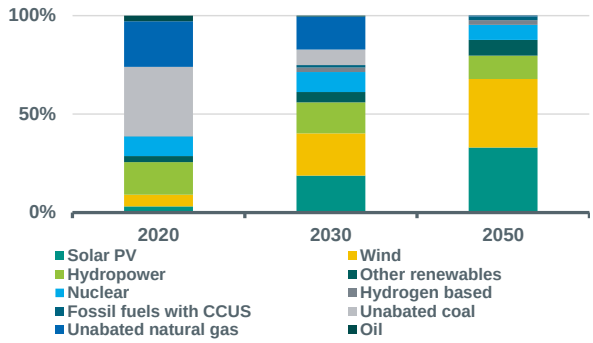
Status per January 3rd 2023



Source: Netbeheer Nederland

Wind and solar will play key role in production

% of total TWh electricity generation. Global



Source: IEA Net Zero by 2050, ABN AMRO Group Economics

Limitations to expanding the grid

Crucial for the grid to handle the growing demand for electricity are substantial investments in grid capacity. This means increasing the capacity of the cables and transformers (grid reinforcement) to ensure the load continues to fit within the grid. However, this is expensive, time-consuming and the process is capital and labour intensive, while there is limited availability of capital and labour resources. In other words, this is not going to fix the problem anytime soon, nor would it be a cost-effective longer-term solution.

A new challenge arises

It is not just that demand is too strong for grid capacity, but also a matter of demand and supply not being balanced. Because electricity supply will be more and more generated by renewable energy sources (see the figure above on the right), there is not a continuous power supply. Electricity supply will depend more and more on when the sun shines or the wind blows. We already have time periods in the day where we generate more than we need. Solving the supply-demand mismatch will require a range of flexible solutions. Proposed solutions are energy storage, expanding (Europe-wide) networks, and flexible demand. These solutions are discussed below.

Energy storage

Storing energy when there is excess supply and discharging later when demanded, forms part of the solution to deal with the unbalanced grid. There are different technologies possible for energy storage systems. According to the European Association for Storage of Energy (EASE) we can classify these different technologies in **5 different categories**: chemical, electrochemical, electrical, mechanical and thermal. Different technologies have different timeframes ranging from seconds to seasonal periods.

Storage systems based on lithium-ion batteries currently still dominate the market, but this technology is the most cost-effective solution for short-duration storage. The main challenge is to find large scale working solutions for long-duration energy storage (LDES) – that is, any system capable to discharge energy for 10 or more hours. These solutions are at various levels of technological maturity. In terms of long-duration energy storage, the current benchmark is pumped hydro storage. When excess electrical energy is available, the water will be pumped and stored in an upper reservoir. When necessary, the moved water can be used to generate electricity. According to **Wood Mackenzie Power & Renewables**, this technology will continue to dominate the market until 2030. Similar mechanical solutions include the movement of mass or compression of air. Other solutions involve new battery types, for example, thermal batteries or flow batteries. However, these are still at a pilot phase.

Long duration energy storage will play a key role in delivering net-zero by 2050. The next step is more market uptake, because without that, it will be impossible to achieve a net-zero power system and a balanced grid. At the COP26 in November 2021, the **creation of the LDES Council** was confirmed. The LDES Council's **Net-zero power report** concludes that LDES could represent between four and seven times the total global TWh of lithium-ion capacity today by 2040, requiring an investment that could reach between USD 1 to 3 trillion. In order to realise this, large deployment is required now and governments need to establish a supportive ecosystem.

Expanding and upgrading the European-wide networks

The EU has set an **interconnection target** for member states. By 2030, there should be enough interconnectivity cables such that at least 15% of produced electricity in one member state can be exported to neighbouring countries. Connecting allows Europe to integrate more renewables into the system. By making the European grids more connected and upgrading their transmission capacity, all connected regions can have better access to more diverse energy sources. Giving regions access to abundant solar power from regions where the sun is shining, or utilize wind power generated where the wind is blowing strongly. For example, Britain has major offshore windfarms. Periods with powerful and light winds can be forecasted. Therefore, others can anticipate how much to import based on Britain's weather forecast. By unlocking the geographical diversity of renewable energy sources across Europe, the region as a whole can benefit most from the abundant availability in connected areas. However, similar to the national grid, increasing the capacity of the cables takes time. The planning and building of wind-parks and solar plants are typically faster than building long-distance, high-voltage lines.

Flexible demand

Changing the pattern of electricity use can help match supply and demand. We are used to consuming energy at any given moment of the day without thinking about the available supply. This is historically logical if electricity is generated by powerplants that can be turned on and off to match demand. However, with more and more renewable power sources, this is not the case. Therefore, instead of supply having to match demand, making demand more flexible is an efficient part of the solution of the mismatch.

Dynamic electricity price contracts become more and more available to consumers. First in the Nordic markets, but currently in **more European markets** like the Netherlands, Spain and UK. With dynamic price contracts, the electricity price is linked to the wholesale market and changes every hour, half-hour or even 15 minutes depending on the supplier. This means that during peak moments prices go up, while during off peak moments or when production is high prices go down. Tariffs can even be negative in case there is a lot of renewable energy available. Consumers on a dynamic contract are therefore incentivised to consume energy at the right moments to help balance the grid. However, dynamic prices in combination with scaling down of the net-metering scheme could make the investment in solar panels for home owners less attractive, see **here**. A potential solution to overcome this is the use of home batteries. Turning demand into more flexible demand seems a solution for fixing part of the supply-demand mismatch.

Concluding remarks

The electricity sector sits at the centre of the decarbonisation process. In order to achieve net-zero by 2050, the sector will have to decarbonise and expand, and extensive new investment will be required in storage capacity, grid reinforcement and expansion of the distribution and transmission networks. Demand will also have to adjust, and this will involve continuous improvements in energy efficiency and balancing of supply and demand to address the intermittency problem of renewable energy. The importance of energy efficiency is embedded in net zero scenarios such as those from the IEA and the NGFS. Additional policies and investment will be required to balance demand with supply, and this could come in the form of pricing incentives and connecting distribution networks across local, regional and national government boundaries.

Green automotive bonds suddenly trading at spread pick-ups

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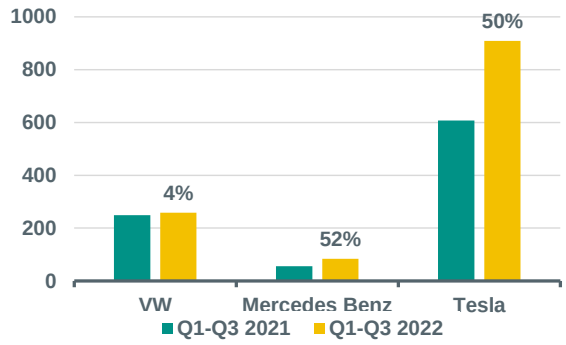
- **We have seen greeniums on bonds issued by VW and Mercedes Benz in the past**
- **However, currently we see that the majority of these issuer's green bonds strangely trade at a pick-up to the regular bonds**
- **Although BEV sales at both issuers have not surged, the carbon reduction impact vs petrol and diesel cars should resonate in bond pricing as well**

VW and Daimler BEV sales do not take a flight, like Tesla

The chart below shows global BEV (battery electric vehicle) registrations from the EUR automotive green bond issuers VW and Mercedes Benz (MB), against Tesla in 2021 and 2022 (until Q3). Clearly VW has not taken a big step in growth like MB or Tesla, but also in terms of scale Tesla continues to stamp its authority over both German names. The green bonds issued by VW and MB were designed to be used in the ramp-up of BEV production.

German manufacturer BEV sales not as strong as Tesla

Unit sold in 000's

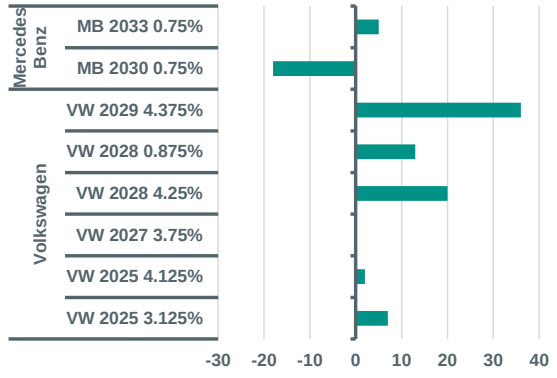


Source: Marklines, Bloomberg, ABN AMRO Group Economics, label represents growth in 2022 vs same period 2021

Could this then be explained by the fact that the majority of green bonds issued by VW and MB suddenly trade at a pick-up to the regular bonds, as investors are perhaps already discouraged by the fact that BEV sales are not ramping up to Tesla's level? The chart below shows how far the various VW and MB green bonds are trading from their regular bond equivalents, in spread.

Majority of VW and MB green bonds trading at pick-up

Deviation in spread from regular bond (bp)

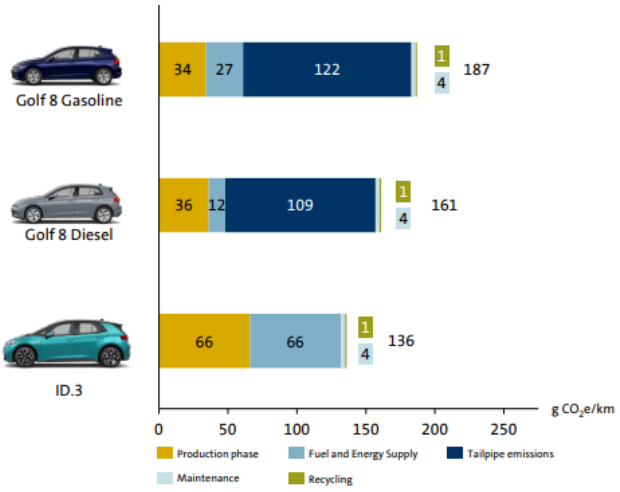


Source: Bloomberg, ABN AMRO Group Economics

Greenium still justified

However, if VW and MB fail to make impression on their BEV sales vs peers, should that not mean that the green bonds need to trade at the same level as the regular bonds? Furthermore, we still see a growing share of BEV sales at both manufacturers, which implies that each car put on the road should theoretically be reducing greenhouse gas emissions in comparison to regular petrol powered cars. For example, the picture taken below from VW's latest green bond impact report shows how much the full electric ID3 compares against a Golf TSI or TDI in terms of lifecycle carbon emissions on a gram per km level. While the ID3 clearly emits more carbon during the production phase, this is more that outweighed for during usage phase based on the emissions profile of the EU-27 electricity mix.

Majority of VW and MB green bonds trading at pick-up



Source: Bloomberg, ABN AMRO Group Economics

MB has similar green bond reporting and claims 24 metric tonne CO2 savings from its EQA model against a petrol powered GLA on a 200 thousand kilometre lifecycle. When we take the general assumption that these levels of carbon savings are available across all of their BEV models, it allows us to calculate the cumulative emissions saving potential for VW and MB BEV vehicles produced since 2020, as shown in the table below. Given VW's larger scale compared to MB the cumulative savings are obviously much more. However, VW has issued more green bonds in comparison to MB, suggesting that the emission reduction potential per EUR financed is lower at VW vs MB. This final assessment still has flaws as we also require other sources of finance in the BEV production facilities, which we unfortunately do not have. Still, given the carbon reduction potential shown, the issuers' green bonds should certainly not trade at a pick-up to the regular bonds. A return of the greenium should be on the cards.

	VW	Mercedes Benz
BEV sold since green bond issuance in 2020	828,979	218,244
Vehicle lifecycle CO2 savings vs equivalent petrol vehicle (metric tonnes)	10.2	24
Total vehicle lifecycle savings (metric tonnes)	8,455,586	5,237,856
Amount of green bonds O/S (EUR)	6,000,000,000	2,068,000,000
CO2 kg saved per EUR financed	1.41	2.53

Source: Company green bond reports, Bloomberg, ABN AMRO Group Economics

ESG bank bonds make strong start to 2023

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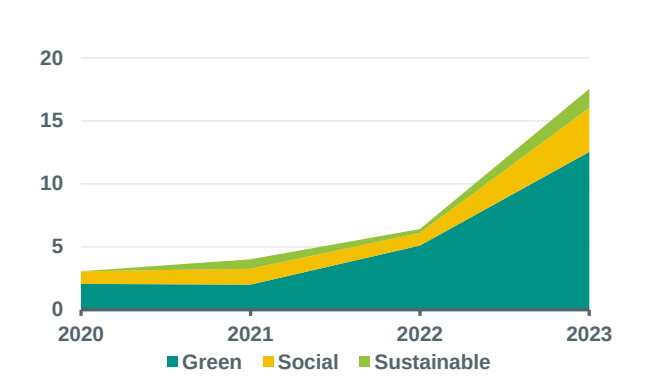
- **Issuance of green, social, and sustainability bank bonds in euro rose in January by 174% compared to 2022, with covered bonds and senior non-preferred debt accounting for most of the increase**
- **Green bond issuance was almost four times larger than bank debt in social format, reflecting that the green bond market is more established than the social bond market**
- **The increase also mirrors the overall flood of supply of bank debt in January, as the share of green and social bank bond issuance remained relatively stable in January versus the 2022 average for the year as a whole**
- **ESG bank bonds attracted larger demand than non-ESG peers, also resulting in lower new issue premia**

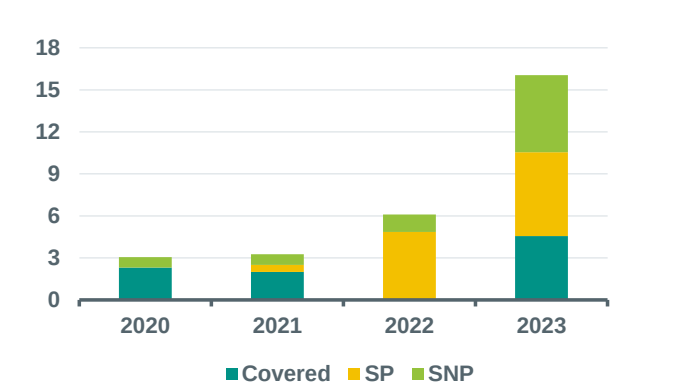
The primary market for euro bank debt has started 2023 on a very strong footing, as almost EUR 100bn of covered bonds, senior paper as well as Tier 2 debt was issued in January. This was a 78% increase compared to January 2022. In this note, we look at last month's issuance of green, social, and sustainability bank bonds (hereby all three flavours referred to as ESG bank bonds), as well as pricing dynamics and demand for these bonds.

Issuance of ESG euro bank bonds in January



Source: Bloomberg, ABN AMRO

January issuance of green and social bonds by debt rank



Source: Bloomberg, ABN AMRO. Note: Sustainable bonds and Tier 2 ESG bond issuance not depicted on this chart.

Issuance rising, share in total stable

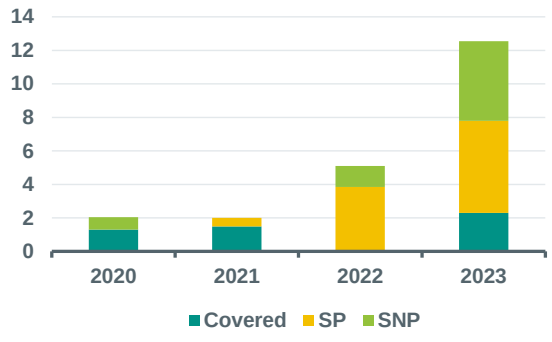
The graph on the left side above shows that issuance of green, social, and sustainability bank bonds, denominated in euro, also rose sharply in January of this year. EUR 18bn of ESG bank bonds were issued last month, which was a 174% rise compared to the volume of issuance in January 2022 (EUR 6.4bn). In volume terms, the largest increase was in issuance of green bank bonds, which increased by EUR 7.5bn, while the volume of supply of social bonds increased by EUR 2.5bn. Sustainability bonds also almost quadrupled in volume, reaching EUR 1.5bn in January 2023. Overall, issuance of ESG bank bonds is already 25% of total ESG bank bond issuance in 2022.

A breakdown by asset type and focussing on bonds in green and social format shows that covered bonds and senior non-preferred bonds (SNP) were the key reason for the strong growth in issuance of ESG bank bonds (see graph above right). However, we base this on only one month's data, and we must bear in mind that no green/social covered bond was issued in January last year, while already eight such covered bonds were issued this year. The increase in issuance was also driven by larger supply of green and social senior non-preferred bonds, which rose to EUR 5.5bn in January this year versus EUR 1.25bn last year. Still, senior preferred debt accounts for the largest chunk of issuance in green and social format (EUR 6bn vs EUR 4.9bn in January 2022).

Digging a bit deeper in the data by splitting issuance of green and social bonds per bank debt rank, reveals that green bond issuance was almost four times higher than the supply of social bonds in January (see graphs below), likely reflecting that the market for green bonds has been more established than that for social bonds. This, in turn, is perhaps related to the fact that the green bond market has developed more robustly over the past few years, driven by, for example, clearer guidelines for green bonds (e.g., the EU taxonomy) than that for social bonds. Social bond issuance in 2020 and 2021 was also in general largely driven by Covid-19 related investments, which are not very common anymore. Covered bonds form the majority of social bank debt issuance, probably as they finance, among others, social/affordable housing, which fits the character of most cover pools well.

January issuance of green euro bank bonds

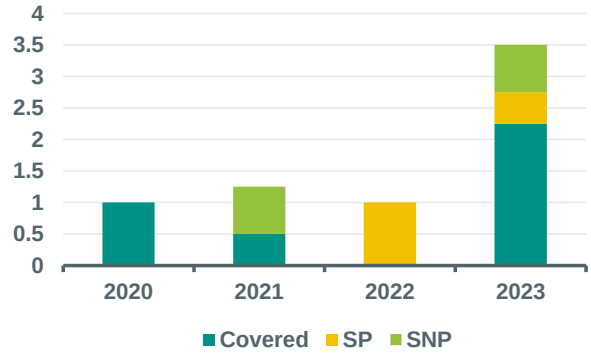
EUR bn



Source: Bloomberg, ABN AMRO

January issuance of social euro bank bonds

EUR bn



Source: Bloomberg, ABN AMRO

Meanwhile, supply of green senior non-preferred bank bonds got off to strong start this year, with six issuers printing EUR 4.75bn. This bodes well for the market going forward. Unlike last year, this year the green format is not being used to get deals done because of unfavourable market conditions, but they are coming to the market under favourable conditions.

Turning to the share of ESG bank bond issuance in total issuance shows that it has remained rather stable so far this year. We focus exclusively on green/social issuance (sustainability bond issuance was mainly in Tier 2 format). In the covered bond space, 10% of total euro-denominated issuance was in green/social format in January, which was 1% higher than the average for 2022 as a whole. The share of green/social senior preferred issuance dropped to 23% of the total, down from 28% on average last year. Finally, in the senior non-preferred market, green/social issuance remained stable at 24% of the total volume of new supply compared to 2022. If this remains the case for the entire year, we will see a slight reduction in social and green bank debt issuance in 2023 as a whole, despite the strong start to the year. This is because we expect, on balance, lower issuance of euro bank debt (including covered bonds) this year than in 2022.

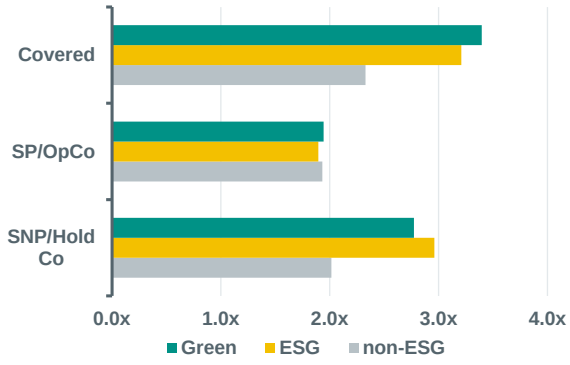
ESG bank bonds attract strong demand, while new issue premia lower

The relatively large volume of new supply of ESG bank bonds in January was well absorbed by investors, which seem to have a clear preference for green, social, or sustainability bank debt. This is reflected by higher average bid-to-cover ratios (see graph on the next page, left), which is particularly observable for covered bonds and senior non-preferred debt. Indeed, the average bid-to-cover ratio for green covered bonds was 3.4x, while this was 2.3x for non-ESG covered bonds. Of course, this could also be due to other factors, such as the tenor and/or the issuer profile, but we think it is fair to assume that the green/social element is also a material factor at play. The same also holds for senior non-preferred debt, whereas demand for green and social senior preferred bonds was roughly in line with that of non-ESG peers. This, in turn, was probably because some green senior preferred debt was issued by banks with a lower credit quality. In any case, in terms of pricing, issuers paid lower new issue premia for ESG bonds, irrespective of the debt rank. This suggests that greeniums are still very much alive in the primary market. This is especially true for senior non-preferred bank debt, where the average new issue premium for bonds in ESG format was more than half that of non-ESG peers. This could also be related to other factors, but it fits the view that the potential for a ‘greenium’ is larger for bank debt that trades at wider levels. Overall, it

seems fair to conclude that the market for green, social, and sustainability bank bonds has made a positive start to 2023, which in itself bodes well for the remainder of the year.

Average bid-to-cover ratio in 2023

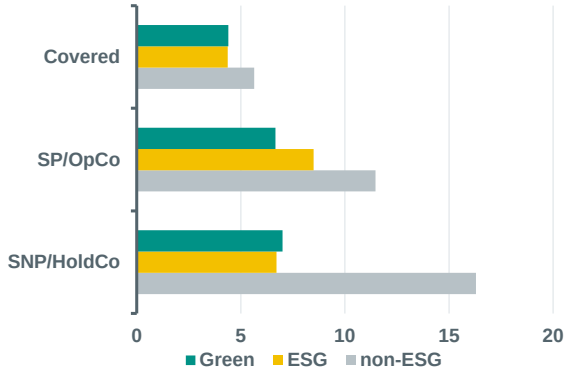
Ratio



Source: Bloomberg, ABN AMRO

Average new issue premium in 2023

In bp

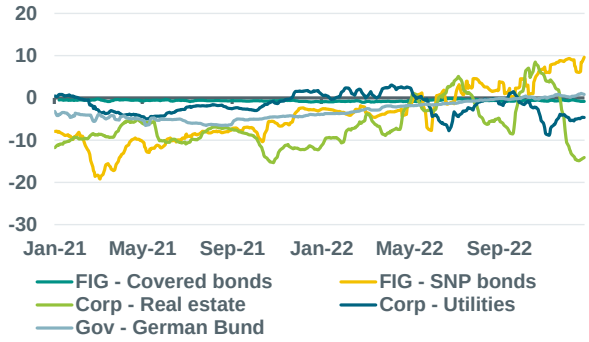


Source: Bloomberg, ABN AMRO

ESG in figures

ABN AMRO Secondary Greenium Indicator

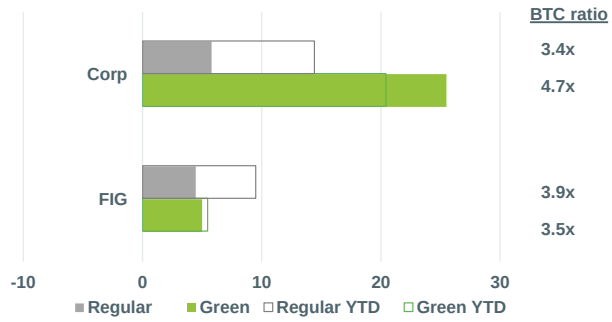
Delta (green I-spread – regular I-spread)



Note: Secondary Greenium indicator for Corp and FIG considers at least five pairs of bonds from the same issuer and same maturity year (except for Corp real estate, where only 3 pairs were identified). German Bund takes into account the 2030s and 2031s green and regular bonds. Delta refers to the 5-day moving average between green and regular I-spread. Source: Bloomberg, ABN AMRO Group Economics

ABN AMRO Weekly Primary Greenium Indicator

NIP in bps



Note: Data until 10-2-23. BTC = Bid-to-cover orderbook ratio. Source: Bloomberg, ABN AMRO Group Economics

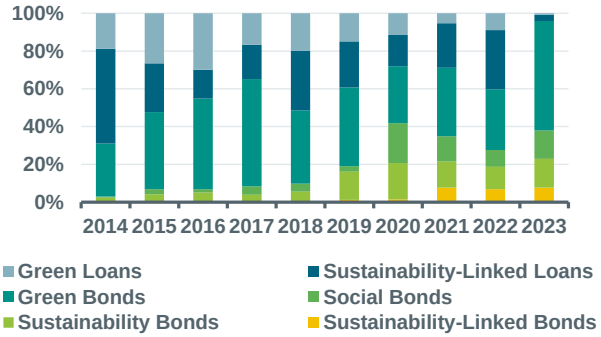
Sustainable debt market overview

EUR bn

Source: Bloomberg, ABN AMRO Group Economics

Breakdown of sustainable debt by type

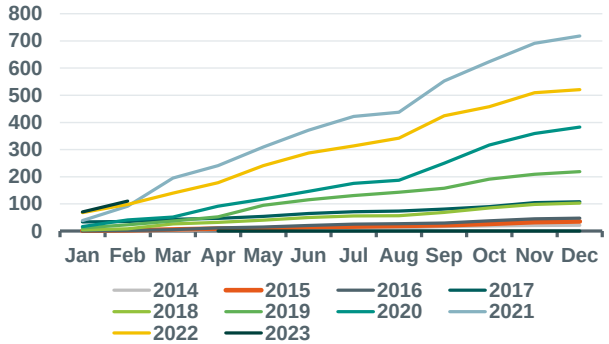
% of total



Source: Bloomberg, ABN AMRO Group Economics

YTD ESG bond issuance

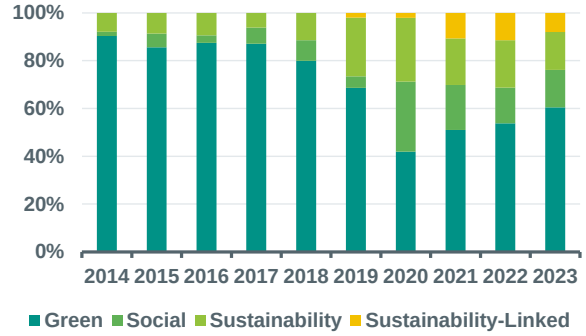
EUR bn (cumulative)



Source: Bloomberg, ABN AMRO Group Economics

Breakdown of ESG bond issuance by type

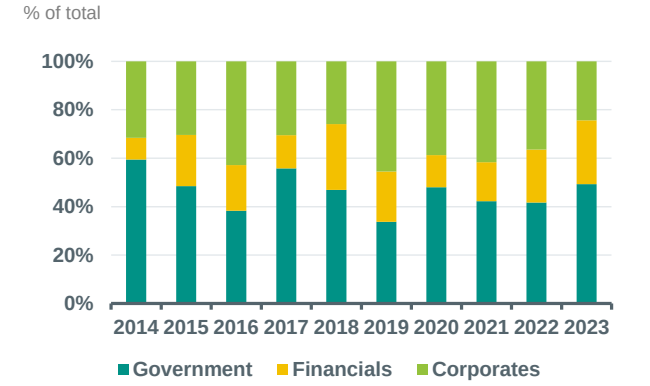
% of total



Source: Bloomberg, ABN AMRO Group Economics

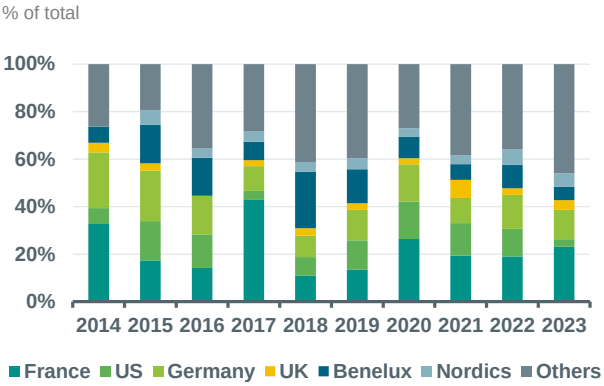
Figures hereby presented take into account only issuances larger than EUR 250m and in the following currencies: EUR, USD and GBP.

Breakdown of ESG bond issuance by sector



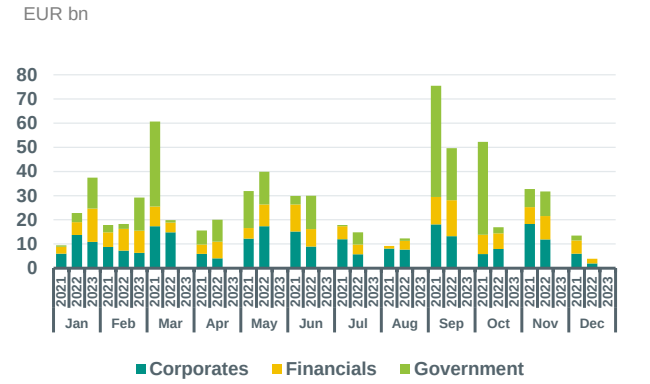
Source: Bloomberg, ABN AMRO Group Economics

Breakdown of ESG bond issuance by country



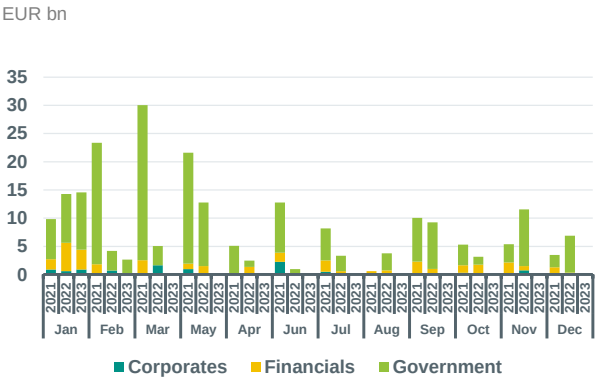
Source: Bloomberg, ABN AMRO Group Economics

Monthly Green Bonds issuance by sector



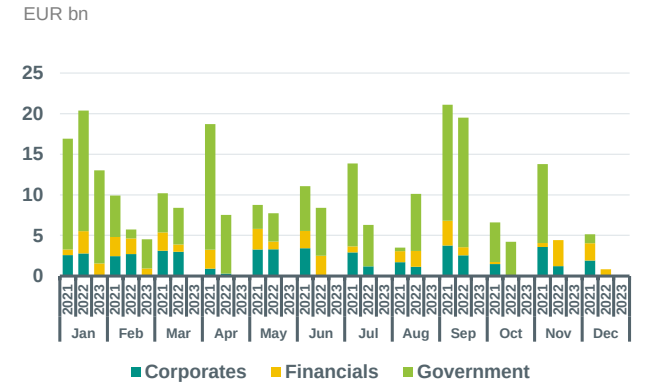
Source: Bloomberg, ABN AMRO Group Economics

Monthly Social Bonds issuance by sector



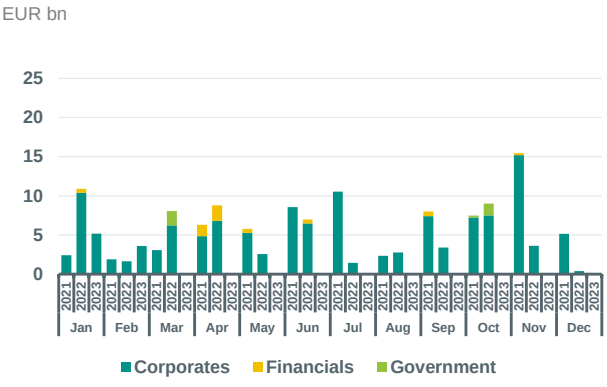
Source: Bloomberg, ABN AMRO Group Economics

Monthly Sustainability Bonds issuance by sector



Source: Bloomberg, ABN AMRO Group Economics

Monthly Sust.-Linked Bonds issuance by sector



Source: Bloomberg, ABN AMRO Group Economics

Figures hereby presented take into account only issuances larger than EUR 250m and in the following currencies: EUR, USD and GBP.

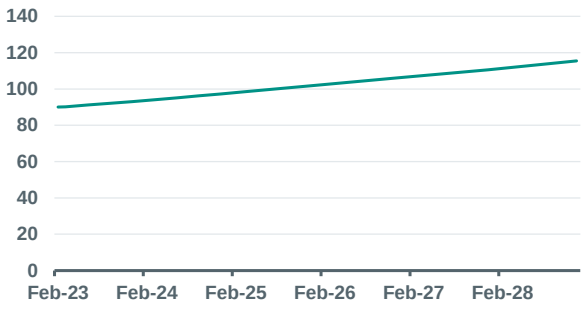
Carbon contract current prices (EU Allowance)

EUR/MT

Source: Bloomberg, ABN AMRO Group Economics

Carbon contract future prices (EU Allowance)

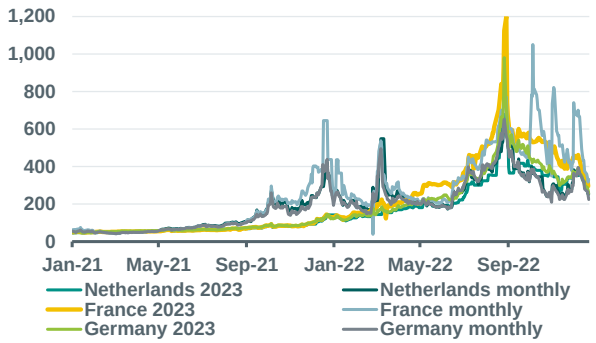
EUR/MT



Source: Bloomberg, ABN AMRO Group Economics

Electricity power prices (monthly & cal+1 contracts)

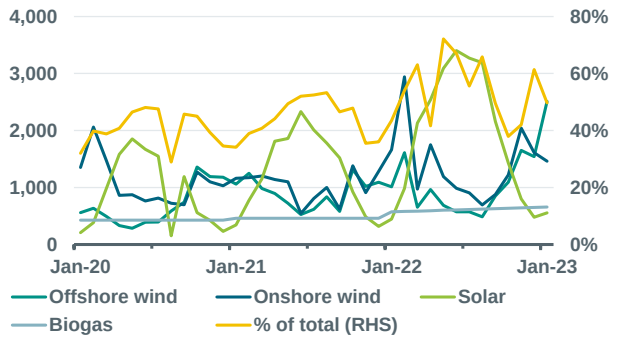
EUR/MWh



Source: Bloomberg, ABN AMRO Group Economics. Note: 2023 contracts refer to cal+1

Electricity generation from renewable sources (NL)

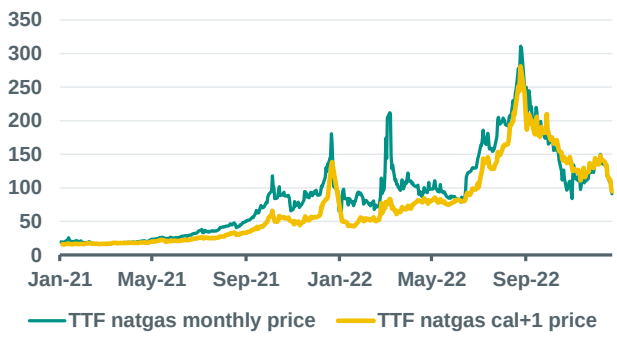
GW % of total



Source: Energieopwek (Klimaat-akkoord), ABN AMRO Group Economics

TTF Natgas prices

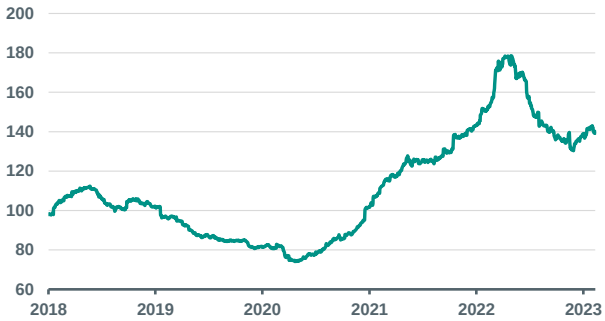
EUR/MWh



Source: Bloomberg, ABN AMRO Group Economics

Transition Commodities Price Index

Index (Jan. 2018=100)



Note: Average price trend of 'transition' commodities, such as: corn, sugar, aluminium, copper, nickel, zinc, cobalt, lead, lithium, manganese, gallium, indium, tellurium, steel, steel scrap, chromium, vanadium, molybdenum, silver and titanium. Source: Refinitiv, ABN AMRO Group Economics

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