SustainaWeekly

Deconstructing Air France-KLM's SLB framework

- **ESG Bonds: Air France-KLM published a Sustainability-Linked Bond (SLB) Framework, where it commits to reduce emission intensity by 10% by 2025 and by 30% by 2030. Using different estimates for revenue ton-km and revenue passenger-km, our analysis shows that Air France-KLM's targets translated into an absolute emission figure could potentially not be aligned with the Paris Agreement.**

- **Economist: Electricity demand has been flat in OECD countries despite GDP growth and new sources of demand. By contrast, demand has been rising in emerging economies. Several factors explain the divergence. These include, structural changes with advanced economies turning away from heavy industries, increased energy efficiency and catch-up in the adoption and use of electrical appliances in emerging economies.**

- **Strategist: Our total covered bond greenium index shows that the greenium more than doubled last year, with Norwegian and French covered bonds having the largest greenium. We see potential for greeniums to rise further this year, as we expect covered bond spreads to widen, providing more room for differentiation, supporting green covered bonds**

- **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 our first SustainaWeekly of the new year, we start by looking at the Sustainability-Linked Bond (SLB) Framework of the French-Dutch airline group Air France-KLM, which is also the first one from the aviation sector. In particular, we analyse Air France-KLM's proposed target and how it fits within the decarbonization strategy of the aviation sector in a net zero scenario. We go on to assess trends in global electricity demand and some of the structural forces at play. Finally, we look at recent trends and the outlook for greeniums in the covered bond market.

We wish all our readers a Happy New Year!

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

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Air France-KLM's SLB is a landmark for the industry, but misses absolute targets in KPI

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- **Air France-KLM has published a Sustainability-Linked Bond (SLB) Framework, where the company commits to reduce emission intensity by 10% by 2025 and by 30% by 2030**
- **We evaluate whether these targets are also ambitious from an absolute emissions point of view**
- **Our analysis shows, by using different estimates for revenue ton-km and revenue passenger-km, tht Air France-KLM's targets translated into an absolute emission figure could potentially not be aligned with the Paris Agreement**
- **While Air France-KLM's SLB Framework and SBTi validation of its targets is a positive step towards the decarbonization of the aviation sector,…**
- **…we would like to have seen also absolute targets being included in the Framework.**

The French-Dutch airline group Air France-KLM has published a Sustainability-Linked Bond (SLB) Framework, which is also the first one from the aviation sector. In this piece, we quickly analyse Air France-KLM's proposed target and how it fits within the decarbonization strategy of the aviation sector.

Air France-KLM's proposed targets

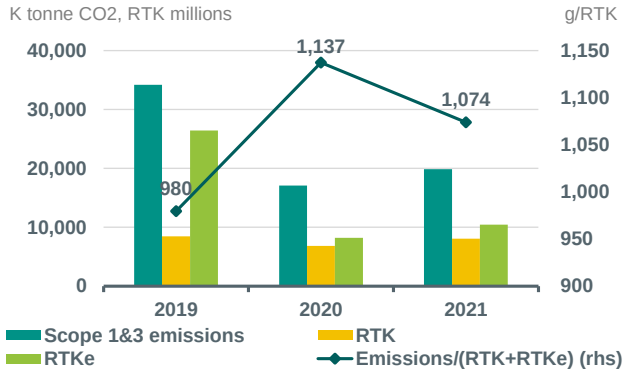
The company has naturally chosen an emission reduction target as a KPI. More specifically, the KPI is calculated by dividing the company's scope 1 and 3 (direct and indirect, respectively) emissions, by the sum of amount of one ton of freight transported over a distance of one kilometre (or RTK) and the amount of one paid passenger transported over a distance of one kilometre (or RPK) converted into a RTK measure (hence resulting in a 'RTK equivalent' figure). Both RTK and RPK are standard measures in the industry. The company also discloses that the RPK figure, which is relevant as a starting point for the SLB, considers only flights operated by the Air France-KLM group, while the RPK figure currently being reported in the annual report of 2021 contains all ticket sales including bus, train and codes shares operated with other airlines. Furthermore, although the KPI does not include scope 2 emissions, these represent less than 1% of the company's emissions. In terms of emissions, Air France-KLM has also disclosed that the emissions currently set out in the annual report do not use the Science-Based Targets initiative (SBTi) emission factor (whereas the ones reported in the SLB Framework do), which means that the reported figures will likely be restated in the annual report of 2022.

Looking at the target itself, Air France-KLM has committed to a reduction in emissions per RTK of 10% by 2025 compared to a 2019 baseline, and a 30% reduction by 2030.

The Air France-KLM target is therefore an **emission intensity target**. While these type of targets allow for a better peer-to-peer comparison (companies with larger scale will automatically emit more carbon emissions), IEA net zero scenarios (as well as international pledges) are based on absolute targets (that is, absolute emissions). Especially in the case of Air France-KLM, this allows the investor to properly de-attach the larger efficiency (resulting in lower emissions), from emission reductions due to lower passenger and cargo numbers. Furthermore, if both targets would have been included in the SLB Framework, this would have allowed investors to better capture (i) if Air France-KLM's estimates on RTK and RPK growth are aligned with the IEA's scenarios (see more on this below), and (ii) to what extent are Air France-KLM's emission trajectory reducing accordingly to new efficiency measures (such as improvements in the development of sustainable aviation fuel, whose availability can still be uncertain).

Based on this, we have tried to estimate whether in absolute terms, the Air France-KLM's targets could also be seen as ambitious or whether the decarbonization could be solely due to an increase in the RTK and RPK figures. For that, we first use the available information (as per the annual report, which does not completely match the methodology applied in the SLB) to try to replicate Air France-KLM's decarbonization pathway. The chart on the next page shows the historical emissions as well as the RTK and the RPK (translated into a RTK equivalent – or RTKe - figure assuming one passenger has 90kg) using annual report figures.

AF-KLM's historical trajectory



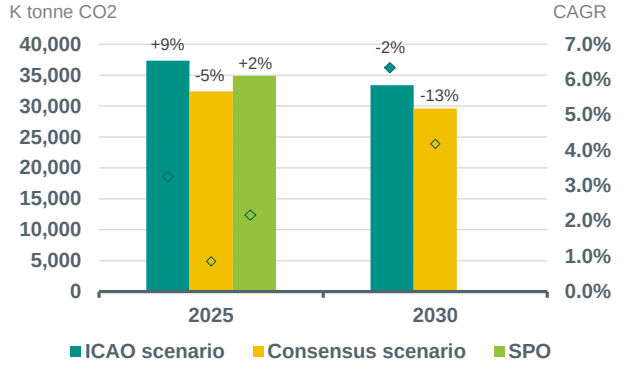
Source: Air-France KLM's annual reports, ABN AMRO Group Economics

We start our analysis by using the International Civil Aviation Organization (ICAO) estimates for annual compound growth (CAGR) for RTK and RPK in order to arrive at a RTK and RTKe figure for the target years. ICAO currently estimates an annual growth of 2.6% and 3.5% for RPK and RTK, respectively, during the period of 2018-2028. For the period of 2018-2038, it predicts a growth of 3.3% and 3.4%, respectively. We use the same figures for our 2025 and 2030 estimate. This leads us to a CAGR for a combined RTK and RPK of 3.3% and 6.3% for the years of 2025 and 2030, respectively. Based on our findings for RTK and RTKe, we can therefore translate this figure to an emission estimate assuming Air France-KLM's emission intensity targets as per the SLB (10% and 30% reduction targets for 2025 and 2030, respectively, applied to our estimates of 2019 emission intensity as shown in the graph above). Hence, under such scenario, the company's emissions could still stand a whopping 9% above 2019 levels for 2025, easing thereafter for a 2% decline by 2030 (see chart below). This ultimately means that under these growth estimates, Air France-KLM's targets could not necessarily involve operational efficiencies, but rather increase in RPK and RTK figures due to more flight movements. For example, if flight occupancy increases, then RPK should also increase, but emissions would stay the same.

Another potential scenario we can run is by using Air France-KLM's equity analyst's consensus for RTK and RPK in 2025 and 2028 (there is no consensus for 2030). In this case, analysts seem to be more conservative than the ICAO, and estimate a CAGR of 0.9% for 2025 and 4.2% for 2028, from 2019 levels. Using again Air France-KLM's reduction targets, this would lead to an emission reduction of 2% by 2025 (vs 2019 levels) and of 13% by 2030. Clearly, under this scenario, the market is not expecting the company to easily meet their 2025 and 2030 targets, and to do so, the company would need to significantly reduce emissions and apply therefore strong operational efficiency measures.

Finally, we note that the Second Party Opinion (SPO) states that "in the case of Air France–KLM Group, the absolute greenhouse gas emissions are still likely to be 2% above 2019 levels by 2025". Translating that back to a CAGR figure, this would mean that Air France-KLM is itself predicting a CAGR of 2.1% by 2025 from 2019 – which is lower than the ICAO figure but also significantly higher than the consensus.

Absolute emission targets under different scenarios



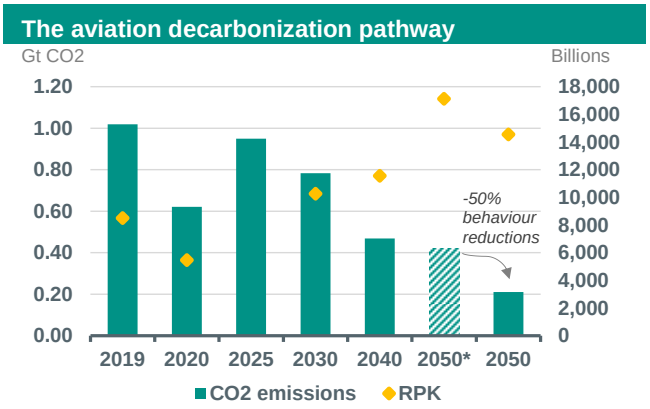
Source: ICAO, Bloomberg, Moody's, ABN AMRO Group Economics. Note: percentages represent emission reduction vs. 2019 levels.

Below, we try to assess whether these absolute targets fit within the IEA's net zero estimates.

Decarbonization of the aviation sector as per IEA

The aviation sector is important for the ambition to reach net zero by 2050. It accounts now for only around 2.5% of global CO2 emissions, but this share is expected to increase as other sectors decarbonize. Hence, in a net zero scenario, aviation is expected to remain one of the main net emitters. Emissions are hard to reduce in the sector given the lack of alternative technology and the limited availability of sustainable fuels.

As a result, for a net zero scenario where emissions are aligned with the 1.5 degree temperature rise as per the Paris Agreement, the aviation would also have to heavily rely on a reduction of demand growth. As shown in the chart below, even if all potential efficiency measures are in place by 2050 (such as sustainable aviation fuel), demand would still need to shrink to ensure that the sector performs accordingly to the 1.5 degree pathway. Without such demand shrinkage, emissions in 2050 for the aviation sector would be around 50% higher than what is required under the 1.5 degree scenario.



Source: IEA, ABN AMRO Group Economics. Note: 2050* shows the scenario without any behaviour reductions (mainly reduction in the aviation demand, driven by shift to high-speed rail, but also cap on flights). RPK for 2025 not disclosed.

Based on the chart above, we can estimate that according to the IEA, (i) CAGR for RPK between 2019-2030 needs to be around 1.7%, which is significantly lower than ICAO (6.3%) and equity analyst (4.2%) estimates, and (ii) emissions need to reduce by around 7% by 2025 and by 23% by 2030 (vs 2019 levels). While Air France-KLM's targets are aligned with a well-below 2 degree pathway, but not a 1.5 degree pathway (as verified by SBTi), clearly the SLB's targets translated into an absolute emission figure does not seem to align with the Paris Agreement.

All in all, we would like to reinforce the importance of having more KPI target transparency in terms of what part of the carbon intensity reduction is being driven by behaviour changes (lower demand growth rates) and what is being driven by lower absolute emissions. Within KLM's action plan to achieve the pre-defined targets, the company focuses mainly on (i) renewal of fleet towards more lower emitting aircrafts; (ii) the use of sustainable aviation fuels, and (iii) operational efficiency, through favouring direct trajectories and applying limit fuel consumption. As all measures are exclusively focused on the efficiency measures rather than behavioural changes (which we acknowledge might not be in the company's control), we would particularly deem an absolute target to be perhaps more appropriate.

Finally, we would like to mention that there is an urgent need for decarbonization of the aviation sector, and Air France-KLM's SLB Framework and SBTi validation is a positive step towards airline companies taking more responsibility. Both should also trigger more transparency in terms of emission reporting. Clearly, the SLB indicates a landmark and we hope it encourages other airline peers to follow Air France-KLM's steps.

Air France-KLM's proposed SLB: a 25bps step-up or 75bps premium at maturity could not be enough

The company currently has 5 (sub)benchmark size euro bonds outstanding, being two in convertible format and 3 are callable bonds. The new SLB is expected to be in a dual tranche format, with maturities in 2026 and 2028. Air France-KLM's existing 2026s callable bond currently trades at z+410bps credit spread, which would translate to an estimated coupon of between 7-7.5%. Hence, if we assume a 75bps (=0.75%) of premium at maturity for the 2026 bond in case the issuer does not meet the KPI, this would imply a mere 10% of the total annual coupon or 3.5% of the total coupon paid over the lifetime of the bond, which seems to be a low penalty for not meeting emission targets. Our calculations show that the average of potential penalty over the annual coupon rate for euro SLBs is currently 16%, which would imply that the 'standard' 75bps of premium at maturity (and correspondingly the 25bps as coupon step-up for the remaining 3 years of the 2026 SLB) could not be seen as ambitious enough. We therefore believe that since Air France KLM's new bonds are expected to carry a high coupon, investors should demand also a higher financial penalty (such as a step up) in the new SLBs.

Box: The use of ETS

*In December 2022, the European Commission agreed on new rules for applying the EU emissions trading system (ETS) in the aviation sector (see **here**). Within the main changes, is the gradual phasing down of free allowances by 2026. Under the current ETS system, the EU sets certain emissions caps through a certain number of emission allowances. Within the cap, companies either buy or receive for free allowances. How much of the corresponding allowances should be granted for free and how much should be auctioned is also set by the EU. Between 2013-2020, 82% of the allowances were in free format, which means these do not need to be paid for by the airline company. The new proposal now specifies that by 2026, all of the allowances will need to be auctioned. While free allowances have been allocated notably to address potential adverse competitiveness impacts and carbon leakage, they constitute a derogation from the 'polluter pays' principle, and hence the idea of the Commission to get rid of them.*

Air France-KLM currently discloses how many carbon emissions were offset voluntarily and how many were offset mandatorily. It also discloses the amount allocated to carbon allowances in the ETS programme. In 2021, the company purchased 897,000 tons of CO2 allowances. It also had a net expense of EUR 36m related to emissions expenses in the same year. This translates to an implicit carbon price of EUR 40/ton of CO2. With the carbon price expected to rise the closer we are to a net zero scenario, and with the number of free allowances also to be reduced to zero by 2026, the decarbonization of Air France-KLM also becomes a must from a financial point of view.

Electricity demand: Why has it been flat?

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- **This is the first of a series of three notes on electricity demand. The electricity sector must decarbonise because it contributes around 1/3 of global CO2 emissions. The sector must also expand because other sectors such as buildings, transport and industry that will replace fossil fuels with green electricity as part of their transition.**
- **In this note we shine a light on divergent trends in electricity demand between OECD economies, including Netherlands and emerging economies. Electricity demand has been flat in OECD countries since 2010 in spite of GDP growth and new demand from digitalisation and the transport sector. By contrast, demand has been rising in emerging economies over the same period.**
- **Several factors explain the divergence. These include, structural changes with advanced economies turning away from heavy industries, increased energy efficiency and catch-up in the adoption and use of electrical appliances in emerging economies.**

The electricity sector sits at the heart of a decarbonised economy. The power sector is one of the most carbon intensive sectors, accounting for around a-third of total global CO2 emissions. Here in the Netherlands, around 20% of CO2 emissions are attributable to the power sector. At the global level, some 60% of electricity is generated from fossil fuels. The power sector will have to fully decarbonise to achieve net zero.

Electricity is also at the centre of de-carbonisation plans of many other sectors. Think of transport, where electric vehicles are gradually replacing internal combustion engines or a heat pump powered by green electricity that replaces a fossil fuel boiler. Nowadays, electricity accounts for about 20% of the world's total final consumption of energy according to the IEA's world energy outlook 2022. The abatement plans of many industries that rely on fossil fuels involves a switch to zero carbon electricity. This switch is widely expected to result in a substantial increase in electricity demand and that in turn, will require large investments. McKinsey, the management consultancy firm, estimates an average annual investment of USD 1 trillion in power generation, USD 820 billion in the power grid and USD120 billion in storage from 2021-2050 to achieve net zero by 2050.
This is the first of a three-part series of notes that we will publish on the electricity sector. In this note, we will focus on recent trends in electricity demand. The two main points are:

1. Electricity demand has been surprisingly flat in OECD economies, including the Netherlands, for the past 12 years even though the economy is substantially larger. This stands in contrast to emerging economies, where electricity demand continues to expand.
2. A combination of increased energy efficiency and a pivot away from energy intensive production explains this divergence between OECD and emerging economies.

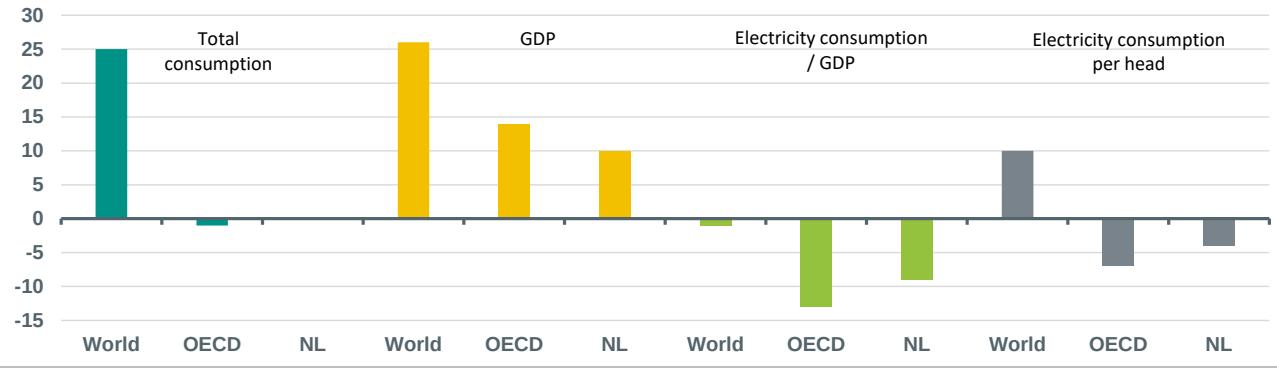
Our next publication on this topic will be more forward looking. In our view, electricity demand in advanced economies is at a turning point as households and businesses switch away from fossil fuels and towards electricity over the next decade. This increase in demand is not without challenges. With an increase in electricity demand and the transition towards renewable energy sources at the same time we are facing an 'energy mismatch' between demand and supply. This is the topic for our third publication in this series.

Divergent trends

Global electricity demand has expanded by around 25% since 2010, see the figure below. The global economy has also expanded by a similar amount over the same period. Together this implies that electricity consumption per unit of GDP has been flat at the global level since 2010.

Electricity consumption and real GDP

2010-2020, % change



Source: OECD, IEA, ABN AMRO Group Economics

The story is somewhat different among OECD countries, including the Netherlands. Electricity consumption was flat over this period even though GDP expanded by 10%. As a result, electricity consumption per unit of GDP fell by around 10% in these economies.

We also observe a divergence when comparing electricity consumption per head. Consumption per head has increased by 10% globally but has notably fallen by around 5% in the OECD/Netherlands over this period.

There are several factors that explain the divergent trends.

To start with, it is worth emphasising that per head electricity consumption remains significantly higher in advanced economies despite the recent reduction and that is, for example, because most households in OECD have access to electricity supply and already owned multiple electric appliances like washing machines, refrigerators, computers and televisions. That is not the case in emerging markets. Consequently, there is more catch-up electricity demand compared to advanced economies. All this is not to say that there were no new sources of electricity demand growth in advanced economies. There are, for example, electrification of cars and increased digitalisation, but so far, the electricity demand from these sources is still relatively small. For example, in 2021 market share of electric cars is still only about 8%.

Moreover, the structure of the economies has changed with advanced economies becoming less reliant on heavy industries such as steel and aluminium production. In fact, advanced economy share of steel and aluminium production has less than halved since 2000 and the migration of these heavy industries to emerging economies has contributed to the higher electricity intensity there.

Another important contributing factor is energy efficiency. This includes new and more stringent standards for electric motors, refrigeration, and lighting. To be sure, many of these efficiency standards have also been adopted in emerging economies, but the speed of adoption and the penetration is likely to be lower. The IEA estimates that annual advanced economy electricity demand would have been around 1.5% per year higher since 2010.

Conclusion

The path to net zero requires an expansion in electricity demand and a complete de-carbonisation of the power production process. Looking back at the past 12 years, electricity demand has been surprisingly flat in OECD economies even though the economy is larger. Economic growth has resulted in higher demand in advanced economies, as has the shift towards digitalisation and electric cars, but this new demand has been fully offset by energy efficiency gains. There is a limit to efficiency gains and going forward, we expect demand for green electricity to expand over the next two decades. This growing demand in combination with the decarbonisation of power production will lead to intermittency problems. In the next two reports we will discuss this further.

Greeniums for covered bonds largest in Norway and France

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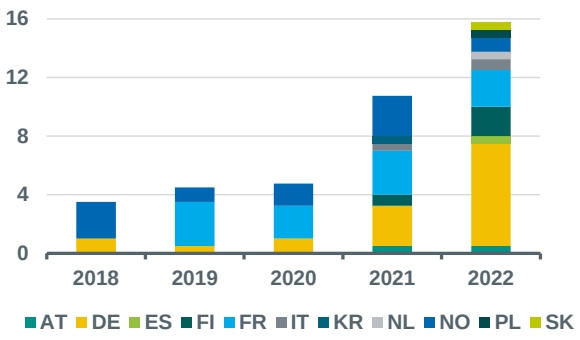
- **Issuance of green euro benchmark covered bonds rose further in 2022, taking the total amount outstanding to EUR 39bn, around 5% of the total index.**
- **The deepening of the green covered bond market also provides room for better measurement of greeniums in the secondary market, also allowing a breakdown for some countries.**
- **Our total covered bond greenium index shows that the greenium more than doubled last year, with Norwegian and French covered bonds having the largest greenium.**
- **Green German covered bonds have the smallest greenium, but this likely reflects their relatively tight spreads .**
- **We see potential for greeniums to rise further this year, as we expect covered bond spreads to widen, providing more room for differentiation, supporting green covered bonds.**

Issuance of green covered bonds continued to increase in 2022, with a total issuance volume of around EUR 16bn of green euro benchmark covered bonds. This compares to EUR 11bn in 2021 and on average EUR 4bn in 2018-2020. The share of green covered bond issuance declined slightly, which was largely due to the record amount of supply seen last year, which lifted the numerator significantly. Still, at 8%, the share of green covered bonds in total euro benchmark covered bond issuance remained well above the levels in 2018-2020. The total amount of green covered bonds in the iBoxx euro benchmark covered bond index now stands at EUR 39.3bn, which is 4.6% of the EUR 845.4bn of the total index. The rise in green covered bond issuance should also have improved liquidity of green covered bonds in the secondary market. This also allows for a better comparison of the existence and extent of greeniums in the secondary market of covered bonds.

Issuance of green covered bonds by country

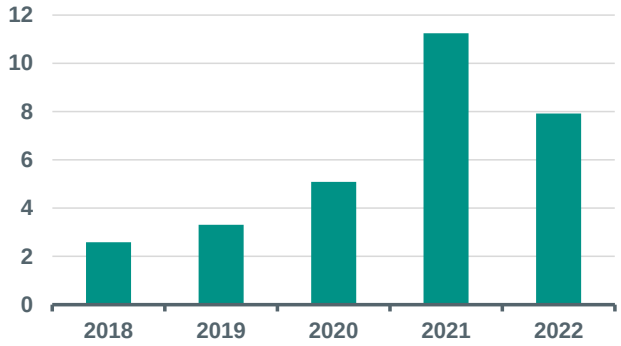
EUR bn, euro benchmark covered bonds



Source: Bloomberg, ABN AMRO

Share of green covered bonds in total issuance

% share of euro benchmark covered bonds



Source: Bloomberg, ABN AMRO

We base our calculations of greeniums on peer-to-peer comparisons, implying that we compare a green covered bond with a non-green covered bond from the same issuer and with a similar maturity. As such, the bonds have similar credit risk as well as duration risk, with the green nature being the only difference between the bonds. Our overall greenium index shows that the average z-spread difference between our green and non-green covered bond sample currently equals around 1.3bp. This is more than double the 0.6bp seen at around the middle of the year when green covered bonds slightly underperformed their non-green peers during a period of heightened volatility in financial markets. However, the greenium increased during 2022, rising from 0.6bp at the start of 2022 to 1.3bp at the start of 2023.

It remains a challenge to explain movements in the greenium, but the rise in the investor base as well as the deepening of the green covered bond market are probably key factors driving the greenium. Indeed, the average bid-to-cover ratio for green covered bonds issued in the primary market rose to 3.0x in 2022, up from 2.3x in 2021. In contrast, non-green covered bonds were on average covered 1.8x last year and 2.2x in 2021.

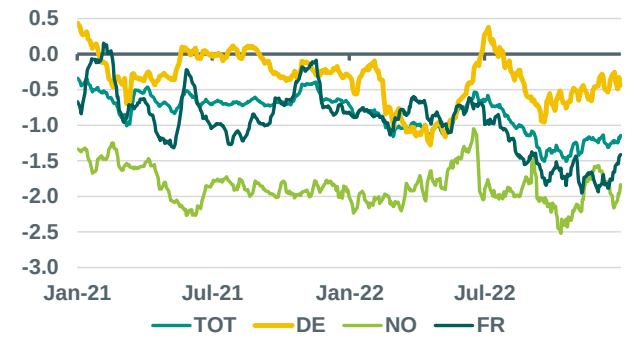
Greenium in secondary market for covered bonds

Source: Bloomberg, ABN AMRO

The increase in the sample size also allows for a country breakdown of greeniums in the covered bond space. We have constructed green country indices for German, Norwegian, and French covered bonds. In the case of Germany, the calculations are based on the z-spread differential of seven pairs of bonds, while we used four pairs for Norway and six pairs for France. The results are shown in the graphs below, which shows that the greenium of Norwegian and French green covered bonds tend to be higher than the overall average, while the opposite holds for green German Pfandbriefe.

Greenium in covered bond market by country

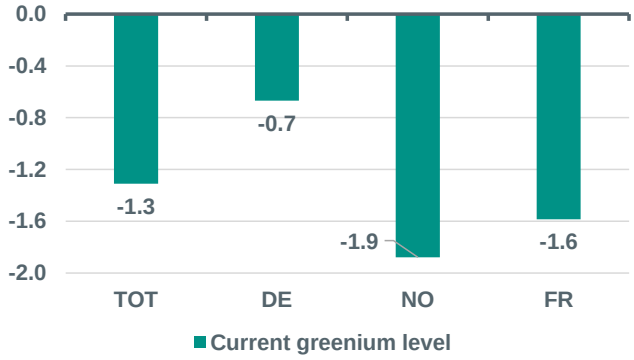
Average z-spread difference green vs non-green euro benchmark covered bonds.



Source: Bloomberg, ABN AMRO

Norway and France have largest greenium

Average z-spread difference green vs non-green euro benchmark covered bonds, bp



Source: Bloomberg, ABN AMRO

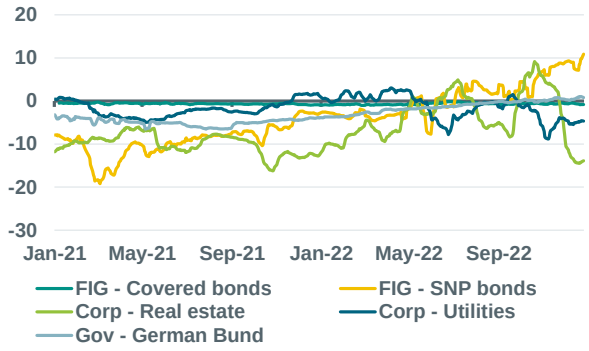
The graph above left also shows that the changes in the greenium, and the upward (so smaller greenium) move during the middle of last year, were mainly due to the greenium temporarily disappearing in the German covered bond market. This was across our sample size of green German covered bonds. Although, the greenium was restored for most peers in the second half of 2022, it remained smaller than the total greenium average in the secondary market for euro benchmark covered bonds. This is/was probably related to the fact that German Pfandbriefe already trade at relatively tight spread levels compared to Norwegian and French covered bonds, which provides less potential for greeniums, while it could make German green covered bonds more volatile during times of stress.

Looking forward, we see potential for greeniums to increase (so larger greeniums) in 2023. This is based on the view that we expect covered bond spreads to widen on the back of large (net) supply and technical factors fading (see also our Fixed Income Outlook **here**). Wider spread levels, in turn, provide more room for spread differentiation, with green covered bonds likely outperforming non-green peers as investors will likely continue to increase their green focus. Needless to say, the greenium potential is largest for covered bonds that trade at wider levels, so it is likely that the greenium for green German Pfandbriefe will remain below the average of the market.

ESG in figures

ABN AMRO Secondary Greenium Indicator

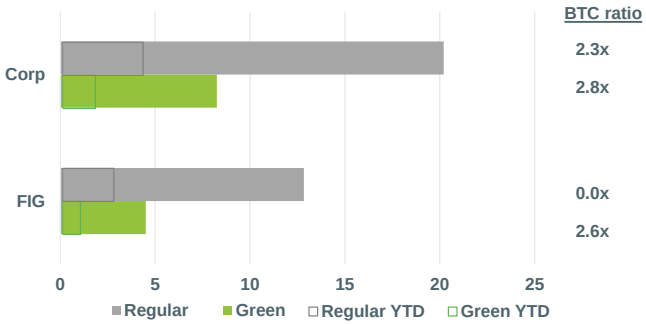
Delta (green I-spread – regular I-spread)



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

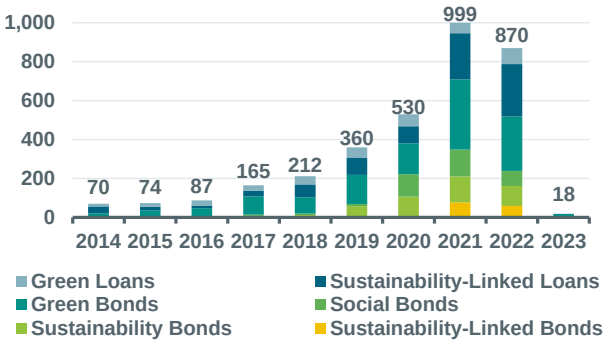
NIP in bps



Note: Data until 6-1-23. BTC = Bid-to-cover orderbook ratio. Source: Bloomberg, ABN AMRO Group Economics

Sustainable debt market overview

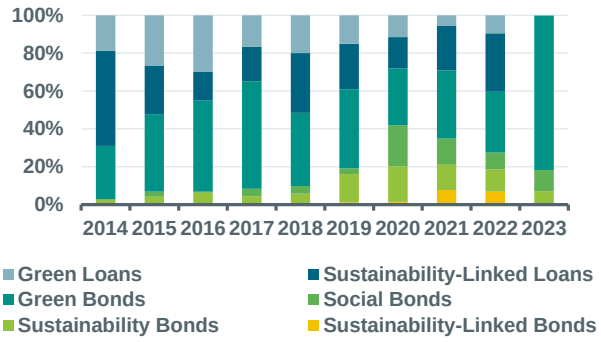
EUR bn



Source: Bloomberg, ABN AMRO Group Economics

Breakdown of sustainable debt by type

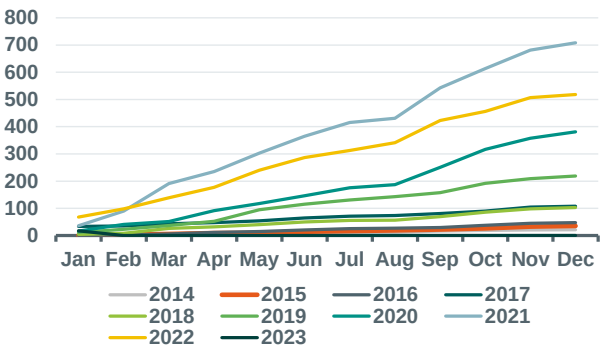
% of total



Source: Bloomberg, ABN AMRO Group Economics

YTD ESG bond issuance

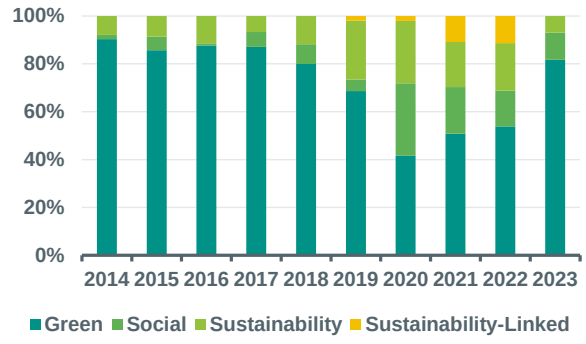
EUR bn (cumulative)



Source: Bloomberg, ABN AMRO Group Economics

Breakdown of ESG bond issuance by type

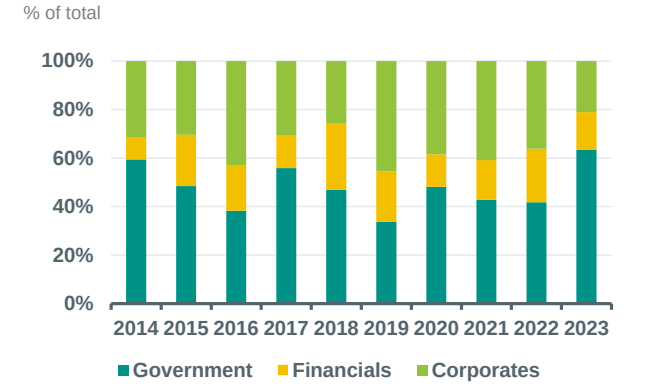
% of total



Source: Bloomberg, ABN AMRO Group Economics

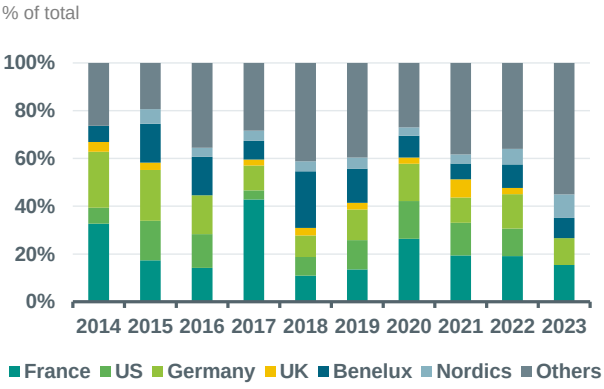
Figures hereby presented take into account only issuances larger than EUR 250m and in the following currencies: EUR, USD and GBP.

Breakdown of ESG bond issuance by sector



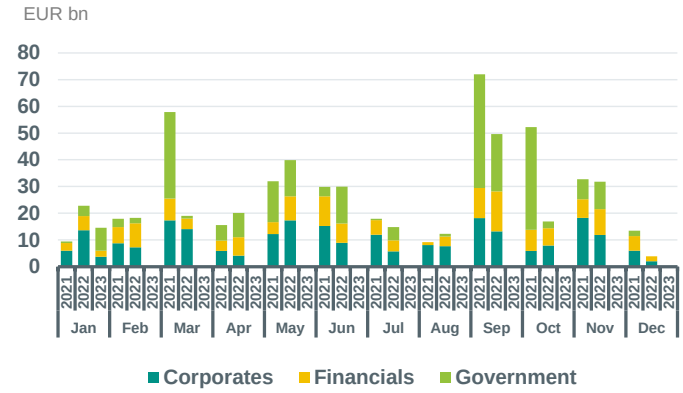
Source: Bloomberg, ABN AMRO Group Economics

Breakdown of ESG bond issuance by country



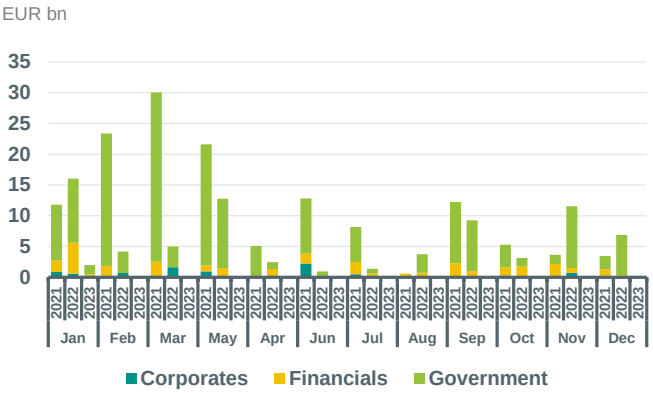
Source: Bloomberg, ABN AMRO Group Economics

Monthly Green Bonds issuance by sector



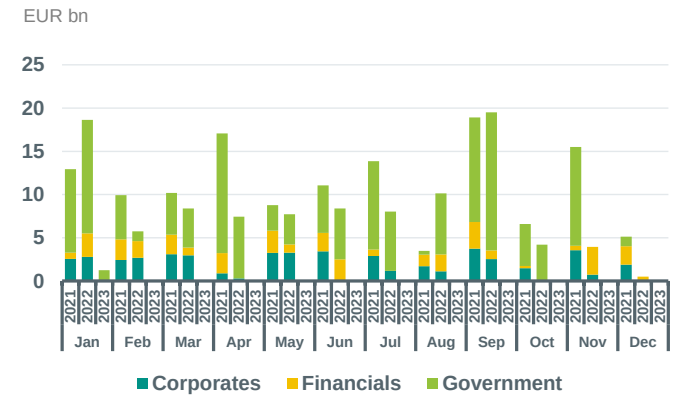
Source: Bloomberg, ABN AMRO Group Economics

Monthly Social Bonds issuance by sector



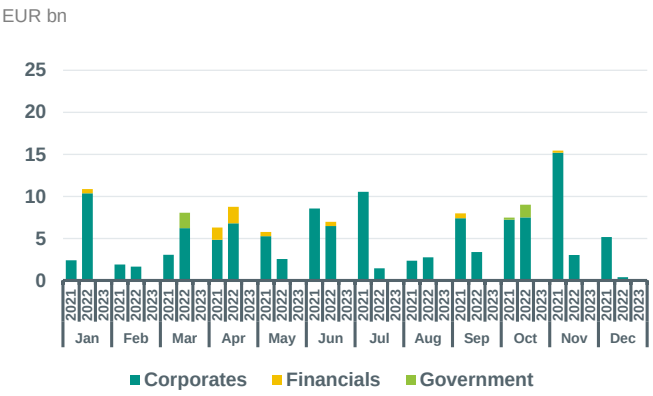
Source: Bloomberg, ABN AMRO Group Economics

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.

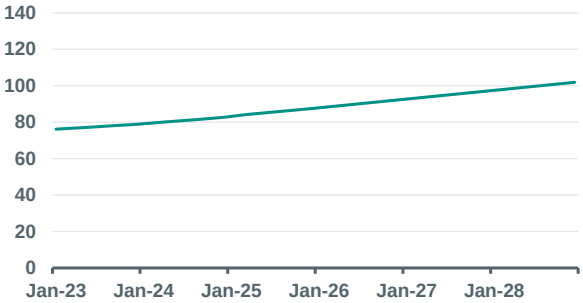
Carbon contract current prices (EU Allowance)

EUR/MT

Source: Bloomberg, ABN AMRO Group Economics

Carbon contract future prices (EU Allowance)

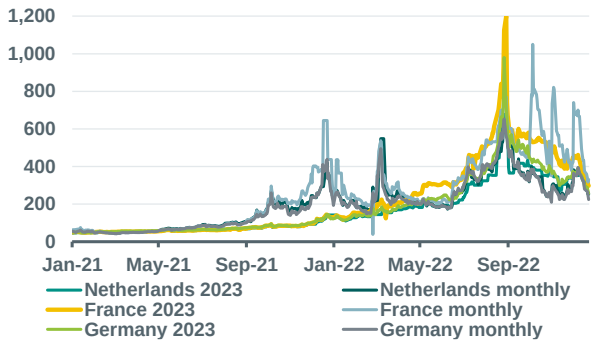
EUR/MT



Source: Bloomberg, ABN AMRO Group Economics

Electricity power prices (monthly & cal+1 contracts)

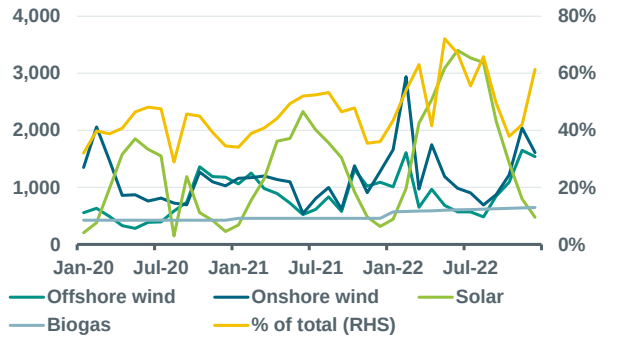
EUR/MWh



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

Electricity generation from renewable sources (NL)

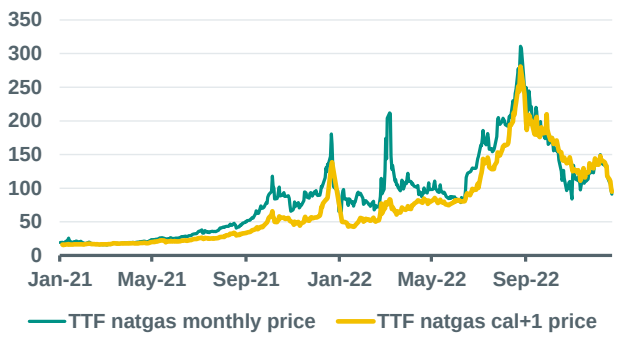
GW % of total



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

TTF Natgas prices

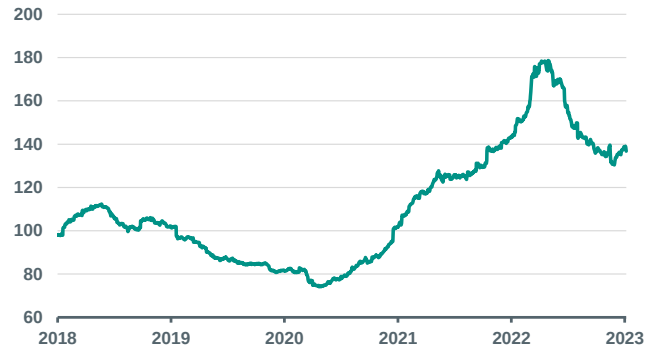
EUR/MWh



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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