SustainaWeekly

The challenge of reducing car emissions

- **Economist: The share of zero-emission passenger cars and charging points rose considerably in 2022. However, they need to continue to rise substantially to meet government targets for 2030. On current policies, the expected GHG emission reduction for cars in 2030 falls short of what is needed.**

- **Strategist: Logistic real estate generally has a lower carbon footprint than retail real estate, though disclosure of energy performance (and carbon emission) is lagging at various EUR IG logistic real estate names. Although Prologis and PELF stand out in terms of energy performance, this is not (yet) visible in their bond pricing.**

- **ESG Bonds: Issuers of green utility hybrids operate with a decent buffer in their credit metrics in the majority of cases. Utility hybrids offer attractive spreads in comparison to their senior equivalent, and there are many green hybrid bonds which also have a significant carbon reduction impact.**

- **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 start by zooming in on the transition of the car sector in the Netherlands, which accounts for around a tenth of all greenhouse gas emissions. We assess the current challenges and where emissions are heading given current policies. We go on to analyse the carbon footprint of issuers in the logistic real estate sector and whether differences are visible in their bond pricing. Finally, we take a closer look at the green utility hybrid space.

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

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More needed to bring down emissions of cars

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- **Share of zero-emission passenger cars and charging points have risen considerably in 2022…**
- **…and they need to continue to rise substantially to meet government targets for 2030**
- **The expected GHG emission reduction for cars in 2030 falls short of what is needed**

Introduction

In 2021 the mobility sector in the Netherlands was responsible for 30.8 Megaton of greenhouse gas (GHG mostly CO2). This represented 18% of the total greenhouse gas emissions in 2021. The preliminary data for 2022 show that greenhouse gas emissions for 2022 could decline to 30 Megaton. Within mobility, road transport is the biggest emitter. It is responsible for around 85% of the total emissions of the mobility sector. Passenger cars emit around half of the total of mobility. The government target for the mobility sector is to reduce GHG emissions to 21 Megaton in 2030. It is clear therefore that to bring down greenhouse gas emissions the mobility sector needs to play a significant role.

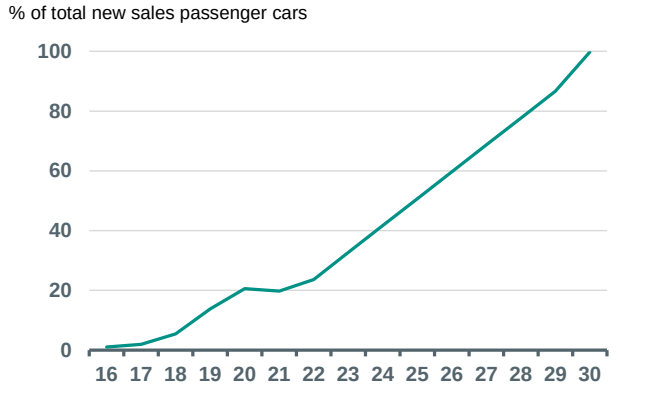
Share of zero-emissions cars needs to continue to rise substantially

The Dutch government's policy is that every new car sold from 2030 onwards has to be a zero-emission car. This can be battery electric car or a hydrogen fuel cell electric car. At the end of December 2022 the car fleet was around 8.8 million passenger cars and 306,321 new passenger cars were sold in 2022, far below the annual average of around 440,000 (average 2005-2021). The fleet of battery electric cars in the Netherlands stood at 328,295 passenger cars and 596 fuel cell electric cars at the end of December 2022 (RVO). This is an increase of 34% in battery-electric vehicles. In 2030 the amount of zero-emission new passenger cars should be equal to the now total sold new passenger cars of around 440,000. To get there, the share in sales of zero-emission passenger cars needs to rise substantially from 23.6% in 2022 (RVO) to 100% in 2030 (see graphs below).

The Netherlands has more ambitious targets for cars than the EU. The EU has set a zero-emission target for both new cars and vans by 2035, against 2030 for the Netherlands. The share of battery-electric cars in the European Union in 2021 was only 0.8%. There were 246 million cars on the road in the EU in 2021 (ACEA). In the EU 12.1% of the new cars sold in 2022 was battery electric, while this share was 24% in the Netherlands. So the Netherlands is well advanced compared to the EU.

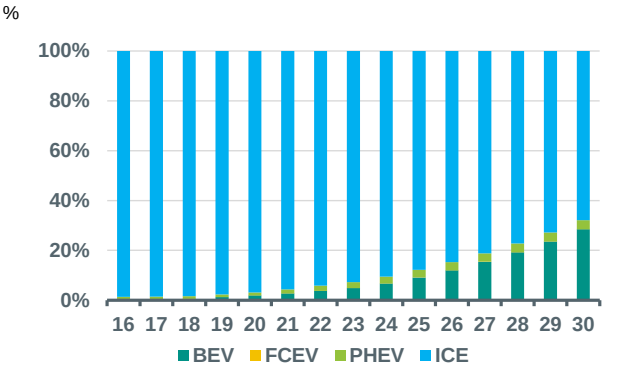
Worldwide more than 10 million EVs were sold in 2022. Of that total, 70% were full battery EVs, with the rest being plug-in hybrids (IEA). According to the IEA the share of EVs in total car sales in the net-zero scenario should reach over 60% in 2030. In this scenario, the number of EVs worldwide jumps from 60 million in 2021 to over 700 million in 2030.

Share of BEV of new sales to rise substantially …



Source: RVO, ABN AMRO Group Economics

…as well as the share in the fleet



Source: RVO, ABN AMRO Group Economics. BEV= Battery electric, FCEV = fuel cell, PHEV = hybrid, ICE = internal combustion engine

In the Netherlands, the fleet of 8.8 million passenger cars was responsible for roughly 15.4 Megaton greenhouse gas emissions in 2021. In 2030 the fleet of cars that emit greenhouse gasses is expected to be 6.4 million passenger cars (internal combustion and hybrid vehicles). The total greenhouse gas emissions of these 6.4 million passenger cars will likely be around 11.6 Megaton. So, by

introducing the measure that all new passenger cars in 2030 have to be zero-emission cars, greenhouse gas emissions will probably drop from 15.4 megaton to 11.6 megaton or a reduction of 3.8 megaton by 2030. Other road transport also needs to reduce CO2 emissions. We will focus on commercial road transport and heavy-duty transport in an upcoming note in this publication.

Total cost of ownership battery electric cars versus internal combustion cars

Currently battery electric cars are more expense to buy even considering government subsidies. The average purchase costs in 2021 was EUR 51,000 while the average price of a petrol car was around EUR 10,000-15,000 lower. However, according to a recent study from **LeasePlan** electric vehicles in nearly every segment and in nearly every European country are now at the same price or cheaper than petrol or diesel cars. The analysis is based on the total costs of owning and operating a car (TCO) including energy/fuel, depreciation, tax, interest, insurance and maintenance. The study notes that "fuel costs remain significantly lower for electric cars than petrol and diesel cars: fuel costs represent 15% of the total cost of ownership of an EV, while this is 23% and 28% for petrol and diesel drivers. So battery electric vehicles have a higher initial investment but lower running costs …". The government incentive program covers some of this higher initial investment. For example the subsidy for buying a new electric car is EUR 2,950 and for a used electric car EUR 2,000 (the amounts for 2023). To achieve the goal of getting more zero-emission passenger cars on the road, purchase costs will have to fall so that electric driving becomes accessible to a large number of people.

Substantial increase in the number of charging points

The total number of charging points in the Netherlands increased substantially, to 119,197 in December. This is an increase of 44% compared to 2021. At the end of 2021 there were 1.8 million charging points worldwide (IEA). In the Netherlands, there are 69,804 regular public charging points that are 24/7 publicly accessible, 49,393 semi- regular semi-public charging points and 4,164 fast charging points. Regular charging points (public and semi-public) have smaller or equal than 22kW capacity while fast charging points have larger than 22 kW (**RVO**). There are also an estimated 345,000 private charging points. The RVO published a survey on charging in the Netherlands (National Laadonderzoek). According to this survey, 68% of electric car users have solar panels and 95% of this group would like to use solar power for charging or are already doing so.

Currently there are 4.1 cars (BEV, PHEV) per public and semi-public charging points. If we also consider the private charging points then there are 1.1 cars per charging point. In China this is 5 cars per charging point and in Germany 12 cars per charging point. So looking at other countries the number of charging points should currently be enough. However, in densely populated areas where there is also limited possibility for private charging points it is likely that the number of cars (BEV, PHEV) per charging point is much higher and that there are not sufficient charging points. The government aims to have 1.8 million public, semi-public and private charging station in 2030. Currently there are 10 hydrogen fuelling stations. This means around 60 fuel cell cars per fuelling station.

Conclusion

In 2021 the mobility sector in the Netherlands was responsible for 30.8 Megaton of greenhouse gas (GHG) emissions including 30.1 megaton CO2 emissions. In 2022 this was most likely lower. This was 18% of the total greenhouse gas emissions. Road transport is the biggest emitter. It is responsible for around 85% of the total emissions of the mobility sector. Passenger cars emit around half of the total of mobility. The government has set a target that all new passenger cars need to be zero-emission cars in 2030. This is an ambitious target that will likely result in a reduction of around 4 Megaton of greenhouse gas emissions in 2030. This falls short of what is needed. Cars should reduce a total of 5 Megaton of greenhouse gas emissions 2030. A faster uptake of EVs via stimulus measures, more affordable EVs and more stringent emission targets for internal combustion cars are crucial to bring down emissions at a faster pace. The target of the mobility sector is a reduction of 10 Megaton greenhouse gas emissions in 2030. More needs to be done in the other parts of the mobility sector to bring down these emissions. We will focus on this in future notes.

Bond spreads do not (yet) capture high energy efficiency at logistic real estate issuers

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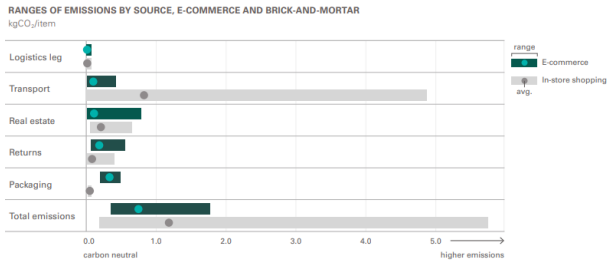
- **Logistic real estate has a lower carbon footprint than retail real estate**
- **However, investors and tenants of logistic real estate are demanding higher energy efficiency**
- **Disclosure of energy performance (and carbon emission) is lagging at various EUR IG logistic real estate names**
- **Although Prologis and PELF stand out in terms of energy performance, this is not (yet) visible in their bond pricing**

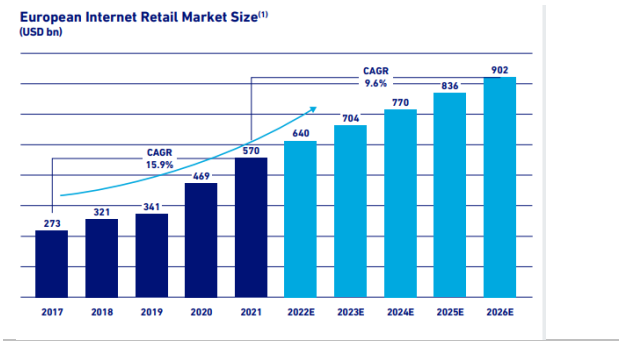
Logistic real estate as an asset has been rallying extensively over the past few years due to a general lack of available properties and strong outlook for growth in e-commerce. But the ESG bid could have also played a role: as shown on the chart on the left below, the carbon footprint per item is much lower compared to when this good is sold through traditional shops or through the internet.

E-commerce has much lower CO2 footprint than traditional retail



Source: Logistic Real Estate and E-commerce lower the carbon footprint of retail (Jan 2021 – Prologis Research/MIT)

Europe still in early innings of e-commerce adoption



Source: Logicor annual report 2021, Euromonitor

Real estate advisor, broker and investor company JLL issued their EMEA 2023 outlook recently. On the logistics real estate sub-sector JLL specifically called for a 'growing emphasis on future-proof buildings' and it was even willing to assert that non-ESG compliant buildings are 'at risk of becoming functionally obsolete' as tenants and investors become more aware about energy efficiency. This could perhaps drive a higher bid for logistic real estate companies with lower energy usage credentials.

Given the swath of green bond issuance from this sub-sector where the proceeds are tied to high quality building labels, the low average age of properties and the issuer's strategy to emphasize energy efficiency in the development process, we presume that holdings of highly inefficient properties will not be material. Indeed, when comparing the average carbon emissions of **Prologis** or **Segro** against the emissions by various office real estate issuers, it does not seem that there is a big gap. This comes despite logistics properties being subject to higher energy intensity due to, for example, their open spaces and in many cases also (light) manufacturing taking place in the buildings.

However, it is important to compare the average energy performances amongst the EUR IG logistic providers. When an issuer has properties that have lower energy usage vs the competitor, their properties could attract a higher interest from tenants and investors. Equally, the issuer's bonds should trade at tighter credit spreads, after adjusting for other items such as issuer leverage. For simplicity we assume the average energy performance we use does not entail large variability across the issuer's total portfolio and that the energy efficient properties are also located in desirable locations. Regarding the latter, we note that for example both **Prologis European Fund** and **Segro** have a gross rental yield close to 3%, which are in line with the low 3% recorded for prime logistics properties in Germany, France and the UK (source: Colliers).

Some issuers are still lagging in terms of energy and carbon disclosures

There are 'only' 8 logistic real estate issuers where each has more than 3 bonds outstanding to justify analyst dedication. However, 3 out of these issuers in this small universe still lag when it comes to energy and carbon emission reporting, including downstream scope 3 energy usage and carbon emissions. This scope 3 tenant data is key as it shows energy usage when actually being used for the purpose for which it was designed. Indeed, for issuers that do report own usage and tenant data, own emissions only represent a small part of energy and emissions. The 3 issuers that lack tenant energy and emissions data are **Blackstone Property Partners Europe (BEP)**, **Logicor** and **CTP**. In the case of BEP and Logicor, one would assume that the backing by US property behemoth Blackstone would have positive impacts in terms of disclosure. CTP is actually an issuer which has printed its entire 8 Euro bond stack in green "use of proceeds" bond format. One would have assumed that the CTP green bond investor might have shown interest in actual energy and carbon performance data when the bonds were printed, than just purely relying on property labels. This does not seem to be the case.

Prologis (and PELF) stand out in terms of low energy usage

As such there are 5 issuers which provide better disclosure than the issuers above, being **Prologis, Prologis European Logistics Fund, Segro, Segro European Logistics Partnership** and **VGP**. The table below shows the latest operational emissions (i.e. including tenant) and energy usage per square meter per annum (psqm pa) as taken from the issuers' sustainability disclosures.

	Prologis/PELF	Segro	SELP	VGP	Blackstone PP Europe	Logicor	CTP
Date reporting	2021	2021	2021	2020	NA	NA	NA
All emissions operational (metric tonne)	2,074,786	179,879	155,380	75,009	NA	NA	NA
Operational emissions downstream (kg psqm pa)	22	36	30	30	NA	NA	NA
Energy usage from operations (KWh psqm pa)	68	103	129	102	NA	NA	NA

Source: Prologis, Segro, SELP, VGP, ABN AMRO Group Economics

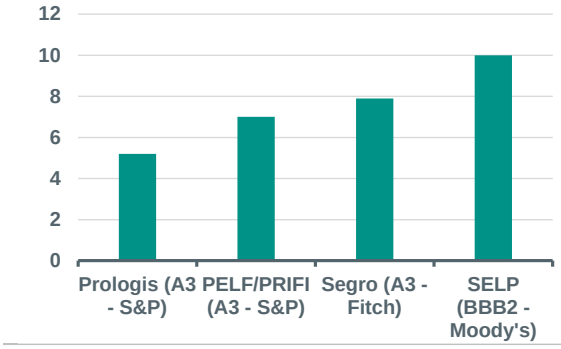
Prologis properties apparently are lowest in emissions and energy use. The difference to the other issuers is quite large as well (nearly 50% less energy used in comparison to SELP, for example). We have combined the picture for **Prologis** and **PELF** as the parent company reports emission data comprehensively across is affiliates, including its ventures such as Prologis European Logistics Fund (PELF). We are comfortable to use the Prologis data, which includes Americas, Europe and Asia, for European focussed PELF. The higher emission factor on electricity in Europe would actually entail a lower energy usage when converting carbon emissions to an implied energy usage, hence energy usage might even turn out to be lower at PELF level.

Prologis' best energy performance does not seem to be priced in

As our goal is to assess to what extent bond investors are pricing in property energy efficiency, we leave out VGP from the assessment for recent significant spread volatility, but also as VGP has a development & sell model and the comparison to the pure play real estate issuers becomes difficult. The remaining issuers operate at different credit ratings, but also different leverage and the chart below on the left shows their near-term leverage outlooks according to the rating agencies.

Near term leverage outlooks

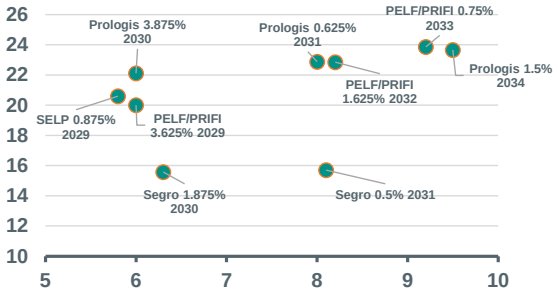
ND/EBITDA outlook as per rating agencies



Source: S&P, Moody's, Fitch, ABN AMRO Group Economics

Prologis/PELF has highest spread per tick of leverage

Z spread per tick of ND/EBITDA (bp)



Source: Bloomberg, ABN AMRO Group Economics, X-axis = bond duration, bonds displayed are in green format except for the Prologis 2030 and Prologis 2031

We use these leverage outlooks to standardize the spread being offered at the moment on the issuers' bond to achieve a better like-for like comparison. The chart on the right above shows this leverage-standardized-issuer-spread for various durations. Hence, Prologis and PELF bonds look rather cheap considering their superior energy performance, also considering that at least all the PELF bonds shown are in green format. We would presume that high energy efficiency would rank high after issuer leverage as a driver behind spreads, as it reflects the desirability of the underlying properties (and hence also a stronger ability to service debt). It seems however that the bond investors are not yet taking this into consideration.

(Green) hybrid bonds by utility issuers: a good place to be right now

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- **We take a look at some of the (green) hybrid bonds issued by European utilities issuers**
- **We evaluate whether green hybrids trade with a greenium and we show that these instruments are very attractive from a z-spread perspective**
- **Issuers from these hybrid instruments operate with a decent buffer in their credit metrics in the majority of cases**
- **Utility hybrids offer attractive spreads in comparison to their senior equivalent, and there are many green hybrid bonds which also have a significant carbon reduction impact**

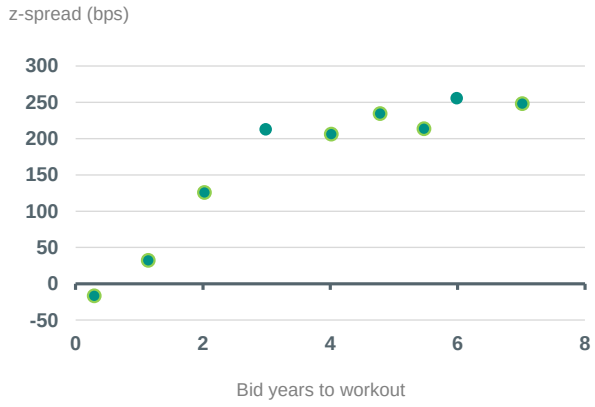
Green hybrids trade with a strong greenium

Green hybrid bonds are structured exactly the same as green senior bonds. That is, they both follow definitions and governance practices as set out in the issuer's Green Bond Framework, and they both commit to invest the proceeds raised towards green projects. Furthermore, although some of these instruments are structured as perpetual bonds with no defined maturity, rating agencies have never perceived them as different to regular (non-green) hybrids.

The first utility company to issue a green hybrid was TenneT, the Dutch TSO, in 2017. Since then, other peers, from the regulated and non-regulated space, have come to the market with such instruments. However, do these instruments provide a pricing advantage? That is, do green hybrids by utility issuers carry the so-called "greenium", meaning that investors are willing to accept a higher price for these bonds vs a non-green equivalent, given their green characteristics?

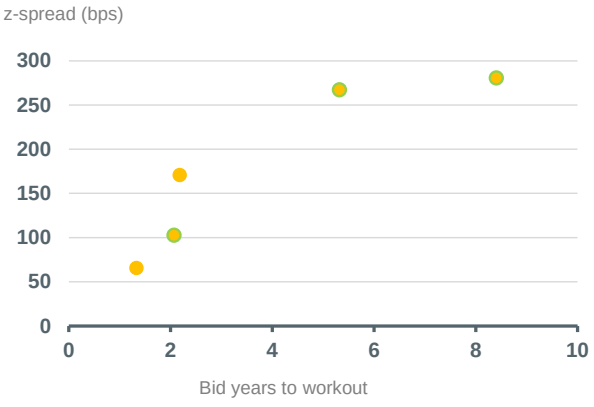
To answer this question, we have looked at the hybrid curves of Spanish utility generator Iberdrola, and its French peer Engie. The reason for choosing these two entities is that these are at the moment the only issuers in the EUR bond space that have both, green and non-green hybrids outstanding. All other utility issuers have either only green or only non-green hybrids outstanding. As shown in the chart below, there is clearly a greenium in the secondary market for these bonds. For example, the green IBESM 1.874 PerpNC4 bond trades 8bps tighter than the non-green IBESM 1.45 PerpNC3. The same is observable when looking at Engie hybrid bonds. For example, the non-green ENGIFP 1 5/8 PerpNC2 trades a whooping 70bps wider than the green ENGIFP 3 ¼ PerpNC2, with both bonds having very similar maturities. We note however that the greenium has been present but historically very small. For example, in the aforementioned example of Iberdrola, the greenium had reached 70bps in October last year, and has averaged around 20-30bps throughout 2022. Nevertheless, the presence of a greenium clearly indicates that green hybrid instruments are a strong preference for investors.

Iberdrola: greenium clearly visible in the hybrid space



Source: Bloomberg, ABN AMRO Group Economics. Note: dots with a light green border indicates green bonds.

Engie: greenium clearly visible in the hybrid space



Source: Bloomberg, ABN AMRO Group Economics. Note: dots with a light green border indicates green bonds.

Hybrid bonds by utility issuers look very attractive, but watch out for the headroom

We broaden our scope and take a look at the entire European utilities hybrid universe (that is, not only green bonds). We are interested in evaluating whether hybrids look attractive compared to a senior unsecured bond. More specifically, we focus on

(i) the spread pick-up offered by hybrids vs. same maturity senior unsecured bonds, but also (ii) whether these companies operate with a decent buffer on their credit ratings downgrade thresholds (as the hybrids would suffer most in case credit rating downgrades materialize). We also evaluate whether any of these hybrids have a yield which exceeds the issuer's cost of equity, as this could be an indication of the bond market expecting a significant deterioration in a company's fundamentals.

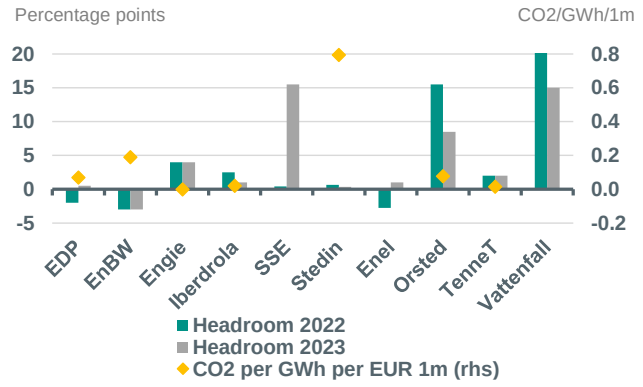
The table below summarizes a few pairs we have selected of senior and hybrid bonds of various utility issuers. The bonds included in such pairs were also issued before January 2022, as this allows us to also analyse what was the pick-up between senior and hybrids before the outbreak of the Russia-Ukraine war. In some cases, no appropriate pair was found, hence the issuer is not included in this analysis.

Issuer	Rating issuer (Moody's / S&P)	Rating hybrid (Moody's / S&P)	Hybrid Bond	Green?	Senior Bond	Green?	Pick-up (yield, %)	Avg pick-up Jan-Feb 2022 (yield, %)	Pick-up (z-spread, bps)	Avg pick-up Jan-Feb 2022 (z-spread, bps)
Iberdrola	Baa1/BBB+	Baa3/BBB-	IBESM 1.575 PERP	Y	IBESM 1 1/4 09/13/27	Y	1.8	3.5	239.6	190.5
Engie	Baa1/BBB+	Baa3/BBB-	ENGIFP 1 1/2 PERP	Y	ENGIFP 1 3/8 06/22/28	N	1.5	3.3	214.0	120.0
SSE	Baa1/BBB+	Baa3/BBB-	SSELN 3 1/8 PERP	N	SSELN 1 3/8 09/04/27	Y	2.8	4.6	163.9	145.0
Enel	Baa1/BBB+	Baa3/BBB-	ENELIM 1 7/8 PERP	N	ENELIM 0 1/2 06/17/30	N (SLB)	1.5	3.2	247.6	130.0
EDF	Baa1/BBB	Ba1/B+	EDF 3 3/8 PERP	N	EDF 2 10/02/30	N	2.8	4.7	269.3	254.0
EDP	Baa3/BBB	Ba2/BB+	EDPPL 1 1/2 03/14/2082	Y	EDPPL 1 1/2 11/22/27	N	1.6	3.7	236.0	160.0
Stedin	-/A-	-/BBB	STEDIN 1 1/2 PERP	Y	STEDIN 0 1/2 11/14/29	Y	1.6	3.4	249.6	118.5

From the table above, we are allowed to draw two conclusions: (1) the pick-up between hybrids and senior bonds has been very attractive, from a z-spread perspective. However, (2) this is not the case when looking at outright yields. The denominator effect from the rise in base rates was strong, which reduced the yield pick-up. This ultimately means that hybrids from utility issuers are only an interesting investment in case the investor hedges the interest rate risk. However, this is already what most investors do, which makes hybrids the cheaper instrument for investors at the moment. The table above allows us to demonstrate that an investor can get similar duration risk, same credit risk (given it is the same issuers, although hybrids carry a lower rating due to subordination), but still earn up to 250bps (in case of EDF) if invested in the hybrid bond.

Nevertheless, hybrid bonds offer a higher spread than senior bonds for a reason: they also carry more risk. With that in mind, we also take a look at how much headroom these companies have in their credit rating metrics, before a downgrade takes place. We have summarized such analysis in the graph on the next page. Issuers that show a positive headroom are companies that currently have credit metrics (in this case, FFO/debt) above the downgrade threshold. This also means that companies that currently operate with negative headroom are issuers that investors should watch out for. This is because of two reasons: (i) this increases the chance of an issuer to not call the hybrid or to call but not replace a hybrid (more so in a current environment where interest rates have increased significantly), and (ii) a downgrade would require the spread on the issuer's curve to re-adjust upwards, even more so on the hybrid instrument ultimately resulting in significant losses for investors (for example, the spreads on the hybrid bonds of EDP, where the issuer has a BBB3 composite rating P, have a pick-up of around 40-60bps to Iberdrola's hybrid bonds, where both issuers are rated BBB+). For point (i), a good example is the Spanish company Naturgy, which recently had all of their hybrids adjusted to "no equity content" given their decision to call and not replace the hybrid. While this did not ultimately result in a downgrade, given the company's strong fundamentals, the move did resulted in an increase of debt by EUR 750m. Another example is EDF, which has in November last year also made a similar move, and this resulted in S&P downgrading their hybrids from a BB- to a B+. Still, the graph below allows us to see that overall, utility issuers seem to be solidly positioned in their credit rating categories, with the exception of EDP and EnBW.

Solid fundamentals with strong green impact

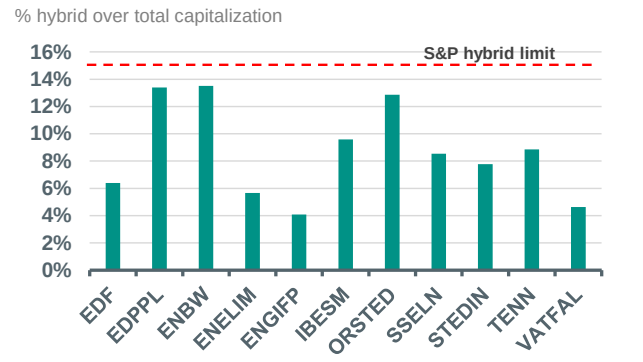


Source: Bloomberg, ABN AMRO Group Economics. Note: headroom refers to FFO/debt. When impact is not shown, indicates the issuer has no green hybrid outstanding.

We also included in the graph above the impact of the green hybrid bonds in terms of carbon reduction. This is part of a previous analysis (see **here**). Basically, investors could benefit from sitting in a solid credit name, which offers an attractive pick-up and on top of that, also has significant impact in terms of CO2 avoidance per GWh, per euro invested. The graph above shows that for example, on a comparative basis, Stedin offers a significant carbon impact on their green hybrid (this is mostly due to it being a DSO rather than a generator), which is also true for EnBW and Orsted. Orsted therefore for example stands out as an issuer with significant impact but also headroom in their credit metrics.

Another important factor to take into consideration is the fact that, as per S&P methodology, the total amount issued in hybrid bonds should not exceed more than 15% of the issuer's book capitalization. If that is the case, then the hybrid bond in excess of the 15% will be assessed as having no equity content. While it is very unlikely that such a situation takes place (for example, issuers could in such a case just issue more senior bonds to increase capitalization), it is something that investors should also keep in the back of their minds. More importantly for the issuers that operate below (or very close to) their credit rating downgrade thresholds. That is because for these companies, an increase in debt would generally weigh very unfavourably for their credit metrics, and on top of that, they could have exhausted their hybrid firepower (remember – hybrid bonds with equity content are accounted for as 50% debt and 50% equity in credit metrics according to the more stringent S&P methodology).

Some issuers have little room for more hybrids



Source: S&P, ABN AMRO Group Economics

Lastly, we have looked at whether the hybrid yield is below or above the cost of equity. We use the cost of equity as reference, as a hybrid bond yield which is higher than the corresponding cost of equity basically indicates that (i) it is priced as perpetual and (ii) that investors are expecting steep losses that the equity side is not taking into consideration. Luckily, this is not the case with any of the utility hybrid bonds, once again reinforcing the attractiveness of these instruments.

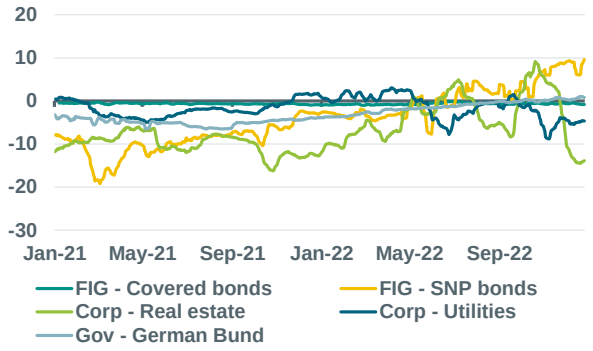
Conclusion

Utility hybrid bonds could offer investors an attractive opportunity, given that it allows for them to have same duration and same credit risk with a more attractive spread. However, investors should prefer hybrids by companies which are solidly positioned in their credit ratings and have strong fundamental profiles. Green hybrids also seem to have a strong greenium and investors could also pick the instruments that offer the largest impact in terms of carbon avoidance.

ESG in figures

ABN AMRO Secondary Greenium Indicator

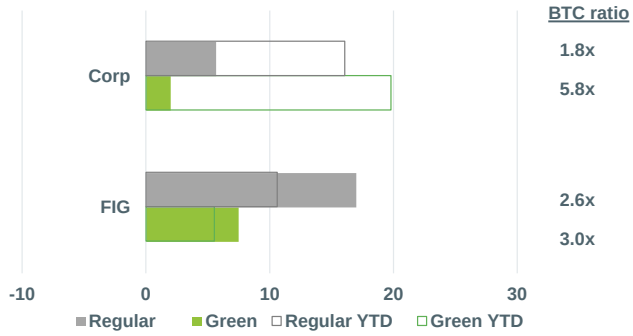
Delta (green I-spread – regular I-spread)



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

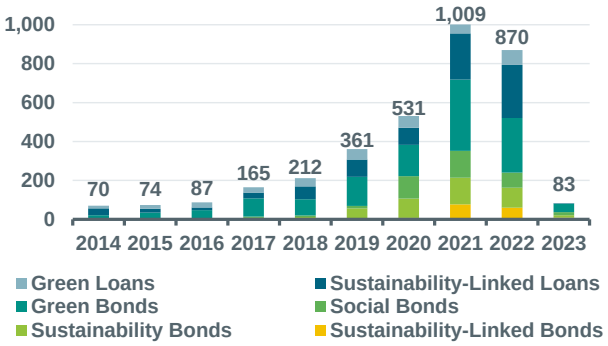
NIP in bps



Note: Data until 02-2-23. BTC = Bid-to-cover orderbook ratio. Source: Bloomberg, ABN AMRO Group Economics

Sustainable debt market overview

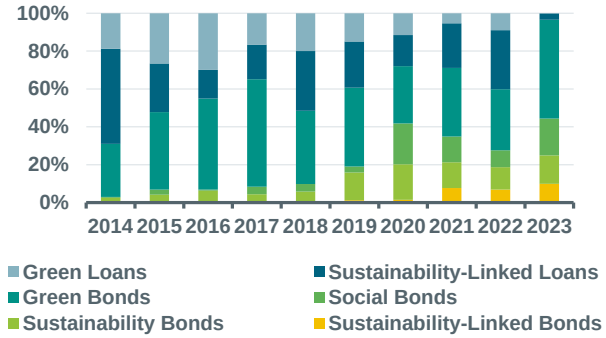
EUR bn



Source: Bloomberg, ABN AMRO Group Economics

Breakdown of sustainable debt by type

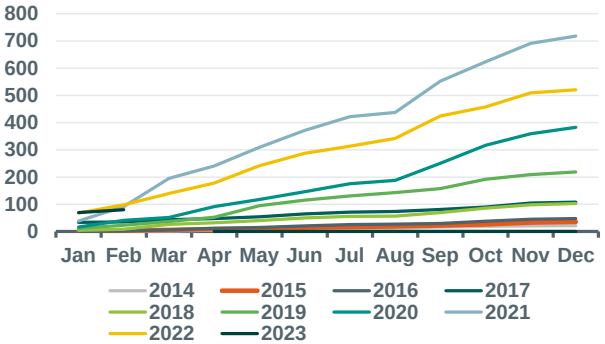
% of total



Source: Bloomberg, ABN AMRO Group Economics

YTD ESG bond issuance

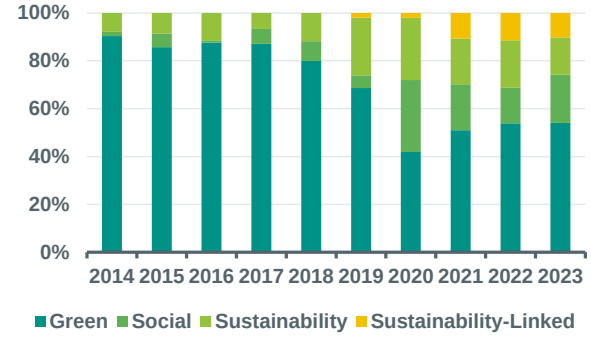
EUR bn (cumulative)



Source: Bloomberg, ABN AMRO Group Economics

Breakdown of ESG bond issuance by type

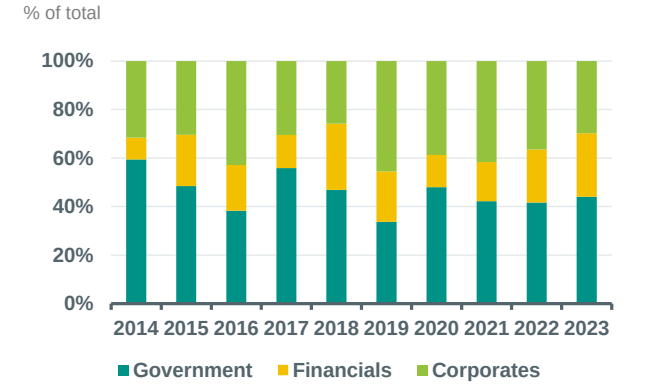
% of total



Source: Bloomberg, ABN AMRO Group Economics

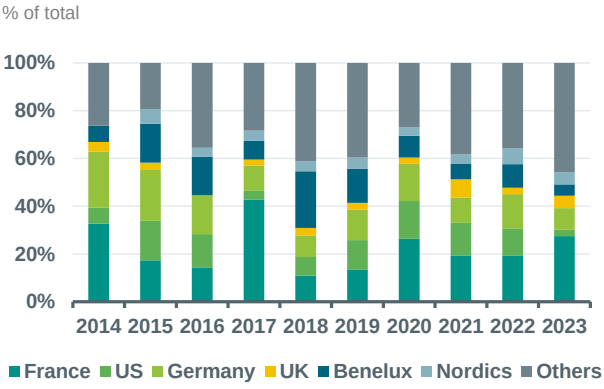
Figures hereby presented take into account only issuances larger than EUR 250m and in the following currencies: EUR, USD and GBP.

Breakdown of ESG bond issuance by sector



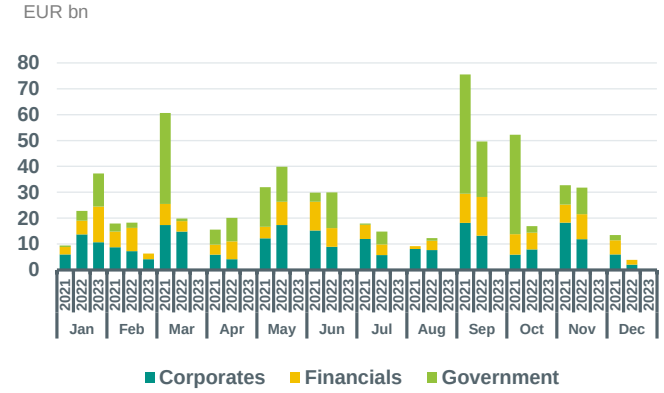
Source: Bloomberg, ABN AMRO Group Economics

Breakdown of ESG bond issuance by country



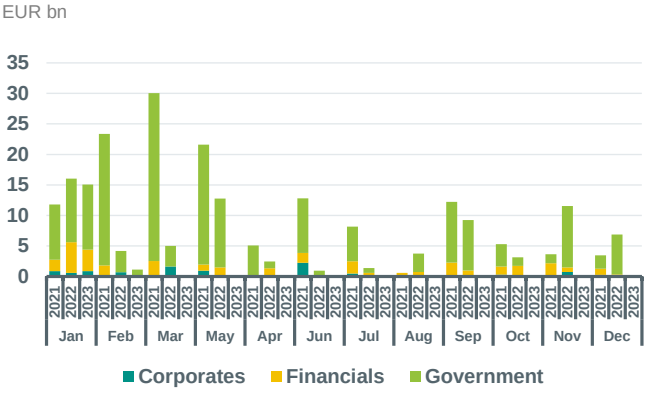
Source: Bloomberg, ABN AMRO Group Economics

Monthly Green Bonds issuance by sector



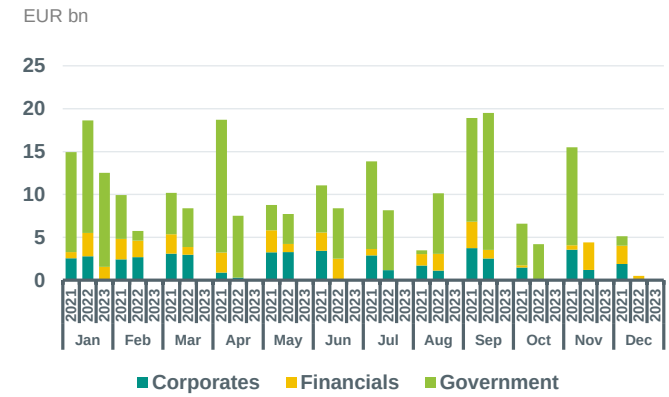
Source: Bloomberg, ABN AMRO Group Economics

Monthly Social Bonds issuance by sector



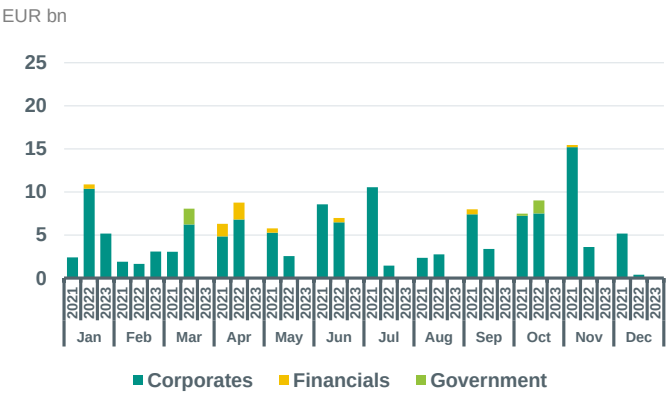
Source: Bloomberg, ABN AMRO Group Economics

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.

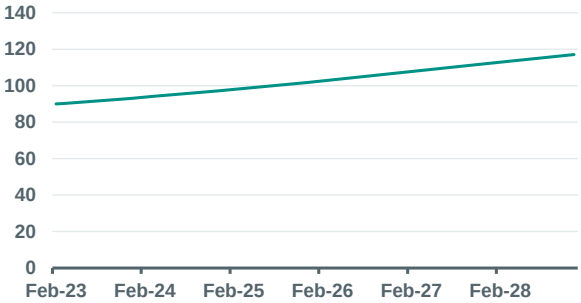
Carbon contract current prices (EU Allowance)

EUR/MT

Source: Bloomberg, ABN AMRO Group Economics

Carbon contract future prices (EU Allowance)

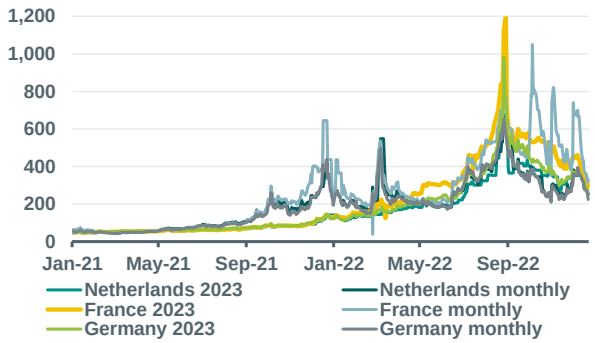
EUR/MT



Source: Bloomberg, ABN AMRO Group Economics

Electricity power prices (monthly & cal+1 contracts)

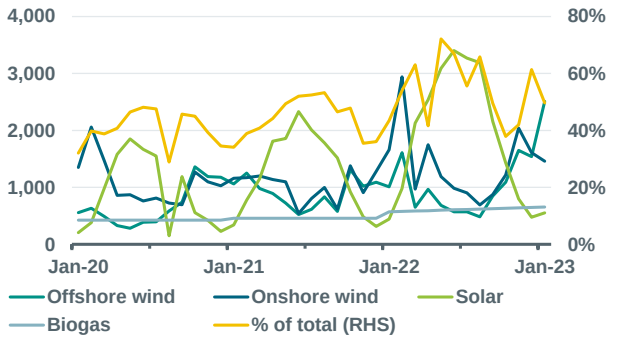
EUR/MWh



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

Electricity generation from renewable sources (NL)

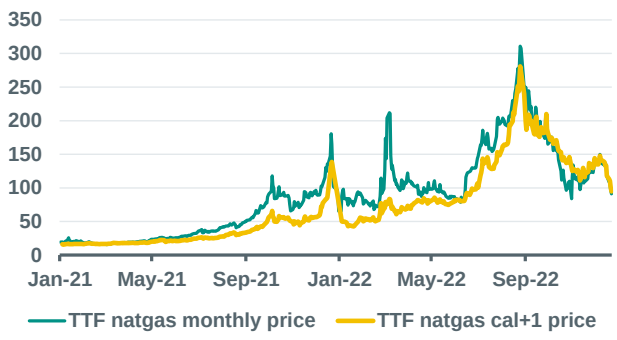
GW % of total



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

TTF Natgas prices

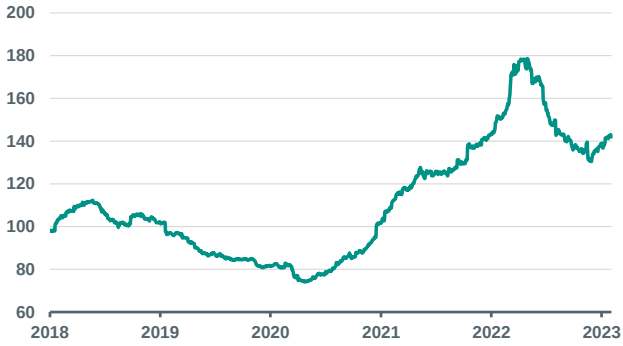
EUR/MWh



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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