Group Economics | Financial Markets & Sustainability Research | 16 January 2023

Marketing Communication

SustainaWeekly

ECB bond greening to intensify and spread

- **Strategist: The ECB has signalled its intention to go further in greening its bond portfolio. It looks likely to actively reshuffle the stock of corporate bond holdings towards greener issuers. In addition, it plans to extend greening to other asset classes, most notably public sector bonds. The ECB looks set to increase the weight of SSAs (where the green proportion is higher) and increasing the share of sovereign green bonds.**

- **Economist: Natural gas consumption decreased by 24% during 1990-2021, while the use of non-fossil energy carriers increased sharply. Growth in renewable energy stands out, with a 233% increase over the last 30 years. But despite this sharp growth, the total amount of energy in PJ is still limited. In almost all energy-intensive sectors, intensity has declined significantly since 1995, except in mineral extraction.**

- **ESG Bonds: So far there are only three issuers have a clear focus on healthcare real estate and have accordingly issued social or sustainability bonds. The sector offers various structural tailwinds and the recent distress at tenant Orpea is manageable. But we do see lack of consistency in bond pricing.**

- **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 of the new year, we start by looking at key speech last week by ECB executive Board member Isabel Schnabel. The clear message is that the ECB will step up the greening of its bond portfolio both by intensifying its efforts with regards to its corporate bond holdings, as well as expanding its efforts to the other asset classes in its bond portfolio. Most notably, this will include public sector bonds. We set out the complications when it comes to a green public sector framework and the strategy the ECB is likely to employ. We then go on to look energy intensity trends across different sectors and subsequently healthcare real estate issuers in our ESG bond section.

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

Nick Kounis, Head Financial Markets and Sustainability Research | nick.kounis@nl.abnamro.com

ECB bond greening to intensify and spread

Sonia Renoult – Rates Strategist | sonia.renoult@nl.abnamro.com
Larissa de Barros Fritz – ESG & Corporates Strategist | larissa.de.barros.fritz@nl.abnamro.com
Joost Beaumont – Head of Bank Research | joost.beaumont@nl.abnamro.com

- **The ECB has signalled its intention to go further in greening its bond portfolio**
- **Given that reinvestments will likely end, the ECB looks likely to actively reshuffle the stock of corporate bond holdings towards greener issuers**
- **In addition, it plans to extend greening to other asset classes, most notably public sector bonds**
- **However, there are complications when it comes to public sector holdings**
- **The capital key, the absence of a monitoring framework regarding the Paris objectives alignment, and the relatively small size of the sovereign green market, are key obstacles**
- **ECB board member Schnabel suggested (i) skewing the holdings to SSAs and (ii) increasing the share of sovereign green bonds, which would be a more long-term strategy given the limited supply of sovereign green bonds at the moment**
- **The European SSAs indeed offer a larger green bond market than sovereigns and additionally would not conflict with the Eurosystem capital key**
- **Such a strategy could be supportive for the greenium from SSA and sovereigns, in which the latter has been declining for the past year**

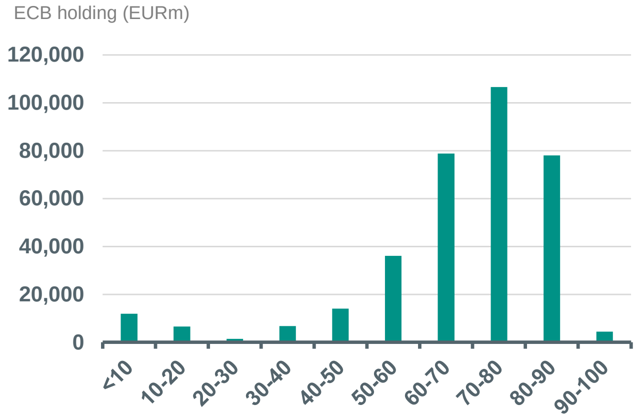
Last week, ECB executive Board member Isabel Schnabel held a speech about monetary policy and the green transition (see **here**). During the speech, Ms. Schnabel has highlighted that rising interest rates and high inflation jeopardize the green transition and that therefore the ECB would need to make additional efforts to align its actions with the objectives with the Paris Agreement.

ECB willing to sell bonds to green its portfolio

One of the most eye-catching messages was that the central bank will move from a flow-based approach to a stock-based approach to greening its stock of corporate bond holdings under the APP and PEPP. This makes sense as the reduction of reinvestments from March onwards, and the likely end of reinvestments in H2, will imply that the central bank no longer can decarbonise its corporate bond portfolio unless high-emitting companies themselves speed up their decarbonisation. In fact, it means that it will start actively 'reshuffling the portfolio towards greener issuers', which implies that it will need to actively sell bonds of companies with weaker green credentials and substitute these with bonds of greener companies.

Ms. Schnabel however made explicit that the intention is not to divest completely from high emitting companies (at least not initially), but rather foster incentives for them to reduce emissions further. The definition of what entails a "green" company is as per previous announcements (see our full note **here**). We judge that this announcement will certainly have some spread impact, which will be negative for the issuers which are lagging behind in the transition. As we noted in our previous piece, currently a lot of issuers carry a very low "ECB score" due to the lack of proper ESG-related disclosures. Therefore, we judge that the first implication of such announcement is to incentivise companies to step up their efforts in terms of transparency on non-financial data disclosures.

Current distribution of ECB's portfolio based on climate scores (low/high score as bad/good)



Source: ECB, Bloomberg, Sustainalytics, ABN AMRO Group Economics

"Greening" its holdings of other asset classes

In her speech, Isabel Schnabel strongly signalled the ECB's desire to support the transition of the economy and to align its monetary policy decisions with the objectives of the Paris Agreement. To do so, the ECB is looking to also extend its portfolio greening to its covered bond, ABS and sovereigns portfolios.

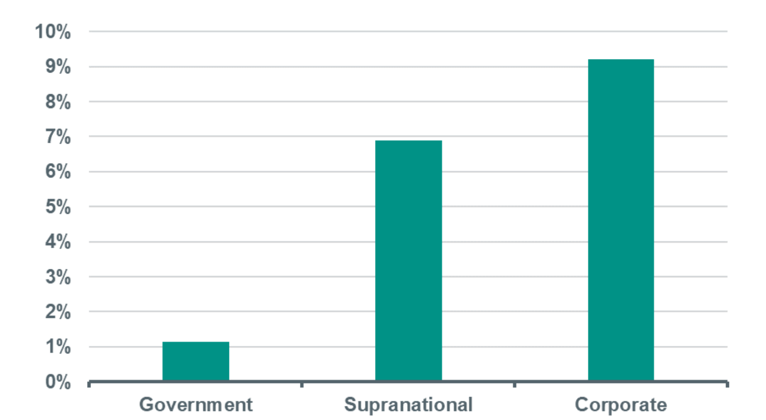
With regards to greening its covered bond and ABS portfolios, Ms. Schnabel has highlighted that this would still require the development of a framework in order for the ECB to properly assess the ESG credentials of those exposures, which will likely follow the same three pillars chosen on the corporate side (quality of disclosures, backward looking and forward looking emissions). Nevertheless, it is likely just a matter of time before the ECB starts to decarbonise its covered bond and ABS portfolios. This is likely to support spreads of green covered bonds (and covered bonds by issuers with a strong green profile) over regular covered bonds.

With regards to public sector bonds, there are various complications that the central bank needs to overcome before such a green framework could come into place. The first of these highlighted in Schnabel's speech is linked to the capital key. Indeed, the ECB must comply with the Eurosystem capital key when executing purchases in some of the ECB's purchase programs. However, for this type of green framework, we doubt a capital key approach would be the best approach as the allocation would be unrelated to eurozone countries' needs and progress made toward the energy transition. This connects to the second obstacle, which is the absence of a framework to assess the alignment of individual countries regarding the Paris agreement objectives. This adds to the difficulty for the ECB to adjust and skew its bond portfolio holdings away from public sector issuers lagging on the energy transition front. The third obstacle relates to the size of the sovereign green bond market. Indeed, despite a growing amount of issuance during the past years, sovereign green bonds remain a niche market. Out of the 19 Eurozone countries, 13 countries have issued green bonds so far, with most of them issuing their first bonds no longer than 2-3 years ago. Green bonds represent therefore only around 1% of the total sovereign bond market.

Currently, it remains unclear exactly how the 'tilt' of ECB holdings toward ''greener'' countries with a more advanced energy transition will be executed in practice. The ECB has proposed two complementary options to make its public sector bond portfolio greener. One would be to reshuffle its portfolio in order to increase the allocation towards sovereign green bonds. Ms. Schnabel has highlighted that the central bank believes this would be a strategy in line with the Paris Agreement. However, we would like to highlight that this is not necessarily the case. For example, the Dutch State Treasure Agency (DSTA) has included climate change adaptations measures (such as expenditures related to flood risk management, flood defences, etc) in their Green Bond Framework (see **here**), which - while still particularly important - do not actually contribute to the decarbonization of the economy in line with the Paris Agreement.

Furthermore, given the relatively small size of the sovereign green bond market, Ms. Schnabel explicitly mentioned this would only be a course of action “as governments expand their supply of green bonds over time”. This implies that the sovereign green bond market would need to expand further before the ECB could intervene efficiently in this market. However, the prospect of the ECB adopting such a framework in the future could push governments to enter and/or increase their green supply in the coming future, as well as support investor demand.

Larger green bond share for SSA than for sovereigns



Source: ECB, ABN AMRO Group Economics.

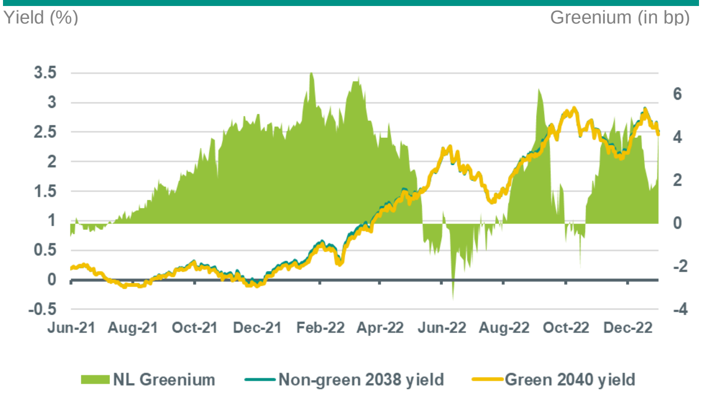
ECB new framework to boost the Greenium …

As depicted in the charts below, the greenium (spread differential between green and non-green bonds of the same issuer and similar tenor) for core countries has so far been relatively moderate and continues to shrink. We discussed the greenium development in a previous note (see here) and it seems that the attractiveness of sovereign green bonds also diminishes during periods of stress. Indeed, as volatility in the rates market increased last year combined with poor liquidity, this led green and non-green peers to trade at similar yields. This is because sovereign green bonds tend to be less liquid than their non-green peers. Particularly in 2022, the Bund greenium reached all time low levels and has stabilised at these levels.

Greenium continues to shrink among core countries…

Source: Bloomberg, ABN AMRO Group Economics.

… and remains quite volatile



Source: Bloomberg, ABN AMRO Group Economics.

Hence, if the ECB indeed decides to tilt its public sector portfolio towards green bonds, this would be an important trigger for the greenium to bounce back. Given the relatively small size of the green bond market, the ECB would be able to acquire a significant portion of those bonds, likely to hold until its maturity and thus drive a significant difference in yields between green and non-green bonds. We have previously shown on the corporate side (see here) that the ECB net purchases tend to increase the spread difference between eligible and non-eligible CSPP bonds. Thus, we expect a comparable reaction if the ECB were to increase its focus on green bonds. Hence, we judge that a new climate-friendly monetary policy would help restore the greenium in the sovereign bond market. In addition, this would also help to reduce the cost of debt for governments committed to combat climate change and thus incentivize further national governments to make use of this market, which would be aligned with the ECB's goals in greening the economy.

… as well as an additional push to green SSAs

The other complementary option given by Isabel Schnabel to tackle the complications set out above is to increase the share of bonds issued by supranational institutions and agencies (SSAs). This would imply skewing ECB purchases to SSAs. The argument was that a larger fraction of SSA outstanding bonds is green, roughly 7% according to the ECB estimates, as shown in the graph earlier in this note. This is indeed a higher share as well as amount than for sovereigns, where the green bond market represents solely EUR 210bn versus EUR 390bn for the European SSAs market (in terms of amounts outstanding). Moreover, increasing the ECB purchases to SSAs would not conflict with the requirement of the capital key and could be allocated more efficiently to the ones in need. An increasing number of SSA issuers are also becoming regular benchmark issuers in the ESG bond space and studies tend to show a higher greenium on average than sovereigns (something we will also discuss in a future note), which could serve as a greater greenium for investors if the ECB were to intervene as well.

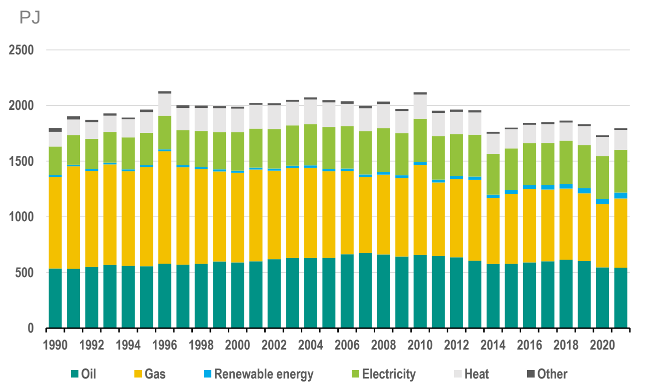
Energy intensity down sharply in many sectors

Casper Burgering – Economic Transition Economist | casper.burgering@nl.abnamro.com

- **Natural gas consumption (energetic) decreased by 24% during 1990-2021, while the use of non-fossil energy carriers increased sharply**
- **Growth in renewable energy stands out, with a 233% increase over the last 30 years. But despite this sharp growth, the total amount of energy in PJ is still limited**
- **In almost all energy-intensive sectors, intensity has declined significantly since 1995, except in mineral extraction**

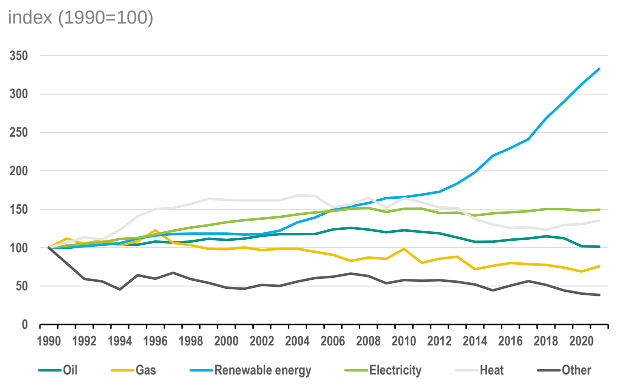
The difference in terms of quantities (in PJ) between final energy consumption in 1990 and in 2021 is marginal. The gap is only -0.2%. At first glance, we conclude from the left-hand figure below that there is very little variation in amounts of PJ over the years in the underlying energy carriers. This is certainly the case for petroleum feedstocks and products. Here the gap in amounts of PJ between 1990 and 2021 is also marginal. But for other energy carriers, a larger percentage difference can be seen. Natural gas is the most important energy carrier both in 1990 and in 2021, but has lost considerable ground over the years, especially in favour of electricity.

Final consumption of energy carriers per year (energetic)



Source: CBS, ABN AMRO Group Economics

Trend in final consumption (energetic) since 1990



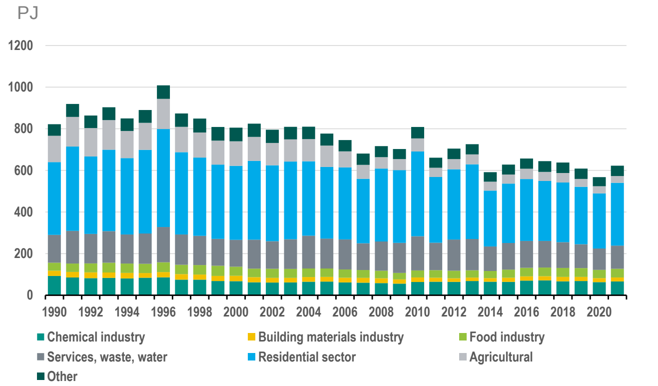
Source: CBS, ABN AMRO Group Economics

Natural gas consumption (energetic) decreased by 24% over the period 1990-2021. In contrast, the use of electricity and heat increased by 49% and 35% respectively between 1990 and 2021, while renewable energy use increased by a whopping 233%. Ultimately, renewable energy capacity needs to maintain exponential growth in the coming years to make the energy mix more sustainable. The variation in consumption of all these energy carriers is influenced by economic trends and developments, structural changes in the various end-use sectors - especially industry - but also improvements in end-use efficiency given the trend in overall consumption.

Final energy consumption by sector

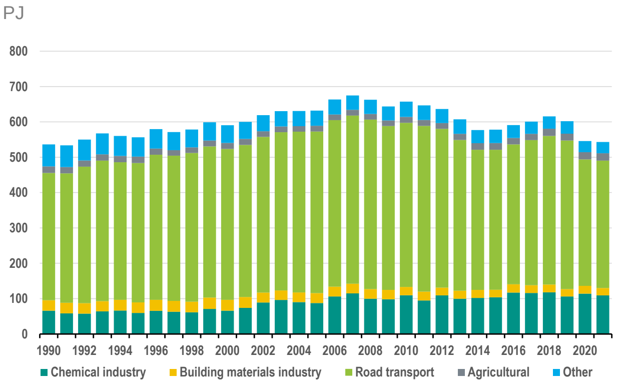
Both natural gas and petroleum feedstocks & products have claimed a solid role in the Dutch energy mix and total energy consumption (energetic) over the past 30 years, with a combined share varying between 65% and 75%. Here, natural gas has a higher share than oil in the energy mix. In 2021, this share was 35% (gas) to 30% (oil). In total natural gas consumption, residential houses have a share of almost 50%. This share has changed little over the past 30 years. As we noticed before, the amount of natural gas used for energy purposes has fallen by 24% since 1990. Almost all major end-use sectors have contributed to this decline. Notably, agriculture with a 74% decrease in natural gas consumption between 1990 and 2021. This is partly due to the strong growth of renewable energy in the sector. But also with the introduction of combined heat and power (CHP), the generation of electricity and heat to the greenhouse has become much more efficient, as this technique requires much less natural gas than via the previously common route via power plants and heat boilers. The only sector where natural gas consumption increased (by 8% since 1990) is the food & beverage industry.

Annual gas consumption (energetic) by sector



Source: CBS, ABN AMRO Group Economics

Annual oil consumption (energetic) by sector

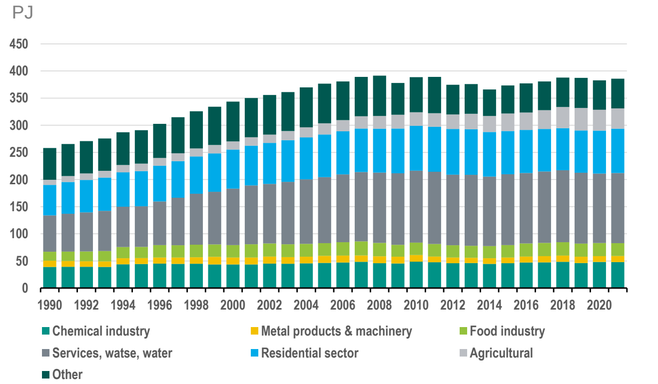


Source: CBS, ABN AMRO Group Economics

Oil consumption (energetic) has remained almost stable over the past 30 years, while non-energetic oil consumption increased by 34% over the same period. The growth in non-energetic consumption is mainly due to the chemical sector, as it uses a wide variety of petroleum raw materials and products in end products. Road transport accounts for about two-thirds of total energetic oil consumption annually, followed at a distance by the chemical sector with about 20% share by 2021.

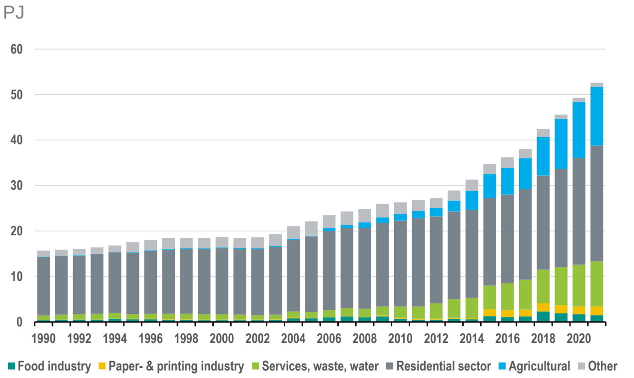
Total electricity consumption has now increased by 49% since 1990 and is expected to continue growing in the coming years. The continuing electrification of society underpins this growth in particular. Electrification is the way to reduce greenhouse gas emissions, provided that the electricity is produced in a clean way. The greatest growth potential - but also the greatest challenges - for electrification lie in the transport sector and industry. One-third of total electricity consumption currently goes to (non-)commercial services (including the water, waste and repair sectors), followed by industry (with 32% share) and residential with a 20% share. The largest consumers of electricity in industry are the chemical industry, the metal products industry (together with the machinery industry) and the food and beverage industry.

Annual electricity consumption by sector



Source: CBS, ABN AMRO Group Economics

Annual renewable energy consumption by sector



Source: CBS, ABN AMRO Group Economics

Growth in renewable energy stands out, with a 233% increase in 30 years. But despite this sharp growth, the total amount of energy in PJ is still limited. Its share in the energy mix is only 3% in 2021. Residential, agriculture and the (non-)commercial service sectors have the largest share in total renewable consumption. By 2022, renewable energy generation has increased sharply year-on-year. This made power generation a lot more sustainable. Solar energy was the largest contributor. Increasing electrification in industry, in transport and in households and buildings (cooking, heating) will further increase the share of electricity in the energy mix.

Energy intensity

The trend in energy intensity in sectors provides insight into (in)efficiency. This can be measured by plotting the amount of energy against units of output, activity or added value. A decrease in energy intensity means that less energy is used to produce a product or service. Then, in theory, efficiency has increased. When the energy intensity increases, the opposite is true.

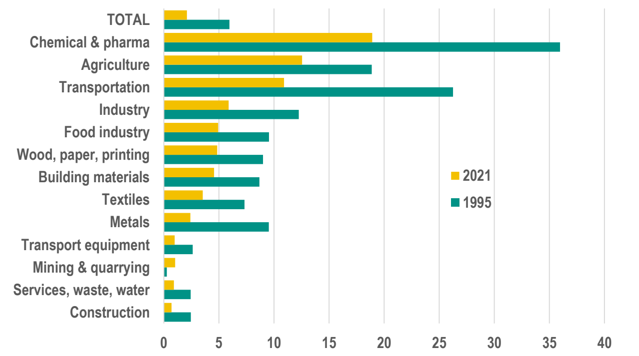
At macro level - i.e. total final energy consumption to total gross domestic product (GDP), indicated by 'TOTAL' in the left-hand figure below - it is, however, more difficult to interpret energy intensity properly. This is because the trends and developments in the underlying sectors show great variety. After all, it is a sum of goods production, transport of goods and people, services in many forms and construction activity, among others. In that sense, the underlying sector trends provide more insight into this.

The top three most energy intensive sectors in 2021 are chemical & pharmaceutical, agriculture and transport. These three sectors stand out above the other subsectors in terms of energy intensity. In almost all energy-intensive sectors, the intensity has declined since 1995, except for mineral extraction. In the metals and construction sectors, the decline has been strongest over the past 25 years (by 70%-75%), followed at some distance by the services and transport sectors (both by around 63%). The agricultural sector has seen the least decline in relative terms at 33%.

In many non-industrial sectors, the decrease in consumption of fossil energy carriers (coal, oil and gas) is much larger than in the industrial sectors. Only in road transport and shipping is the volume of fossil energy carriers in 2021 at almost the same level as in 1995.

Energy intensity sectors

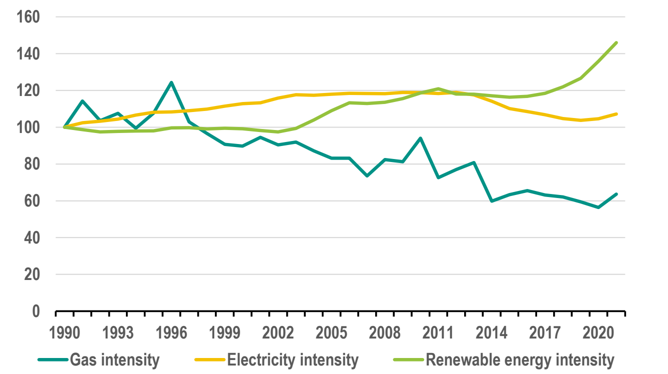
(final energy consumption in PJ per EUR value added)



Source: CBS, ABN AMRO Group Economics

Residential sector energy intensity since 1990

index (1990=100)



Source: CBS, ABN AMRO Group Economics

The housing sector shows a sharp decline in gas intensity and an increase in renewable energy intensity. The consumption of electricity (from non-renewable sources) by homeowners decreased after 2014 due to the strong rise in generation from renewable sources (especially from solar panels).

With increasing electrification of homes, dependence on fossil fuels (mainly gas) will decrease. Technologies to further electrify homes are widely available and also readily deployable. Nevertheless, decarbonising the housing stock remains a major task and challenge. Because on balance, it remains difficult to convince residents and users of homes to make the climate-neutral transition. In addition, implementing all climate-neutral options for homes will not be easy due to the persistent shortage of skilled professionals. What is certain in any case is that in the energy mix for the homes of the future, there will no longer be any room for natural gas.

The small universe of healthcare real estate bonds

Shanawaz Bhimji – Head of Corporate Debt Research | shanawaz.bhimji@nl.abnamro.com

- **So far there are only three issuers have a clear focus on healthcare real estate and have accordingly issued social or sustainability bonds**
- **The sector offers various structural tailwinds and the recent distress at tenant Orpea is manageable**
- **But we do see lack of consistency in bond pricing**

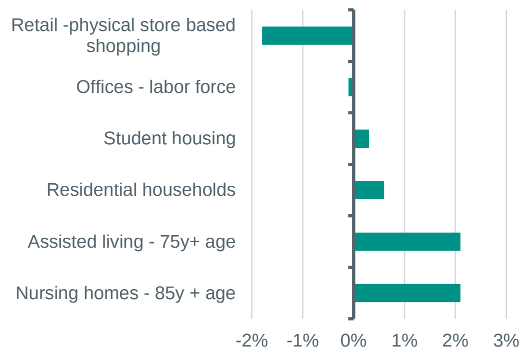
The EUR IG healthcare real estate bond space is scarcely populated with only 3 issuers focussing on either being a landlord of elderly care (Cofinimmo and Aedifica) or of both clinical & elderly care (Icade Sante) properties. Each of these issuers has printed public debt under a use of proceeds banner, either as a social bond (Icade Sante) or a sustainability bond (Cofinimmo and Aedifica). One would assume that the scarcity in bond supply plus the structural tailwinds behind healthcare properties due to for example the ageing population should normally drive a strong bid towards healthcare issuers relative to issuers focusing on other property types.

The benefits offered by healthcare real estate

We like the various attributes offered by healthcare real estate. The triple or double net lease structures make the tenant responsible for property maintenance and/or opex. Supply of healthcare property is set to remain low in the imminent course as Europe lacks developers that can quickly ramp up supply. Finally, a recent survey conducted by broker/advisor Knight Frank revealed that more institutional investors in regular residential real estate had plans to expand their presence in elderly healthcare. Presumably due to diversification benefits, the ability to raise rents in line with inflation (which is being held back in the residential space due to rent regulation) and also long term higher rent growth potential. The left hand chart below shows the long-term growth drivers per real estate sub-class (e.g. for assisted living this would be ageing of population). Clearly elderly care stands out in terms of growth potential. The chart on the right then shows that the upcoming population of elderly care recipients (55-64 years of age) have at least the same or even a higher median wealth than the current care population. Hence, with an imbalanced supply/demand picture, the future does look bright for elderly care real estate.

Underlying growth per real estate segment

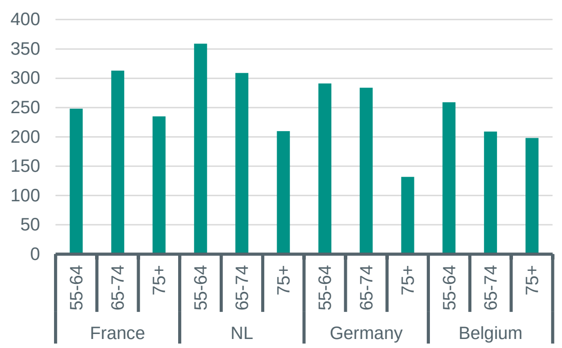
2020-2030 expected CAGR in underling drivers



Source: Eurostat, KPMG, ABN AMRO Group Economics

Boomers have more to spend than incumbents

EUR thousands in median wealth



Source: Credit Suisse Global Wealth Report 2019, ECB HF Survey , ABN AMRO Group Economics,

Healthcare tenant troubles, but Orpea concentration is limited

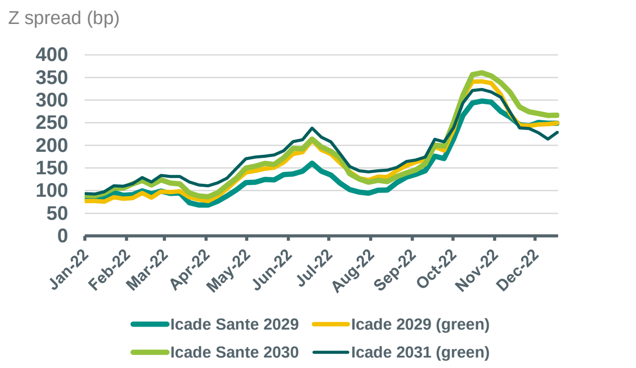
The troubles at one of the big elderly healthcare operators and tenant, Orpea, could lead to investor caution towards the healthcare landlords. Next to maltreatment of residents resulting in huge reputational damage, Orpea is also facing an existential threat. Orpea had the intention to dispose real estate assets to raise funds, yet its failure to attract decent bids creates an imminent cash crunch and the company claims that liquidity could dry up as early as next month. Orpea's failure to sell assets is also a warning that the market for large scale healthcare property transactions is pretty much dead at the moment (like other real estate assets by the way), which makes price discovery for the underlying assets at Cofinimmo and Aedifica also difficult. However, neither Cofinimmo or Aedifica have intention to dispose healthcare real estate assets and remain acquisitive in this area.

Also, both Aedifica and Cofinimmo have not yet accrued unpaid rents from Orpea and given the manageable exposure of only 5% in annual rents, we deem a potential insolvency at Orpea to be manageable for the Belgian landlords. Actually, given that Orpea holds a vast amount of real estate assets, a potential bankruptcy proceeding could be rather straightforward and the successor company could be up and running quite quickly. Looking at other large tenants such as Korian and Colisee (which represent 23% and 14% of Cofinimmo's annual rent roll), we see mixed results in terms of rent service ability. Korian's 2022H1 EBITDAR (=EBITDA before rents) of EUR 528mn was plentiful in comparison to EUR 245mn of rents. In the case of Colisee there are no public financials, yet the latest Moody's report dated Aug 2022 suggests that the tenant would generate only EUR 210mn EBITDAR, which leaves limited headroom to cope with EUR 176mn rents and the risk of higher expenses such as staffing costs. Colisee only represents 7% of contractual rents at Aedifica.

Lack of consistency in bond pricing across this niche segment

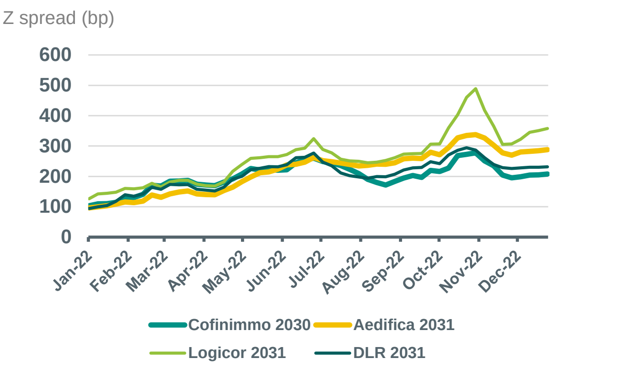
As we make ourselves comfortable with the structural tailwinds and fundamentals of this niche part of the real estate bond market, one would assume rich pricing in the underlying bonds. Looking back over 2022, the charts below show that performance of healthcare real estate issuer bonds has not been straightforward.

Icade Sante bonds at wider spreads than Icade Group



Source: Bloomberg, ABN AMRO Group Economics

Mixed results in BBB2 rated Belgian healthcare names



Source: Bloomberg, ABN AMRO Group Economics,

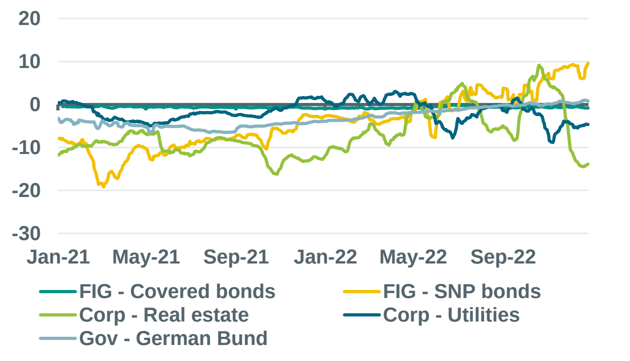
First, the purest of comparison you can get is between the Icade group bonds and the company's designated healthcare real estate unit Icade Sante bonds, as shown on the left hand chart. On the 2029 maturity, the credit spread seems to be even, but the difference opens up to 38bp in favour of the group bond when comparing the Icade Sante 2030 against the Icade group 2031 bonds. At the start of 2022 the spreads on both of these bonds were equal. One could perhaps argue that the Icade group 2031 bond also has indirect exposure to healthcare real estate and it also attracts a larger crowd of investors due to it being a green bond (the Icade Sante is a social bond). However, even though both issuers have the same BBB1 composite credit rating, we note that Icade Sante actually carries less debt in relation to both EBITDA as well as total capitalization versus the parent company, which would argue for a lower credit spread on the Icade Sante bond, in both the 2029 and 2031 maturities. We would expect at least equivalence in credit spreads between the pair shown.

In contrast, the second comparison (right hand chart previous page) still shows big appreciation for Belgian healthcare real estate issuer Cofinimmo. All of the real estate issuers in this selection have a BBB2 composite credit rating and issuers Logicor and DLR also operate assets that benefit from structural tailwinds (such as logistics and datacentres). Firstly, we note that the Cofinimmo bond spreads trade relatively tight in this selection, also considering that the company has the highest leverage (13x ND/EBITDA according to S&P). Furthermore, Cofinimmo still owns a range of Brussels office real estate, which could face headwinds in rents due to the upcoming weaker economy and needs yet to crystalize work from home effects on upcoming renewal of leases. The other BBB2 rated Belgian healthcare issuer, Aedifica, seems to have a more normal appreciation by the debt market. Credit spreads on the Aedifica 2031 trade fair in comparison to similar duration bonds issued by datacentre operator DLR or logistics real estate operator Logicor, when expressed in spread per tick of issuer leverage.

ESG in figures

ABN AMRO Secondary Greenium Indicator

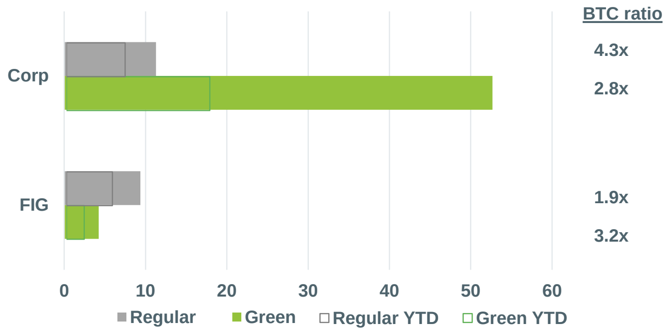
Delta (green I-spread – regular I-spread)



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

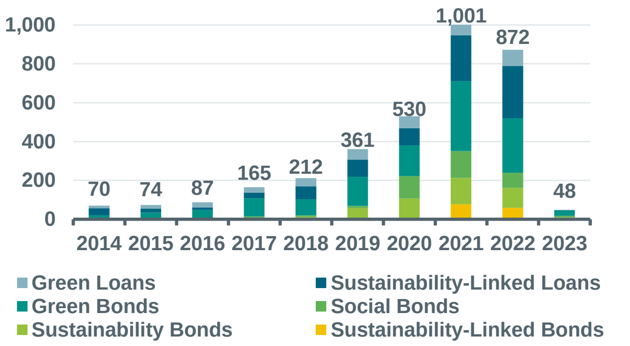
NIP in bps



Note: Data until 12-1-23. BTC = Bid-to-cover orderbook ratio. Source: Bloomberg, ABN AMRO Group Economics

Sustainable debt market overview

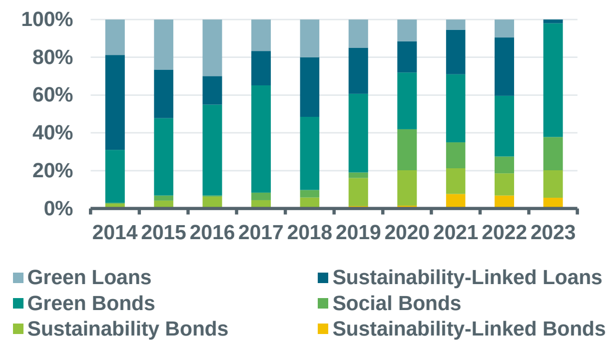
EUR bn



Source: Bloomberg, ABN AMRO Group Economics

Breakdown of sustainable debt by type

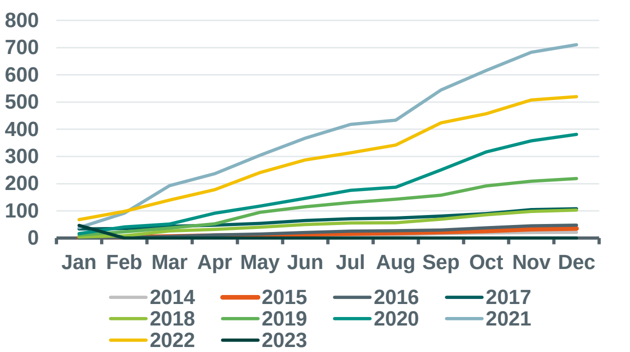
% of total



Source: Bloomberg, ABN AMRO Group Economics

YTD ESG bond issuance

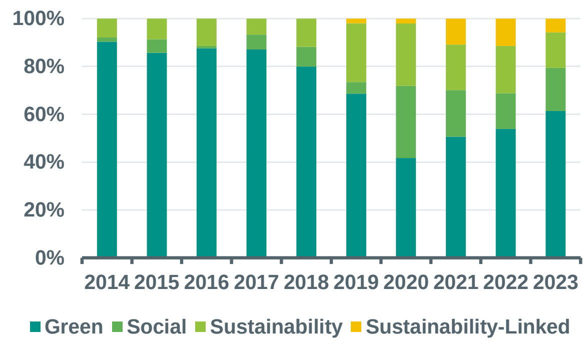
EUR bn (cumulative)



Source: Bloomberg, ABN AMRO Group Economics

Breakdown of ESG bond issuance by type

% of total

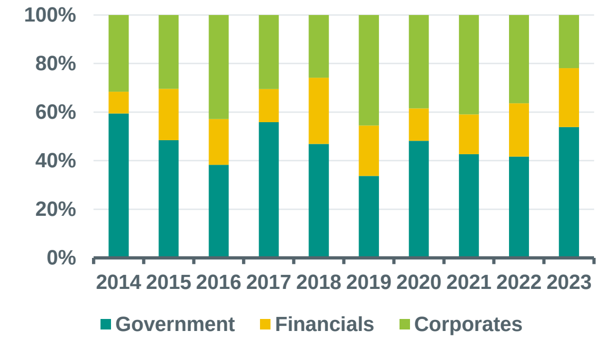


Source: Bloomberg, ABN AMRO Group Economics

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

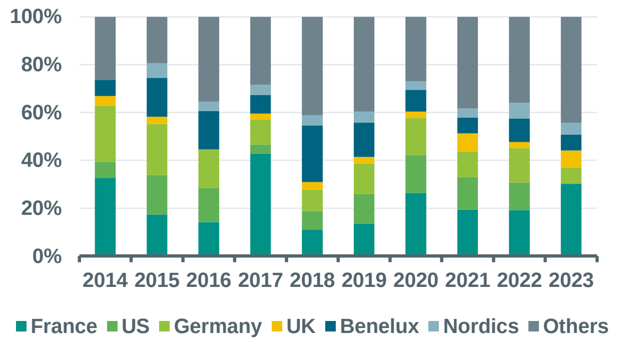
% of total



Source: Bloomberg, ABN AMRO Group Economics

Breakdown of ESG bond issuance by country

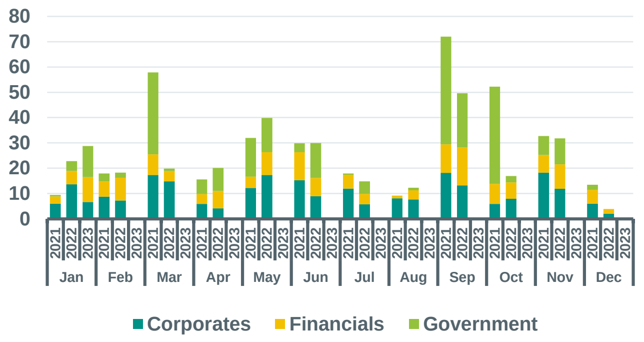
% of total



Source: Bloomberg, ABN AMRO Group Economics

Monthly Green Bonds issuance by sector

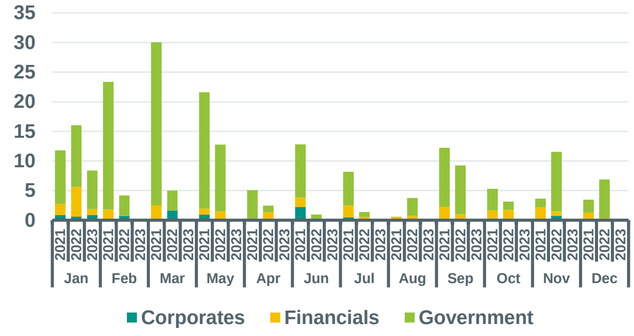
EUR bn



Source: Bloomberg, ABN AMRO Group Economics

Monthly Social Bonds issuance by sector

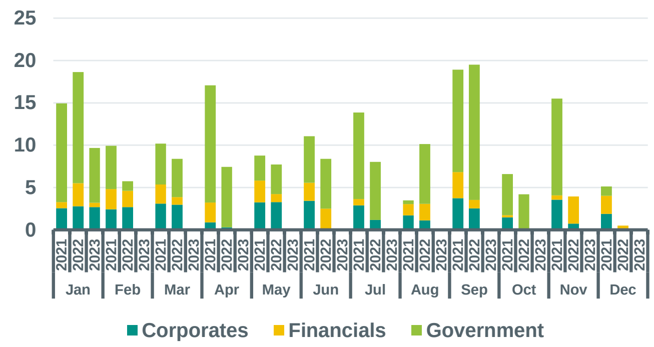
EUR bn



Source: Bloomberg, ABN AMRO Group Economics

Monthly Sustainability Bonds issuance by sector

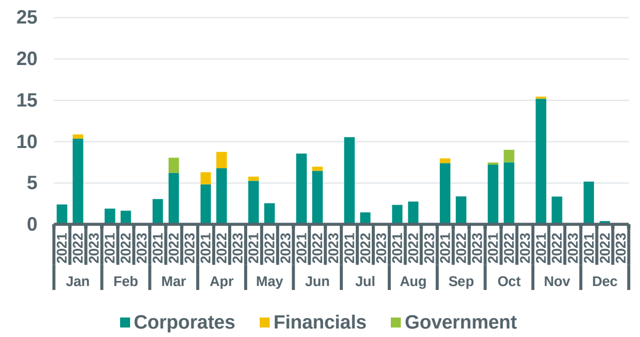
EUR bn



Source: Bloomberg, ABN AMRO Group Economics

Monthly Sust.-Linked Bonds issuance by sector

EUR bn



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.

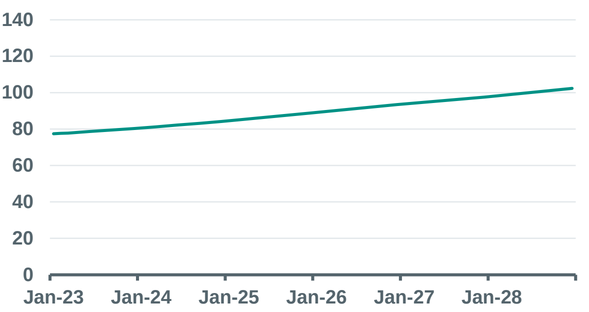
Carbon contract current prices (EU Allowance)

EUR/MT

Source: Bloomberg, ABN AMRO Group Economics

Carbon contract future prices (EU Allowance)

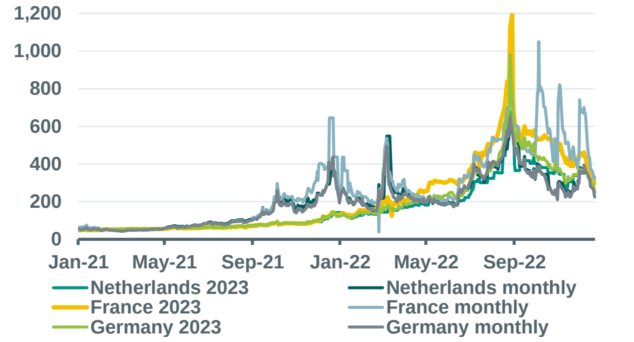
EUR/MT



Source: Bloomberg, ABN AMRO Group Economics

Electricity power prices (monthly & cal+1 contracts)

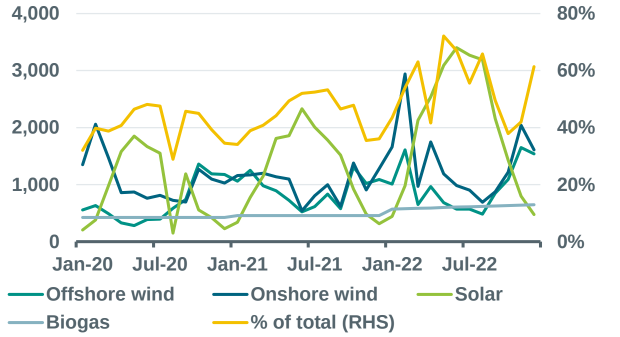
EUR/MWh



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

Electricity generation from renewable sources (NL)

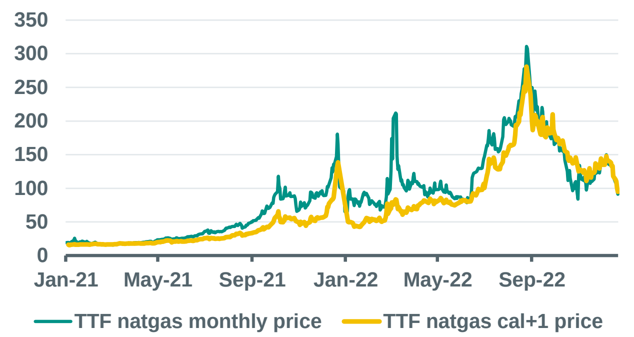
GW % of total



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

TTF Natgas prices

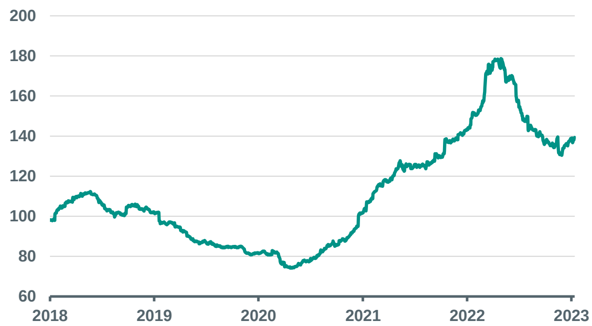
EUR/MWh



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

DISCLAIMER

ABN AMRO Bank
Gustav Mahlerlaan 10 (visiting address)
P.O. Box 283
1000 EA Amsterdam
The Netherlands

This material has been generated and produced by a Fixed Income Strategist ("Strategists"). Strategists prepare and produce trade commentary, trade ideas, and other analysis to support the Fixed Income sales and trading desks. The information in these reports has been obtained or derived from public available sources; ABN AMRO Bank NV makes no representations as to its accuracy or completeness. The analysis of the Strategists is subject to change and subsequent analysis may be inconsistent with information previously provided to you. Strategists are not part of any department conducting 'Investment Research' and do not have a direct reporting line to the Head of Fixed Income Trading or the Head of Fixed Income Sales. The view of the Strategists may differ (materially) from the views of the Fixed Income Trading and sales desks or from the view of the Departments conducting 'Investment Research' or other divisions

This marketing communication has been prepared by ABN AMRO Bank N.V. or an affiliated company ('ABN AMRO') and for the purposes of Directive 2004/39/EC has not been prepared in accordance with the legal and regulatory requirements designed to promote the independence of research. As such regulatory restrictions on ABN AMRO dealing in any financial instruments mentioned in this marketing communication at any time before it is distributed to you do not apply.

This marketing communication is for your private information only and does not constitute an analysis of all potentially material issues nor does it constitute an offer to buy or sell any investment. Prior to entering into any transaction with ABN AMRO, you should consider the relevance of the information contained herein to your decision given your own investment objectives, experience, financial and operational resources and any other relevant circumstances. Views expressed herein are not intended to be and should not be viewed as advice or as a recommendation. You should take independent advice on issues that are of concern to you.

Neither ABN AMRO nor other persons shall be liable for any direct, indirect, special, incidental, consequential, punitive or exemplary damages, including lost profits arising in any way from the information contained in this communication.
Any views or opinions expressed herein might conflict with investment research produced by ABN AMRO.
ABN AMRO and its affiliated companies may from time to time have long or short positions in, buy or sell (on a principal basis or otherwise), make markets in the securities or derivatives of, and provide or have provided, investment banking, commercial banking or other services to any company or issuer named herein.

Any price(s) or value(s) are provided as of the date or time indicated and no representation is made that any trade can be executed at these prices or values. In addition, ABN AMRO has no obligation to update any information contained herein.
This marketing communication is not intended for distribution to retail clients under any circumstances.
This presentation is not intended for distribution to, or use by any person or entity in any jurisdiction where such distribution or use would be contrary to local law or regulation. In particular, this presentation must not be distributed to any person in the United States or to or for the account of any "US persons" as defined in Regulation S of the United States Securities Act of 1933, as amended.

CONFLICTS OF INTEREST/ DISCLOSURES
This report contains the views, opinions and recommendations of ABN AMRO (AA) strategists. Strategists routinely consult with AA sales and trading desk personnel regarding market information including, but not limited to, pricing, spread levels and trading activity of a specific fixed income security or financial instrument, sector or other asset class. AA is a primary dealer for the Dutch state and is a recognized dealer for the German state. To the extent that this report contains trade ideas based on macro views of economic market conditions or relative value, it may differ from the fundamental credit opinions and recommendations contained in credit sector or company research reports and from the views and opinions of other departments of AA and its affiliates. Trading desks may trade, or have traded, as principal on the basis of the research analyst(s) views and reports. In addition, strategists receive compensation based, in part, on the quality and accuracy of their analysis, client feedback, trading desk and firm revenues and competitive factors. As a general matter, AA and/or its affiliates normally make a market and trade as principal in securities discussed in marketing communications.

ABN AMRO is authorised by De Nederlandsche Bank and regulated by the Financial Services Authority; regulated by the AFM for the conduct of business in the Netherlands and the Financial Services Authority for the conduct of UK business.