SustainaWeekly

How might climate policy impact economic growth?

- **Economist: Climate policy can have negative impacts on economic growth if there is an unbalance between the speed/stringency of such policy, and the ability of the private sector to adjust. We explore two examples in this piece. We first look at how emissions caps under the ETS may restrain growth if the private sector cannot adjust as policy becomes more stringent. We then also show that stricter climate regulation in the housing market could lead to a negative impact on household finances and/or house price declines for poorer energy labels.**

- **Strategist: The DSTA published its Green Bond Report, whereby it shows that proceeds from its green bond tap in 2022 were directed to expenditures that are fully aligned with the EU Taxonomy. Looking forward, the DSTA will issue this year a new 20-year green bond (EUR 5 bn),in which taps of this bond expected in the coming years.**

- **Sectors: The energy transition is metal-intensive and many metals have an important role to play in a sustainable future. Hence, the demand outlook for most of these metals remains favourable. However, from an aggregate price perspective, we do not expect prices to reach the peak levels of 2022. This trend will remain largely dependent on economic conditions in China and the outlook for the global economy.**

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

In this edition of the SustainaWeekly, we first dig into the potential impact that climate policy can have on economic growth. We show that the extent of such impact is determined by the balance between the speed and stringency of climate policy and the ability of the private sector to adjust. If the policy and adjustment pace are in synch, then the impact on economic growth will be limited. But this is not always the case. We explore therefore the impact that ETS and climate regulation in the housing market can have on economic growth. We then go on to assess the recently published Green Bond Report by the DSTA and the potential for new green bond issuances in the future. Finally, we discuss our outlook for the demand and the price dynamics of critical metals required for the energy transition.

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

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How might climate policy impact economic growth?

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- **We set out a framework of how climate policies can impact economic growth, and give two concrete examples of such transition shocks, focusing on the regulatory side rather than carbon pricing**
- **In broad terms, the economic impact is determined by the balance between the speed and stringency of climate policy and the ability of the private sector to adjust**
- **If the private sector is able to adjust at the same or faster pace than policy, economic effects will be limited or even positive; the negative economic effects come if it is unable to do so**
- **Allowances under the ETS will be reduced at a faster pace in coming years. If the private sector is unable to match this pace of adjustment, output in the sectors will decline to make up the residual**
- **Stricter regulation in the housing market could lead to house price declines for poorer energy labels, and/or a negative impact on household finances, both of which could impact consumption**

The economic effects of climate change are separated into transition shocks (the impact of policies to reduce emissions) and physical shocks (the impact of global warming and acute weather events). When it comes to transition shocks, economists tend to focus on the impact of higher carbon prices, which are designed to increase incentives to reduce emissions and provide revenues that can be recycled into climate objectives, but which can also squeeze household purchasing power and company profits. Though if the revenue is recycled back to households through transfers or tax reductions it can cushion the blow, while it economic growth can be boosted if the revenue is used for government investment spending. However, carbon prices are not the only game in town – and perhaps not even the most important - in terms of climate policy globally. According to the World Bank (see here), only around 23% of emissions are subject to carbon pricing, while the effective price tends to be quite low.

In addition, most carbon price mechanisms work through emission trading schemes (ETS - accounting for 69% of carbon revenues) rather than carbon taxes. An ETS generally works by limiting the supply of emission permits and therefore capping emissions, while the price is formed on the balance of demand and supply. So even here, regulation plays at least as an important role as the price signal. In this note, we set out a framework of how climate policies can impact economic growth, and give two concrete examples of such transition shocks, focusing on the regulatory side rather than the impact of a higher carbon price (which we have covered extensively in the past).

Climate policy and economic growth

In broad terms, the economic impact is determined by the balance between the speed and stringency of climate policy and the ability of the private sector to adjust. That speed will depend on the evolution of technology, the availability and price of capital equipment and the supply of skilled labour. There is also the issue of carbon leakage, where firms find it more profitable to import emission heavy products from economies where regulation is less stringent. If the policy and adjustment pace are in synch, then the impact on economic growth will be limited. Indeed, the impact on economic growth could be positive due to higher investments and innovation, which could spur productivity. However, if the speed and stringency of climate policy exceed the private sector's ability to adjust, there will very likely be a negative impact on economic growth in the economy where the regulation is applied. There are various channels that can negatively impact the economy, depending on the exact regulation and the nature of the sector involved. These include:

a) Where the emissions related to a particular activity cannot be reduced (quickly enough) the emission reduction can only come from ending or reducing the activity

b) The value of certain physical assets may decline if regulation makes them unusable – or at least implies large costs to make them compliant. This can be exacerbated it there are shortages of labour or materials to make necessary adjustments.

c) Costs related to regulation imposed on households can reduce their spending in other areas

d) Large capital spending requirements in order to reduce emissions, can reduce profitability and capital spending in other areas

e) Uncertainty related to (future) policy and the potential for the effects (a – d) could lead to precautionary cuts in companies' capital spending or household expenditure

f) Credit conditions could tighten adding to the drags on demand. Threats to the economy and declining physical asset values would lead to tightening financial and bank lending conditions leading to financial accelerator effects

To make these transmission channels more concrete, it is worth looking at a couple of examples. Below we first look at how emission caps under the ETS may restrain growth if the private sector cannot adjust as policy becomes more stringent. We then go on to look at how regulation could impact the real estate market.

Transition shocks and the ETS

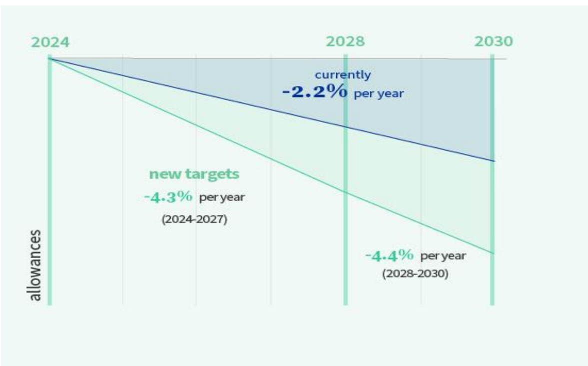
The flagship policy in the EU to reduce emissions is the ETS. Under the system a cap is set on how many emissions allowances are put on the market and the cap has been decreasing each year. Changes are coming, which will increase the policy stringency: (a) the target annual reduction in emissions will be doubled (see chart below on the left), (b) free allowances for certain sectors will be phased out - in parallel with the introduction of the carbon border adjustment mechanism (c) two one-off 'rebasings' of the cap, reducing it by 90 million allowances in 2024 and an additional 27 million in 2026 (d) the scheme will be expanded to include maritime transport from next year (see our note **here**), while a separate ETS will be introduced for buildings, road transport and fuels for additional sectors.

As emission allowances decline at a faster pace, on aggregate the covered companies (currently electricity and heat generation, energy-intensive industry sectors and domestic commercial aviation) will obviously need to reduce their emissions more sharply. This can negatively impact output if the sectors covered on aggregate are unable to reduce the emission intensity of their output at the same pace. In that case, output would be lower than it otherwise would in the covered sectors as a whole as that would be the only remaining way to reduce aggregate emissions. Another channel that could impact future output growth is that high investment needs to achieve the emission reductions required by the ETS could reduce capital spending in other areas.

If the sectors covered by the ETS are able to adjust, the impact on output growth will be limited. Improved efficiency and potential lower energy costs could even be a boost to activity. There is evidence from the recent energy crisis of the industrial sector managing to reduce gas usage sharply, while continuing to expand (at least before cyclical headwinds for the industrial sector took over) – see chart below on the right for the case of the Netherlands. However, some of this adjustment entailed switching to other fossil fuels, and potentially the exhaustion of low hanging fruit.

ETS reform will reduce emissions at a faster pace

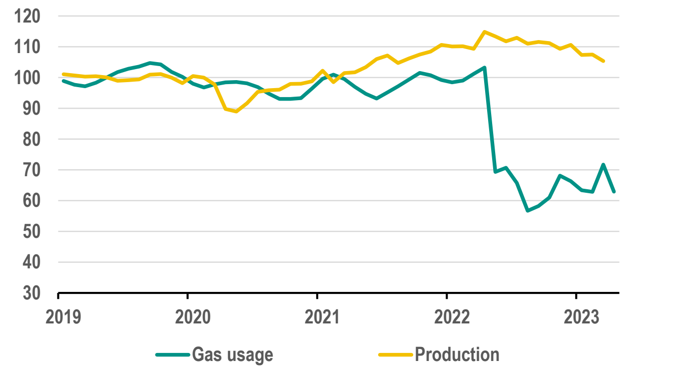
Change in linear reduction factor for allowances



Source: European Commission

Dutch industrial output and gas use

index (2019=100)



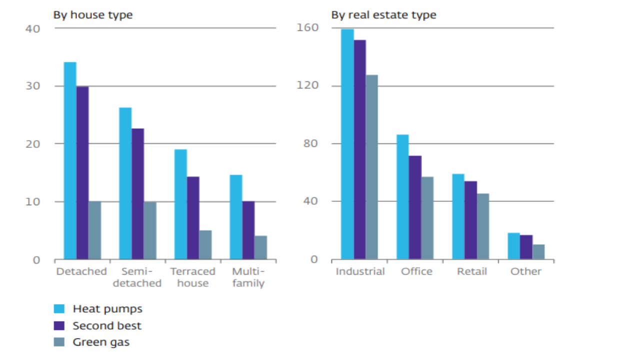
Source: CBS, ABN AMRO Group Economics

Transition shocks and the building sector

The real estate sector's transition to net zero emissions involves costly adjustments to properties to improve energy efficiency and switch to an alternative heating system. A study from the Dutch central bank (see **here**) shows that these costs can be significant (see chart on the left below). The highest costs are estimated in a scenario when all houses need to rely on heat pumps, while the lowest costs are in a scenario where buildings are heated through green gas, which would also require less improvements in energy efficiency. However, green gas is not available at the very large scale needed. The 'second best' involves some mix of the two. If the private sector is easily able to finance these costs and if the labour and materials and installations necessary to make the adjustments are readily available, this will reduce the economic impact. However, if this is not the case, there can be a significant negative effects, especially in a situation of a rapid increase in policy stringency. Examples are minimum energy label standards or a ban in the installation of oil and gas heating systems. Buildings with lower energy labels may then suffer price falls to reflect the cost of adjustment. The inability to easily conduct the adjustment due to shortages or financing restrictions could exacerbate the price decline. According to the DNB study, a large proportion of home owners would not have sufficient own funds to finance the adjustment (see chart below on the right). In addition, it estimates that more than 20% of homeowners would be credit-constrained and may not be able to make the required investment.

Costs of building sector transition

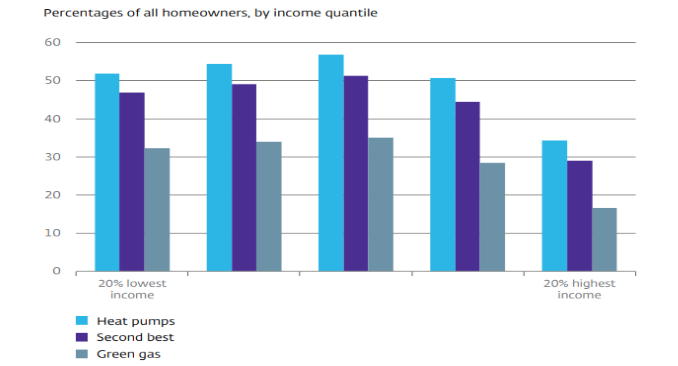
Average investment amount to make a building net zero, EUR 000s



Source: DNB

Many households do not have own funds

Share of homeowners with insufficient own funds



Source: DNB

Real estate price declines can impact consumer spending via negative wealth effects and by depressing confidence. In addition, even where property owner can bear the costs or borrow, it can weaken their financial position and may lead to more saving and less spending. Finally, financial institutions can be impacted if the collateral value and the financial position of the borrower deteriorate, increasing the credit risk of their loans. Finally, these developments can lead to tighter credit conditions.

DSTA published Green Bond Report, new 20-year Green DSL later this year

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- **The expenditures allocated to the DSL green bond are EU Taxonomy aligned**
- **These expenditures are mainly allocated to the railways and Delta Fund**
- **This year the DSTA will issue a new 20-year green bond (EUR 5 bn). Taps of this bond expected in the coming years**

On Thursday 25th of May, the Dutch State Treasury Agency published its Green Bond Report (see **here**), in which the allocation of the proceeds of the bond and its impact is explained. In 2022, the DSTA updated its Green Bond Framework (GBF) in order to align it with the EU Taxonomy and tapped its only green bond, the DSL 2040, according to this new Framework. On 14 June 2022, the DSTA raised almost EUR 5 bn, bringing the outstanding amount of the DSL 2040 to EUR 15.7 bn. Looking forward, the DSTA has announced that it will issue a new 20-year green bond in 2023, but we do not expect that the volume of green issuance will increase significantly next year.

New green bond framework, alignment with EU Taxonomy

The proceeds of the tap of the green bond are used to (re)finance expenditures that are part of the Central General Budget and contribute to the climate change mitigation and climate change adaptation. According to the GBF, up to 50% of the proceeds may be allocated to eligible green expenditures in the financial year preceding the issuance of the green bond and at least 50% will be allocated to expenditures in the year of issuance. As EUR 2.5 bn of eligible expenditures of 2021 remained unallocated, this amount was allocated to the proceeds of the EUR 5bn of the DSL 2040 tap in 2022.

Three categories of eligible green expenditures were used by the DSTA for the proceeds of the tap, renewable energy, clean transportation and climate change adaptation and sustainable water management. All expenditures in the first two categories are fully EU Taxonomy aligned, whereas in the latter category only a fraction is aligned. The expenditures in the renewable energy category, subsidies for offshore and onshore wind energy and solar energy, totalled around EUR 551 mn. In the clean transportation category (in total EUR 2.7 bn) the vast majority of the expenditures was allocated to the railways, while in the climate change adaptation and sustainable water management category, the expenditures were attributed to investments in the Delta Fund, which covers flood risk management, freshwater supply and water quality measures.

Impact of the Dutch State Green Bond itself on avoided CO2 is limited

The current Dutch coalition has an objective to reduce greenhouse gas (GHG) emissions by 55% by 2030 in comparison to 1990. In 2022, due to the energy savings triggered by high gas prices, GHG emissions were 9% lower than in 2021 and 31.7% lower compared to 1990. The production of renewable energy in 2022 amounted to 40% of total electricity consumption in the Netherlands. The production of renewable energy generated by solar panels increased by 54% compared to 2021 as a result of increased installed capacity. Wind energy, still the largest share in the production of total renewable energy, increased by 17% last year while the use of biomass for electricity production dropped by 12% in 2022.

The report also included an overview of the impact of the green bond issued in relation to eligible expenditures in 2021 and 2022. The emphasis is on the projections of avoided carbon emissions for each expenditure category, which always relates to the joint impact of all the expenditures and investments of all actors for the underlying projects. Only for the expenditures related to clean transportation the avoided CO2 is calculated on the part financed by the green bond. In 2021 and 2022 this was 0.2 Mton. Within the clean energy category, more than 19.000 projects received subsidies, which resulted in 4.71 Mton of avoided CO2 emissions. No CO2 emissions were avoided in the climate change adaptation and sustainable water management category, but the impact was measured by using metrics like the mortality risk and percentage of dykes to be improved and the availability of storm surge barriers.

Following the revision of the GBF in 2022, social and adverse indicators have been included in the impact report where possible. Examples of social indicators are the access to rail mobility measured by the proximity of a railway station (71% of the Dutch population lives within a 5 km range of a railway station) and the number of people protected by flood defence works (10.9 mln. inhabitants live are under flood risk, the Delta programme ensures life protection of 1:100.000 years becoming a flooding casualty). Adverse indicators are the use of space by Offshore wind parks (the area covered by offshore wind parks in the North Sea is expected to increase to 1.65% in 2023 and to 4.5% in 2030) and the noise pollution of railways.

New 20-year green bond this year, and taps only next year but probably not in the DSL 2040

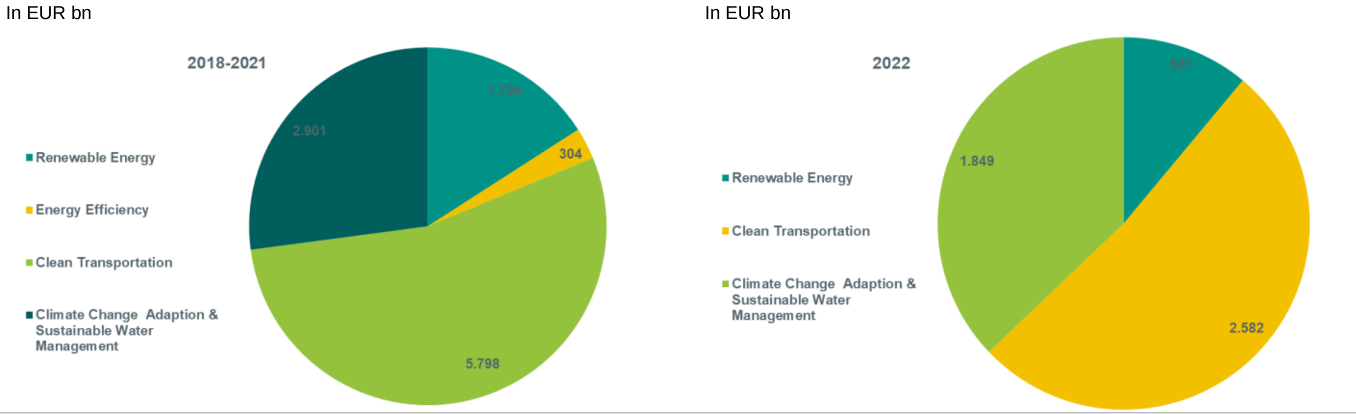
In 2019, the DSTA issued its first and at the moment only green bond, the DSL 0.5% January 2040. At that time, it was the first AAA-rated country to issue a green bond. Since then, the DSTA has tapped this bond four times, the last reopening via a Dutch Direct Auction (DDA) in 2022 and the outstanding amount is EUR 15.7 bn.

In the second half of this year, the DSTA will issue a new green bond with a 20-year maturity with an initial issuance size of EUR 5bn. According to the principles the DSTA applies for its issuance policy to ensure liquidity for its outstanding debt, when the DSTA issues a new bond with a maturity longer than ten years, they will tap this bond to an outstanding amount of around 10 bn in the following years. This means that the DSTA will most probably want to tap the new 20-year green bond in 2024 and 2025.

The total of expenses eligible for green bond allocation in 2021 and 2022 has been stable EUR 3.8 bn in these years. Since the launch of the DSL 2040 green bond, the largest expenditures have been related to railway (management, maintenance and replacement) and the Delta Fund, accounting for more than 75% of the total expenses since 2018. These expenditures require long term planning and are labour-intensive and given the still tight labour market conditions in The Netherlands, the Dutch government might be constrained to increase expenditures in these categories. However, other expenditures that are eligible under the GBF and are EU Taxonomy aligned can be used to increase the government's expenditures given the ambitions of the Dutch government to reduce CO2 emissions to at least 55% compared to 1990.

We believe that in 2024, the new 20-year green DSL will be tapped at least once to increase the outstanding amount to a higher level in order to enhance liquidity. Furthermore, the DSTA might decide to tap the DSL 2040 green bond as it complies with the GBF, but we think the probability of a tap of this bond next year is relatively low. Firstly, we expect that there will be around EUR 4 bn of eligible expenditures available to allocate to the green bonds (based on the expenditures data of 2021 and 2023), which will mainly be allocated to the new green bond. Besides that, the outstanding amount of the DSL 2040 is already at EUR 15.7 bn, which is well above DSTA's target level for longer dated bonds.

Dutch state green bond: Use of proceeds (2021 & 2022)



Source: ABN AMRO Group Economics, DSTA, Green bond report 2022 (**2021: Groene obligatie rapportage | Publicatie | DSTA.nl**)

Metals remain crucial for net zero technologies

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- **The energy transition is metal-intensive and many metals have an important role to play in a sustainable future**
- **Given the high need for these metals in the energy transition, the demand outlook for most of these metals remains favourable…**
- **…but all-in-all, a return to the peak levels of price indices of 2022 – and thus input costs for low-carbon technologies – is not likely in the short term due to the unfavourable macro-outlook**

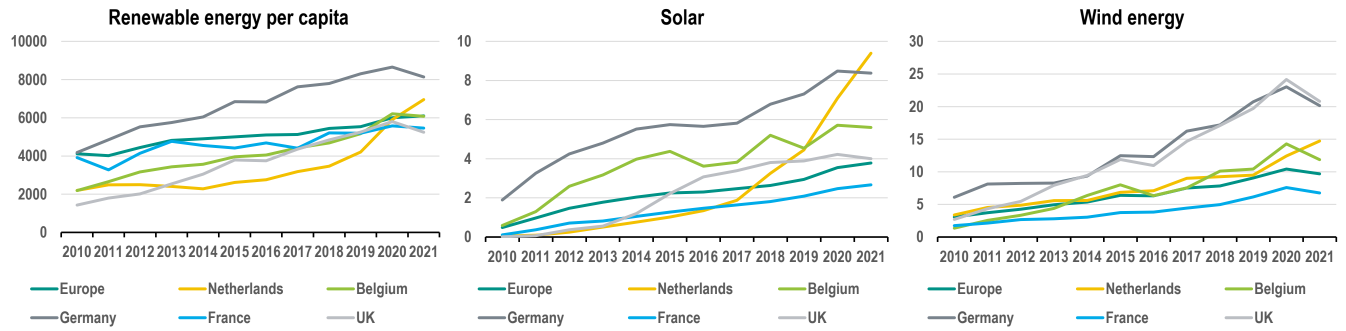
The race is on to decarbonize the world by 2050. There are certain technologies that are crucial to help in this endeavour. However, these technologies depend on a number of raw materials that are experiencing rapid demand growth and a high concentration of supply chains in particular countries. In this report we focus on what materials are used in the decarbonization technologies, how prices have developed and what we expect in the near-term as well as the longer term.

Emergence of low-carbon technologies

Demand for low carbon technologies are rising rapidly. Not only because the EU adopted targets to achieve a 32% share of renewable energy in the energy mix, but also due to the energy crisis and the high levels of gas prices. Renewable energy per capita is high in the Netherlands compared to other countries in Europe. This is mainly due to the stronger growth of renewable energy in the Netherlands since 2019 (+65%). Compared to surrounding countries, renewable energy per capita in 2021 in the Netherlands is below Germany and well above the European average. In Belgium too, renewable energy per capita has risen sharply over the past decade (+129%), more than 75%-points above the European average. But the Belgian rate of growth does not match the Dutch growth in the amount of renewable energy per capita over the past decade (+179%). According to CBS, the share of renewable energy in the Netherlands is around 15% of total energy consumption. This was 13% in 2021. The 2%-point increase is mainly due to strong growth in solar and wind energy consumption.

Strong growth in clean technologies

terawatt hour per capita | % share in electricity generation | % share in electricity generation



Source: Our World in Data, Refinitiv

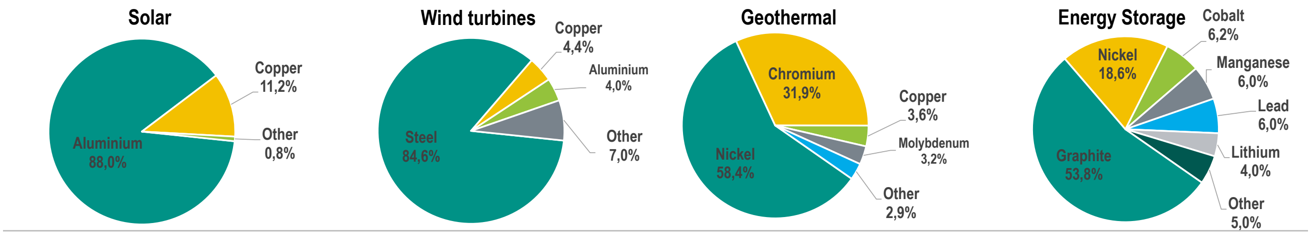
Because many more new solar panels were added in the Netherlands in recent years, the total installed capacity of solar panels has risen sharply. Much more than other countries in Europe. According to CBS, that capacity would have been increased by 28% on an annual basis by 2022. Energy consumption from wind power has also continued to increase. Last year, it increased by 13%. Offshore wind power generation has a share of around 40% and onshore 60%. Dutch consumption from onshore wind power grew 25% year-on-year last year, while offshore wind generation remained stable in 2022. Again, a sharper increase in the share of wind energy generation can clearly be seen since 2019, while others countries lagged behind.

High metal intensity

The energy transition is metal-intensive and many metals have an important role to play in a sustainable future. From the charts below it becomes clear that base metals are widely used and incorporated in various low-carbon technologies, such as solar panels, wind turbines, geothermal and energy storage. In the production of clean technologies, base metals such as aluminium, steel, nickel and copper in particular are processed in large volumes. These materials are used in almost every clean technology. The price trends of these metals therefore largely determine the price trends in those of the clean technologies.

Share of raw materials low-carbon technologies

% share



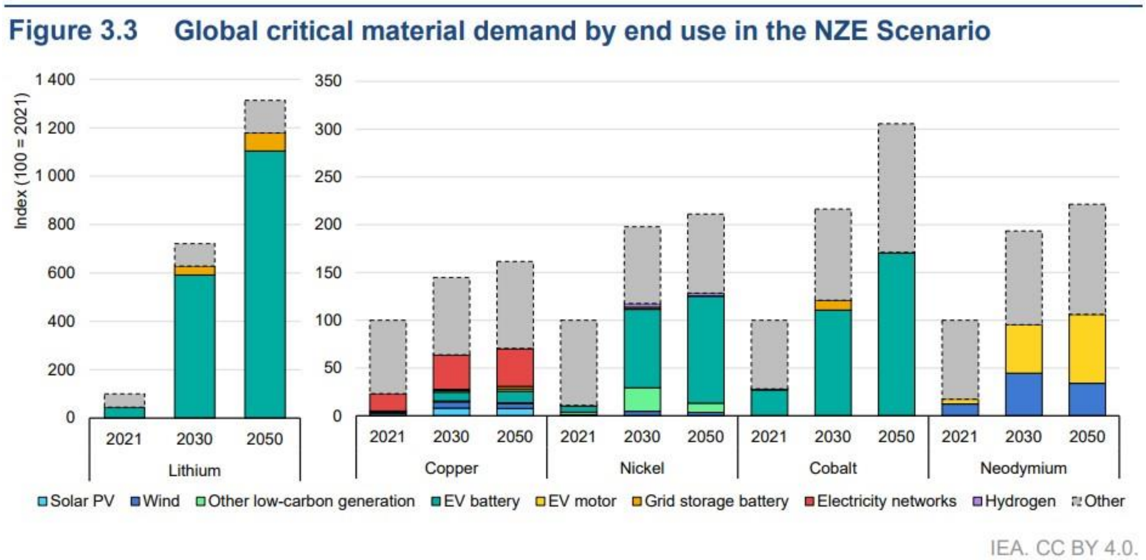
Source: Worldbank, IEA, ABN AMRO Group Economics

Bulk versus critical metals

Moreover, it is important to determine if the material is a bulk or critical. Bulk materials are materials that used in substantial quantities in these technologies such as cement, steel and aluminium. The IEA expects that demand for these materials would not increase significantly in the net zero scenario, partly because of efficiency and the geographic concentration of bulk material is expected to decrease gradually. Next to bulk materials there are also critical materials. Critical materials are important for clean energy technologies and infrastructure and that could lead to supply gaps if sufficient efforts are not taken to scale up supply. The volumes of critical materials tend to be small relative to other materials. Some of them are produced in relatively small volumes, China dominates the extraction, the processing, or both, and there is a large supply and demand gap due to the surge in demand. The graph below shows the critical material demand per technology in net zero scenario.

Critical material demand in decarbonization technologies

Index

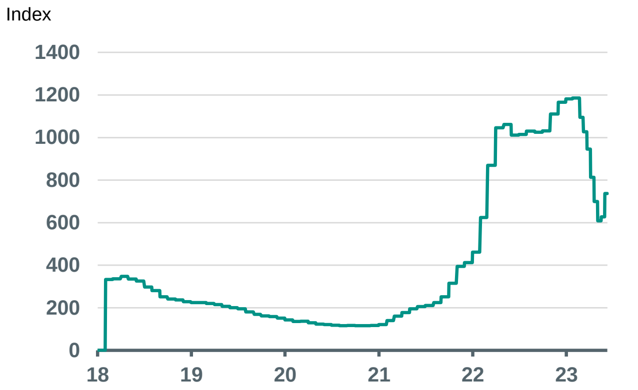


Source: IEA

Prices rose exponentially in 2020-2022

How have prices developed? In this section we focus on the price developments of critical metals mentioned above and then go on to assess trends in overall commodity price index for clean technologies. Given the outlook for current technologies, demand for critical materials such as lithium, copper, nickel, cobalt and neodymium are set to rise enormously because all countries are mainly looking at the same technologies. So the rationale often made is that prices will go sky high. This is what happened between 2020 and the peak in 2022, where prices of lithium, copper, nickel, cobalt and neodymium increased between 110% (copper) and 550% (lithium). The prospect of strong demand from decarbonisation technologies was an important driver for these substantial increase in prices but not the only reason. The exponential price rise in Nickel was also the result of expected lower supply from Russia triggered by the Russia-Ukraine war.

Lithium price index



Source: Bloomberg, Benchmark Minerals

LME 3m rolling Cobalt price

Source: Bloomberg

Substantial price decline after a strong rise

Since prices peaked in 2022, prices of these critical metals have declined substantially and in some cases they are back at the 2020 levels. Has the long term outlook for these metals changed? Generally this is not the case and supply shortages are expected for these metals in the long run. But not only do long-term developments have an effect on the price outlook, shorter term dynamics also play a role. Prices have declined mainly because of the following reasons. First, the growth outlook has deteriorated and fears for recessions in major economies have resulted in weakening of the demand outlook in the near-term. Second, there has been some destocking taking place in some of the materials. Third, there have been announcements of possible new mines outside China and more supply have come available. If the economic outlook is better than expected, and the market has anticipated already the supply that becomes online in the near term, prices will probably recover again. This is because the long-term demand outlook continues to look favourable. Moreover, higher interest rates increase the financing costs for developing a mine. The drive to decarbonize the mining sector generally also has an upward effect on the cost of mining. It is likely that these dynamics will support the prices of these metals. But there is a big IF.

The big IF

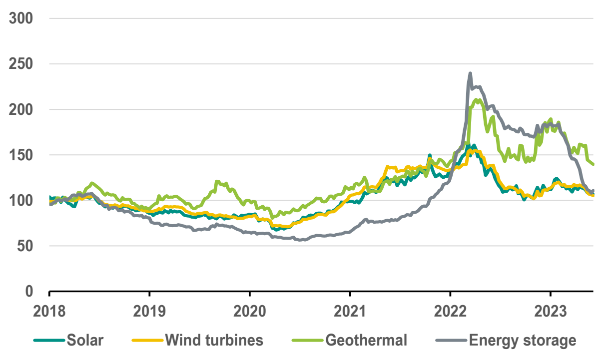
What if technology is changing and one of these materials could become obsolete in the use of any new decarbonisation technologies? This is already to some extent happening to cobalt. There is some desire to diversify away from cobalt in batteries because of concerns about human right issues at the mines in Congo, the main supplier of the metal. One way to do this, is to increase the nickel content in a battery at the expense of cobalt. Another way is to use batteries in EVs and storage that have no cobalt content at all such as Lithium Iron Phosphate (LFP) batteries. LFP batteries are mainly used in storage, but more car manufacturers start using LFP batteries because they are cheaper and don’t contain cobalt en nickel. If this trend, towards more LFP batteries, were to continue, demand for nickel will also fall. These are examples of how a metal that is now deemed critical will be no longer be necessary for a certain decarbonization technology just because of a change/development in technology. Such a development will completely change the long-term demand outlook for this material and the price outlook as well. And this could not only happen to cobalt or nickel but also to other materials.

Outlook for our transition commodity price index

As long as the decarbonisation technologies need certain materials, the price outlook is favourable. When we combine the metals needed per low-carbon technology, weighted in a separate commodity price index per clean technology, we get an indication of the price trend of the input cost of making the technology in question. From the four different price trends, it is noticeable that those of solar panels and wind turbines follow a fairly identical pattern over time. This is because the price trends in steel and aluminium – both with a high share in the raw materials input structure – are broadly parallel to each other. It is also notable that the prices of energy storage and geothermal have increased significantly more sharply than those of solar panels and wind turbines as of February 2022. Energy storage technology involves two perspectives: (1) on the one hand, it relates to battery technology to power electric vehicles, and (2) on the other, it involves storing energy from electricity generation from solar and wind farms, including grids. For energy storage, it is particularly the price of nickel and lithium that are responsible for a sharp rise in the price index. At the same time, these metals are also responsible for the downward correction from May 2022. The input costs for geothermal systems have risen sharply due to much higher titanium and nickel prices, but these prices also decline more sharply from May 2022. Input costs for low-carbon technologies have continued to decline from their historical peaks since early 2023. Meanwhile, input costs for solar panels, wind turbines and energy storage are back on 2018 levels, while input costs for geothermal are still about 40% above them.

Commodity price index by low-carbon technology

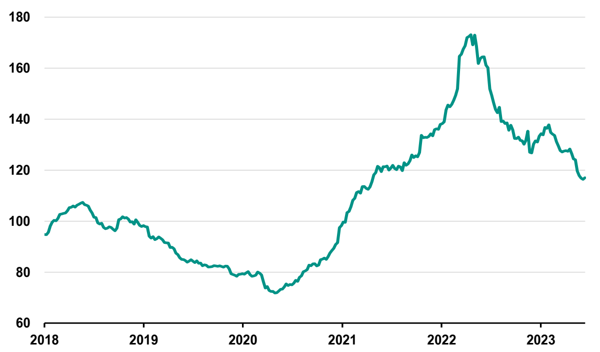
index (Q1 2018=100)



Source: World Bank, IEA, Refinitiv, ABN AMRO Group Economics

ABN AMRO Transition Commodity Price index

index (Q1-2018=100)



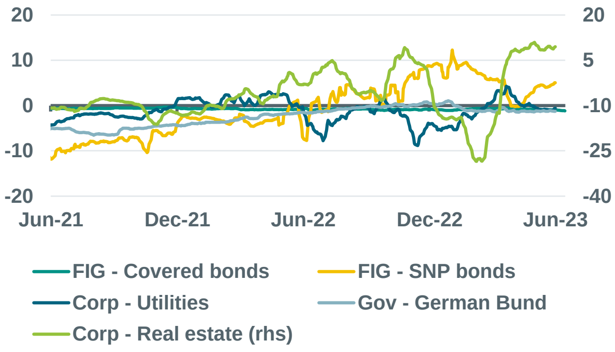
Source: Refinitiv, ABN AMRO Group Economics

In the near term all this means that a return to peak levels of price indices - and thus input costs - for low-carbon technologies is not likely. For the coming months, the trend in the ABN AMRO Transition Commodity Index will remain largely dependent on economic conditions in China and the outlook for the global economy. The Chinese economy currently still shows too much weakness and is still not running at full speed. This is mainly due to headwinds from the property sector and the global growth slowdown and tensions between the US and China. China's manufacturing sector is also in relatively weaker shape and the slowdown in investment will continue for some time to come.

ESG in figures

ABN AMRO Secondary Greenium Indicator

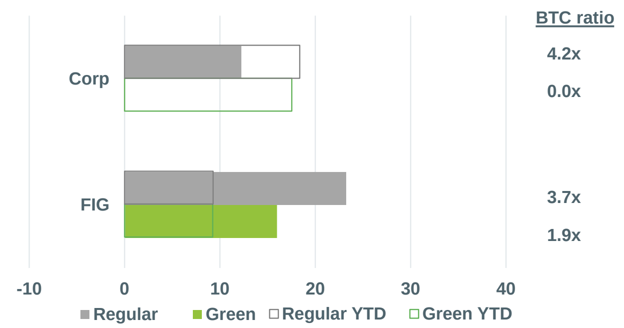
Delta (green I-spread – regular I-spread)



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

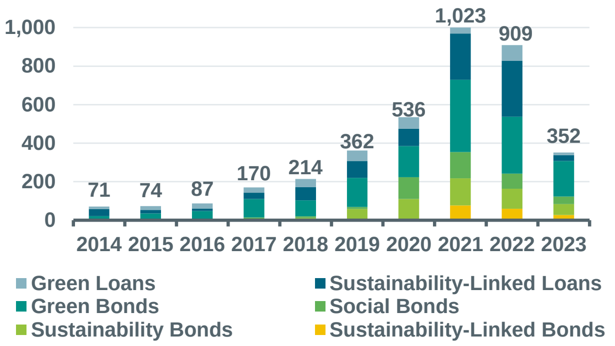
NIP in bps



Note: Data until 15-06-23. BTC = Bid-to-cover orderbook ratio. Source: Bloomberg, ABN AMRO Group Economics

Sustainable debt market overview

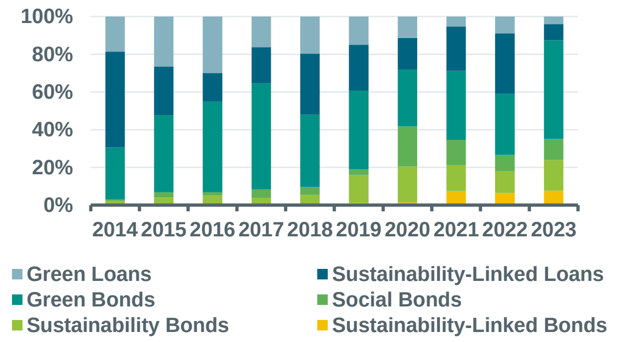
EUR bn



Source: Bloomberg, ABN AMRO Group Economics

Breakdown of sustainable debt by type

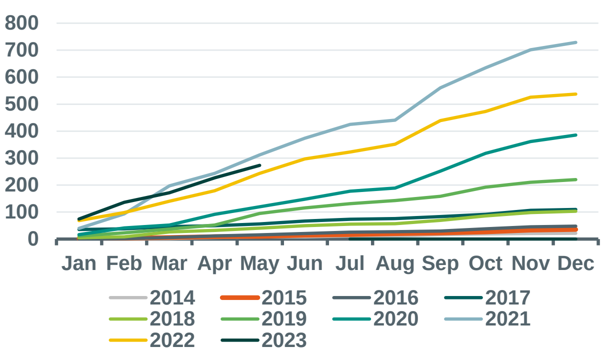
% of total



Source: Bloomberg, ABN AMRO Group Economics

YTD ESG bond issuance

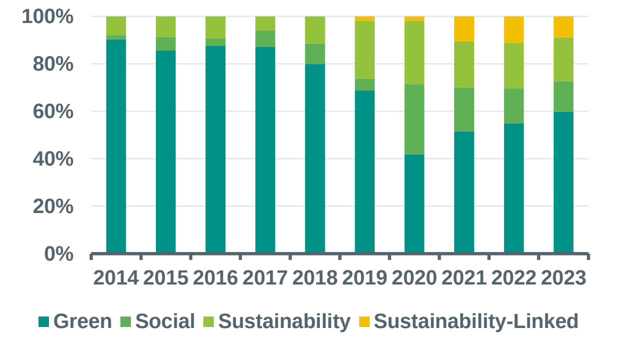
EUR bn (cumulative)



Source: Bloomberg, ABN AMRO Group Economics

Breakdown of ESG bond issuance by type

% of total

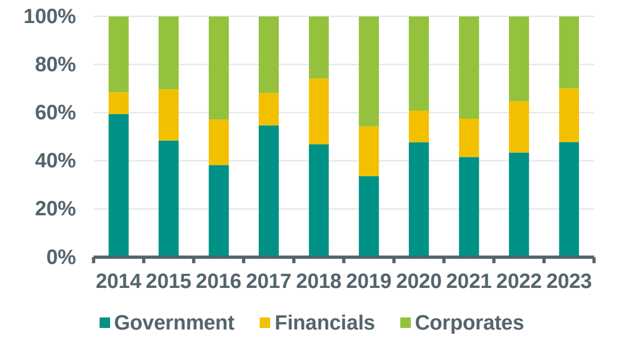


Source: Bloomberg, ABN AMRO Group Economics

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

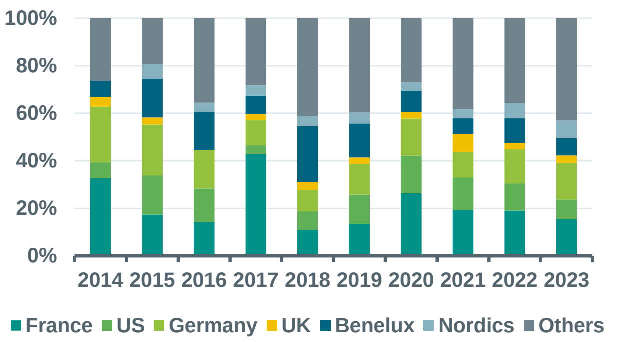
% of total



Source: Bloomberg, ABN AMRO Group Economics

Breakdown of ESG bond issuance by country

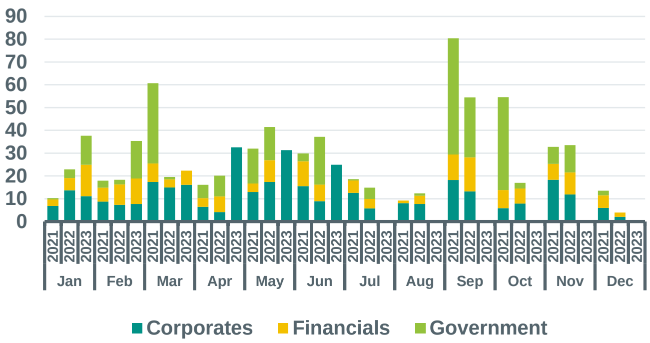
% of total



Source: Bloomberg, ABN AMRO Group Economics

Monthly Green Bonds issuance by sector

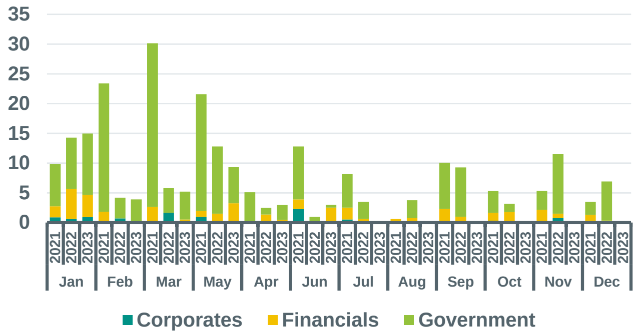
EUR bn



Source: Bloomberg, ABN AMRO Group Economics

Monthly Social Bonds issuance by sector

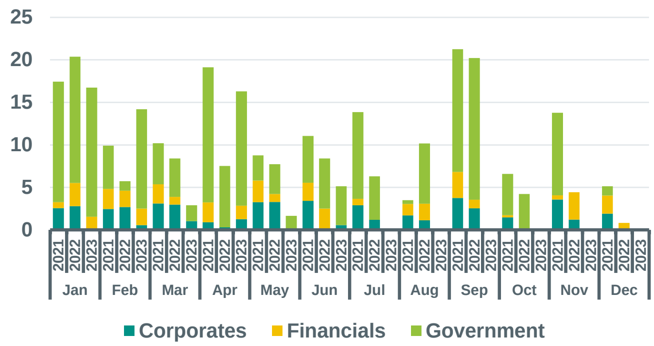
EUR bn



Source: Bloomberg, ABN AMRO Group Economics

Monthly Sustainability Bonds issuance by sector

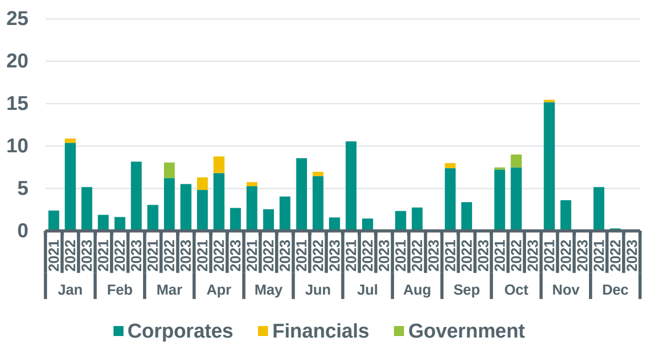
EUR bn



Source: Bloomberg, ABN AMRO Group Economics

Monthly Sust.-Linked Bonds issuance by sector

EUR bn



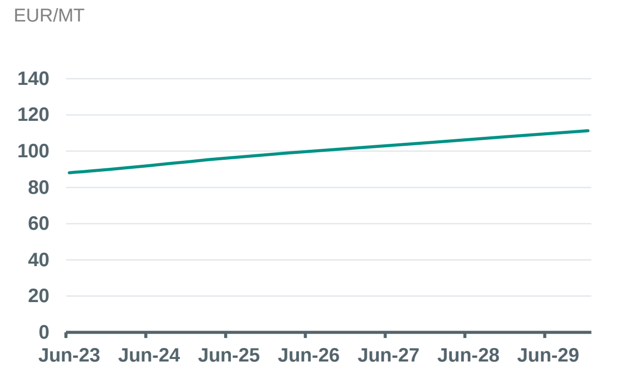
Source: Bloomberg, ABN AMRO Group Economics

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)

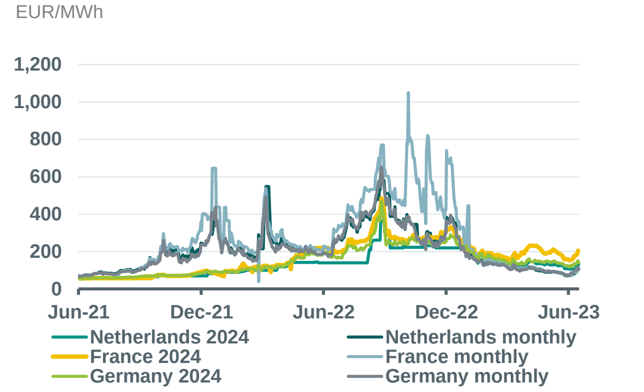
Source: Bloomberg, ABN AMRO Group Economics

Carbon contract futures curve (EU Allowance)



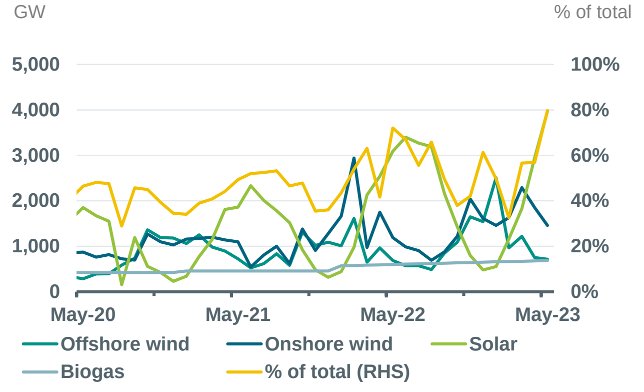
Source: Bloomberg, ABN AMRO Group Economics

Electricity power prices (monthly & cal+1 contracts)



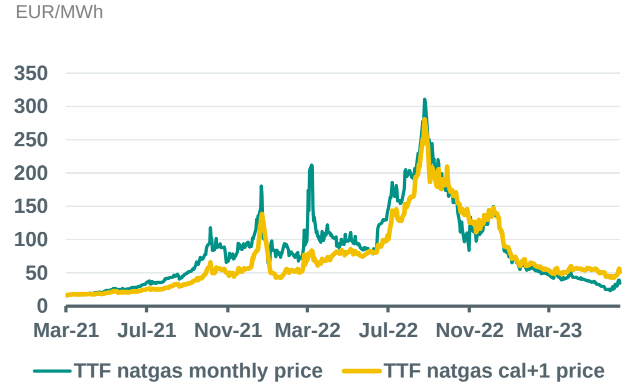
Source: Bloomberg, ABN AMRO Group Economics. Note: 2024 contracts refer to cal+1

Electricity generation from renewable sources (NL)



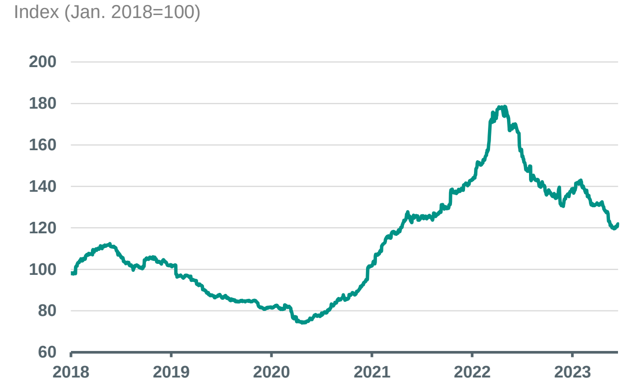
Source: Energieopwek (Klimaat-akkoord), ABN AMRO Group Economics

TTF Natgas prices



Source: Bloomberg, ABN AMRO Group Economics

Transition Commodities Price Index



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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