Bundles | 20 May 2022

So many questions... we've got some answers

Why is our senior sector economist sceptical about Europe's latest moves to tackle the global energy and climate crises? What does America's growing bioenergy market need right now? Why does James Knightley in New York think fears of a US recession are overdone? What's adding flame to the fire in credit markets? So many questions; find some answers here

In this bundle

Energy | Sustainability

A reality check on Europe's latest energy proposals

The European Commission has unveiled more details on its strategy to wean itself off Russian gas. Once again, ambitions are high. But the big question...

By Gerben Hieminga

Energy | Sustainability

America's growing bioenergy market needs clearer monitoring and more innovation

Bioenergy is a crucial pathway to net-zero emissions by 2050. The bioenergy market in the US has been growing and diversifying, with strong growth...

By Coco Zhang

Credit

Credit scenarios: credit cocktail shaking up to be bearish

Numerous risks and negative factors cast a shadow over the European credit market. Inflation still poses the largest risk for credit, but the ending of...

By Timothy Rahill and Jeroen van den Broek

United States | Video

Watch: Why inflation-led recession fears in the States are overdone

Equity investors appear to be spooked by concerns that the US could be facing a recession. Despite rising inflation and Fed rate hikes, ING's Chief...

By James Knightley

ECB minutes show that the hawks are calling the shots

The European Central Bank hawks are calling the shots. The minutes of the ECB's April meeting just confirmed that the hawks increasingly have the...

By Carsten Brzeski

Transport & Logistics

Electric vehicle uptake exceeds expectations

The global share of electric cars in new deliveries surpassed expectations in 2021. Governments and corporates also made regulatory and strategic...

By Rico Luman

Opinion | 18 May 2022

A reality check on Europe's latest energy proposals

The European Commission has unveiled more details on its strategy to wean itself off Russian gas. Once again, ambitions are high. But the big question remains: can organisations and companies deliver amid a myriad of net-zero commitments? Our Senior Sector Economist, Gerben Hieminga, has his doubts

European Commission President, Ursula von der Leyen

A 'double urgency'

The European Commission has responded to the global energy crisis caused by Russia's war on Ukraine. It says there's a 'double urgency' to transform Europe's energy system and its reliance on the bloc's dependence on Russian fossil fuels.

The Commission proposes to enhance long-term energy efficiency measures, including an increase from 9% to 13% of the binding Energy Efficiency Target under the 'Fit for 55' package of European Green Deal legislation.

It aims to diversify supplies further, and it's considering the development of a 'joint purchasing mechanism' which will negotiate and contract gas purchases on behalf of participating Member States.

A massive scaling-up and speeding-up of renewable energy in power generation, industry, buildings and transport will accelerate the European Union's independence, according to the proposals, which will give 'a boost to the green transition' and reduce prices over time.

The Commission proposes to increase the headline 2030 target for renewables from 40% to 45% under the 'Fit for 55' package.

The EC's full announcement is here.

Keeping track of leapfrogging ambitions by the European Commission

If you find it difficult to keep track of the many initiatives by the European Commission (EC) aimed at tackling the climate and energy crises, you're not alone. And I'm sceptical about yet another increase in ambitions and just how companies can live up to the promises. Before we get to that, let's recap where we are right now.

The EC first presented the Green Deal with the ambition for Europe to be the first climate-neutral continent by 2050. It lays out the main building blocks for sectors to transition to a net-zero economy by 2050 and defines an intermediate climate goal of 55% emission reduction by 2030. More details followed in July 2021 with the Fitfor55-strategy.

So far, so good. All these initiatives are focused on making the economy more sustainable. Security of energy supply was not an issue. And energy was affordable too.

But concerns about supply shortages started to drive prices to unprecedented levels. The EC responded in October 2021 with the 'Energy Price Toolbox'.

And then Russia invaded Ukraine in February this year. The affordability of energy bills, and energy security, are now a top concern for politicians, households and board members of energy-intensive companies. The EC responded with the REPoperEU package, which aims to provide companies and households with affordable, secure and clean energy.

Today's announcement builds on those already ambitious targets. And while those ambitions are laudable, it's important we don't lose sight of reality. Let me give you five 'pinch points' which make me sceptical about just how much can be achieved.

1 Relaxing permit procedures helps companies, but don't forget about participation

The EC President, Ursula von der Leyen, made much in today's announcement about speeding up permitting procedures. Projects that support the energy transition often take years to develop due to planning permission and compliance with environmental rules. That stands in sharp contrast with the 'lightning speed' that the EC envisions. Hence, the commission allows member states to designate areas where permits can be granted quickly as these areas serve 'a public goal'. For me, these more or less 'rule-free zones' are the revolutionary aspect of the package.

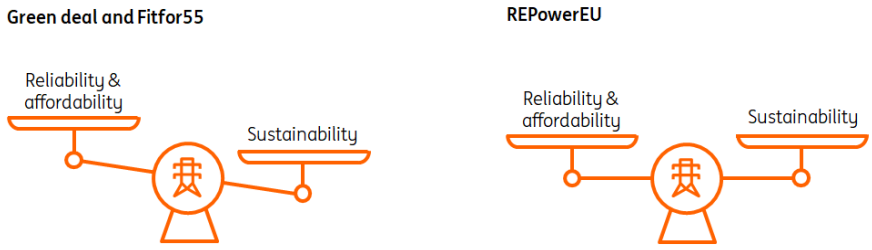
It is likely, though, that environmental agencies and NGOs will protest against this and they might

take it to court. They are likely to argue that solar fields and wind turbines could interfere with bird migration routes, and offshore wind farms could disturb marine life. Nature clearly also serves 'a public goal', and any loss of biodiversity only adds to that. It is far from clear how judges will balance these public goals. And it is likely to take time before the legal system has settled clear and practical guidelines for companies to speed up the transition.

Furthermore, the EC focuses on speeding up legal procedures, but gaining local support is equally important to accelerate the transition. Technologies such as biomass, nuclear power, carbon capture and storage, district heating networks, and onshore wind and solar fields often meet a lot of local opposition, particularly around urban areas. The New European Bauhaus initiative is part of the EU Green Deal and aims for more co-creation between citizens, experts, companies and government institutions. While co-creation might increase local support, it is not a guarantee that processes will speed up. And local opposition could easily increase as the transition accelerates and regional sceneries change faster than people are willing to accept.

REPowerEU has balanced the strong focus on sustainability with reliability and affordability

Balance between sustainability, reliability and affordability in climate and energy policies



Source: ING Research

2 Power grids are likely to remain a persistent barrier

Increasingly, the ambition to scale up renewables does not match the crude physics of power grids. Phasing out fossil fuels increases power demand, and on the supply side, renewables cause peak supplies at times when the sun shines and the wind blows. In many cases, we're reaching capacity limits on transporting power over the grid.

As a result, power grids need to be extended on a large scale, but that takes years. Supply and demand need to be matched in smart ways, but power users are usually slow in changing their habits, for example by not powering their electric vehicles at home at 6 pm when they're also cooking. And governments need to take a more strategic approach to grid connections. Governments are still a long way from designing a clear rulebook to allocate scarce capacity. It remains to be seen if it will come soon, as it requires tough choices between economic activities.

3 Companies struggle with labour and material shortages

And suppose that power grids are no barrier to the energy transition, how do companies find the resources to realise their ambitions?

The energy transition is very labour intensive. Electricians, installers, welders, fitters, plumbers, carpenters and the planners and project leaders in the office - they're very hard to find. And if you

do find them, other more lucrative job offers are often just around the corner.

Second, there are material shortages. Supply chain disruptions, for example, have impacted the availability of solar panels. And chip shortages have a negative impact on the supply of heat pumps. It is not uncommon for clients to have to wait months to have their order to be installed. Prices have gone up too, in some cases to such an extent that it delays the execution of the project.

Note that this is already happening at the current speed of the energy transition. These issues could get far worse if the transition needs to progress at 'lightning speed' and the war in Ukraine continues.

4 This can be a gamechanger for utilities

So far, utilities have weathered the Covid and energy crises well. Only smaller utilities suffer severely from high energy prices as they generally lack power generating assets and have to buy most of their power on the market to meet client obligations. Last year, 29 such utilities declared bankruptcy in the UK. However, most larger utilities could generate strong revenues from their power generating assets and power grid activities. Until now, most utilities have been able to pass on rising energy costs to their clients.

That could change for the worse if REPowerEU results in member states implementing price caps on energy prices for retail clients (households and SMEs). So far, many governments have compensated for higher utility bills through income support measures and by lowering energy taxes; both have no impact on utilities. But capping energy prices eats into the profits of utilities. That needs to be done wisely as utilities can only live up to growing investment ambitions with solid profit margins. Losses or bankruptcies among the larger utilities must be prevented as they are likely to add to market turmoil and backfire on the ambitions of the EC to speed up the transition to a net-zero economy.

5 Solar panels and wind turbines cannot substitute heating demand

My final point boils down to the reality check on the energy transition. Too often, it is framed in terms of solar and wind power as a solution to everything. But power demand only makes up one-fifth of total energy demand. The vast majority of energy demand comes from heating purposes. Solar and wind power cannot make much of a difference here as power electrons are far from a perfect substitute for gas molecules.

Yes, green hydrogen is a good substitute for gas, but that takes years to develop and scale up. Yes, biogas can substitute natural gas, but its potential does not come anywhere near the vast amounts of natural gas use. Yes, heat pumps can be a good way to warm new buildings, but most of the gas use is in old buildings where heat pumps are the second-best option. And yes, district heating networks are a good way to utilise otherwise lost heat, but they too take years to develop.

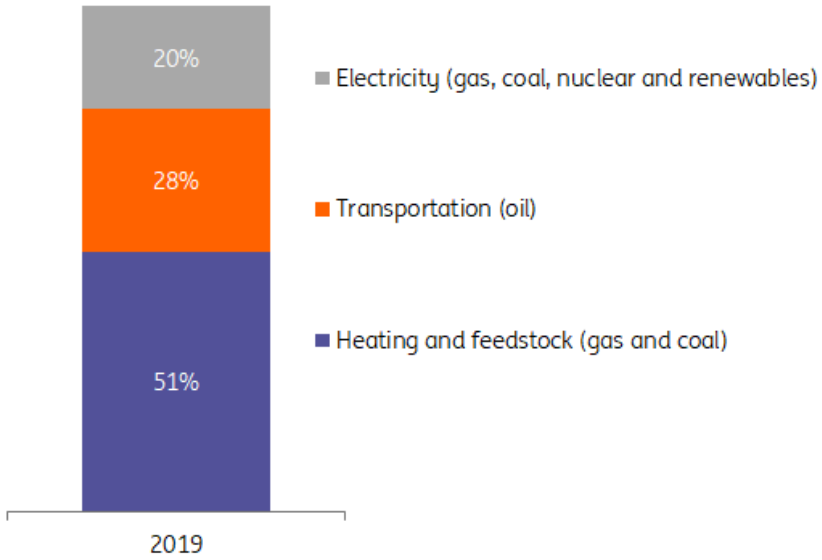
The Netherlands is a case in point. It currently uses 40 billion cubic metres (bcm) of natural gas per annum domestically. The Dutch have very ambitious targets for the energy transition towards 2030. Still, hydrogen and biogas targets can only substitute 2 bcm of natural gas each. Heat pump targets can save 1 bcm, energy savings by energy-intensive companies only 0.6 bcm. And new district heating networks add another 0.5 bcm. That makes a total of 5 bcm by 2030, which is a

meagre 12% of total natural gas use. Remember; by 2030! And only if these ambitious targets are met.

Such examples always make me realise that the real challenge is in transforming heating demand, not power demand. REHeatingEU would have been a better name instead.

Heating is the main purpose of energy use, not power generation

Total energy consumption in Europe per energy use in 2019



Source: ING Research based on International Energy Agency

Europe is again taking another leap in its ambitions to transition to a net-zero economy and wean itself off Russian gas. In itself, that is a good thing, but it remains to be seen whether companies can live up to the challenge. It is relatively easy to put solar panels on the roof of an office or company outbuilding or to install a wind turbine on a production site. Greening the heating demand is where the real challenge lies. Despite good intentions and talk of moving at 'lighting speed', this is still likely to remain a disappointingly slow process.

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Article | 19 May 2022

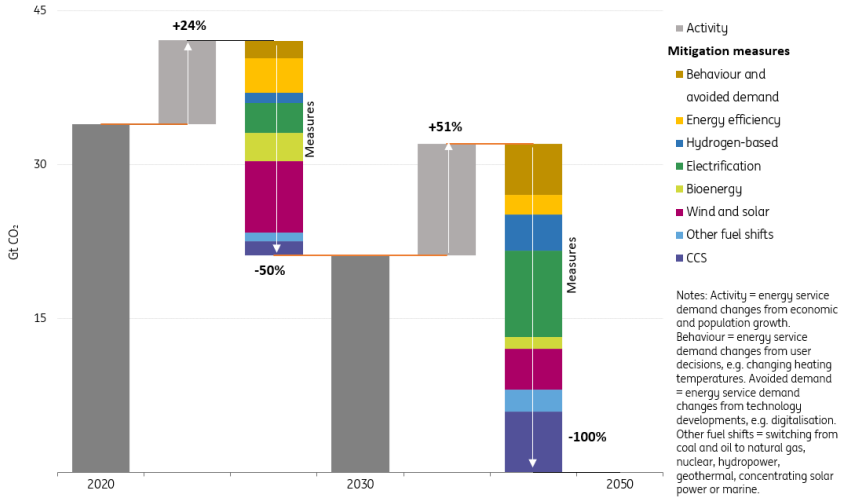
America's growing bioenergy market needs clearer monitoring and more innovation

Bioenergy is a crucial pathway to net-zero emissions by 2050. The bioenergy market in the US has been growing and diversifying, with strong growth potential seen in carbon capture and storage (CCS), renewable diesel, and renewable natural gas. Addressing the environmental impact of bioenergy needs clear monitoring and more innovative solutions

Bioenergy is a form of renewable energy derived from organic material

Bioenergy, a form of renewable energy derived from organic materials (or biomass), will play a pivotal role in helping the world achieve net-zero emissions by 2050. With a wide range of application options in sectors such as transport, heating, and electricity, bioenergy is forecast to account for 19% of total energy supply in 2050 and will contribute to 13% of the emissions reduction between 2020 and 2030 under the International Energy Agency's (IEA) Net-Zero Emissions (NZE) scenario.

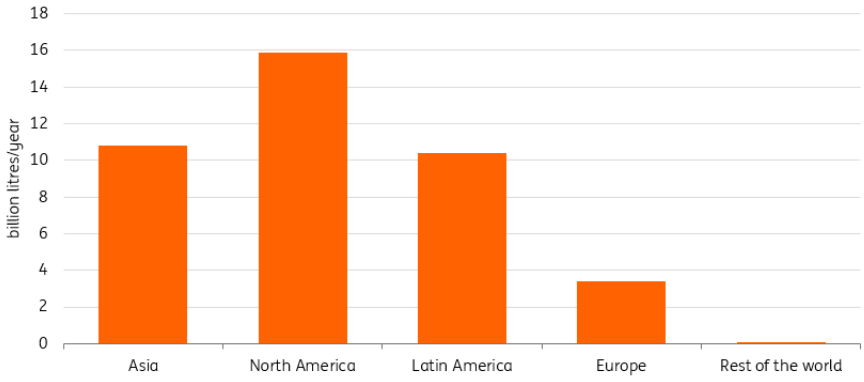
Emissions reductions by mitigation measure in the Net-Zero Emissions scenario, 2020-50



Source: International Energy Agency

In the US, the development of bioenergy has been accelerating and expanding. In the transport sector, the US is home to the world's largest biofuels market, and the demand for biofuels in North America is expected to grow more than any other region through 2026 under the IEA's baseline scenario. Growth will continue to be led by a diversification of biofuels supply beyond conventional ethanol, as advanced biofuels like renewable diesel and renewable natural gas (RNG) keep gaining momentum. Sustainable aviation fuels (SAFs) are another point of growth; these will be covered in a later article.

Biofuel demand growth by region in the baseline scenario, 2021-2026



Source: International Energy Agency

But the deployment of and investment in bioenergy is rising in other sectors as well, led by mounting action from corporates and investors across sectors to decarbonise their businesses and portfolios. So, let's take a look at the growth prospects of various bioenergy applications in the US, as well as the challenges they face.

Examples of bioenergy-related corporate climate strategies:

- Oil and gas: ExxonMobil identifies biofuels as one of its core solutions for its net-zero ambition. The company announced in early 2022 that it would acquire a 49.9% stake in Biojet AS, a Norwegian biofuels company, to receive up to three million barrels of biofuels per year. ExxonMobil is also investing $125m in California-based Global Clean Energy to purchase up to five million barrels per year of renewable diesel.
- Petrochemicals: Dow sees the creation of a circular economy through recycling and using bio-based materials as a focus area to accelerate sustainability. The company is expanding an agreement with Fuenix Ecogy Group to ramp up circular plastics production. It has also signed agreements with Gunvor Petroleum Rotterdam and Texas-based New Hope Energy to purify pyrolysis oil feedstocks derived from plastic waste.
- Power: Southern Company last year took ownership of the Meadow Branch Landfill Methane Recovery Facility, the renewable natural gas facility located in Tennessee, to strengthen its RNG capacity as part of the company's strategy to achieve net-zero emissions by 2050.

Biofuels: Federal policies will have a net positive effect on US production this year

The main federal policy to support the US biofuels market is the renewable fuel standard (RFS), which requires refiners to blend certain volumes of biofuels in gasoline each year. The RFS benefited biofuels production – especially that of fuel ethanol – in the past, although in recent years the RFS has become more susceptible to policy uncertainty.

The Environmental Protection Agency (EPA), which is in charge of setting RFS mandates, last December proposed to retroactively lower biofuel mandates for 2020 and 2021 but set 2022 requirements slightly above pre-pandemic levels. This will put pressure on refiners to blend more biofuel into their gasoline production this year, resulting in a net positive impact on the biofuels industry.

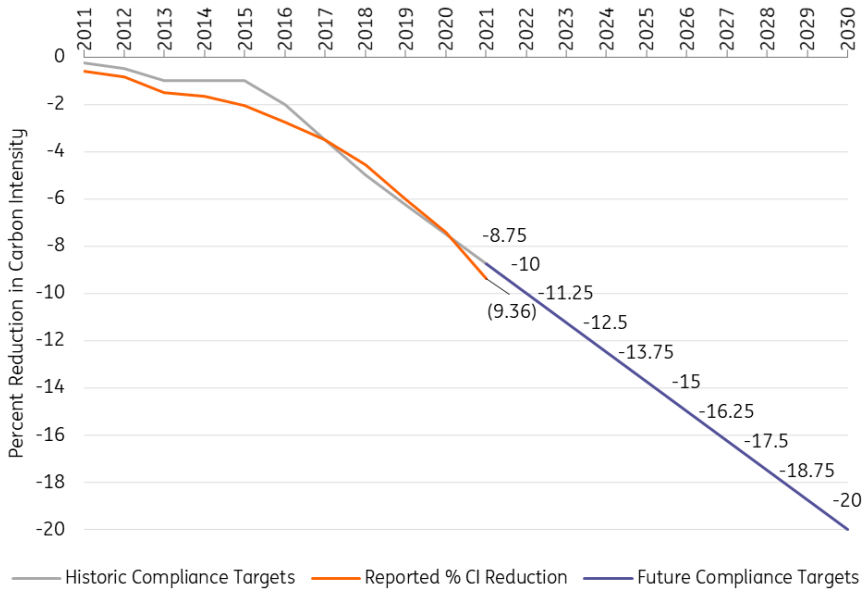
In addition, the EPA has proposed the rejection of all outstanding small refinery exemption (SREs) waivers pending for the 2016-20 compliance years. SREs give small refiners that process less than 75,000 barrels per day (bpd) of oil and can demonstrate economic hardship caused by the RFS an exemption from complying with the rules. If implemented, this decision would substantially raise the demand for biofuel credits.

A federal policy that will specifically boost the production of ethanol is the Biden administration's plan to allow E15 gasoline, a fuel that uses a 15% ethanol blend, to be sold between June and September. E15 gasoline is typically banned in summer due to worries about air pollution. E15 consumption is low also because of retail availability, automobile compatibility, and safety concerns. But heightened oil prices amid the Russia-Ukraine war have made the case for more E15 gasoline sales to ease prices.

State level policies are a powerful addition

At the state level, California's low-carbon fuel standard (LCFS), the backbone of a carbon intensity-based cap-and-trade system, has been playing a substantial role in incentivising biofuels production in and near the state. The LCFS aims to achieve a 20% reduction in the carbon intensity of California's transportation fuel pool by 2030, with compliance standards set for each year.

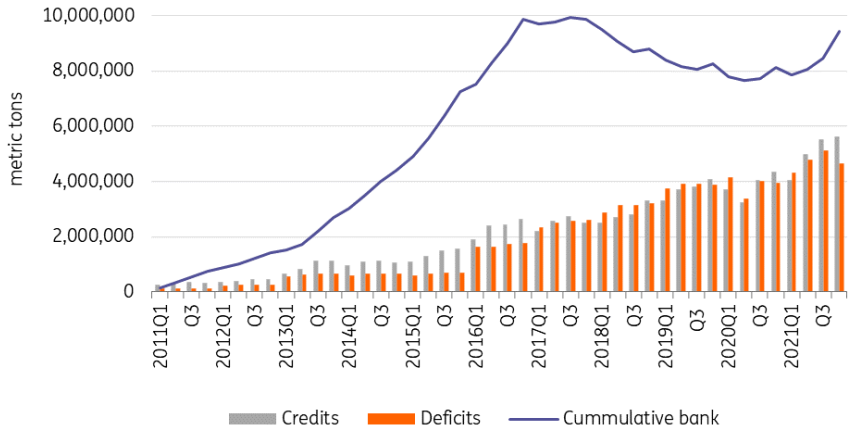
Carbon intensity (CIs) based on composite of gasoline and diesel fuels under the LCFS



Source: California Air Resources Board

Since last year, LCFS credits (supply) generated from low-carbon fuels have increasingly outgrown LCFS deficits (demand), which has led to a 23% fall from the record high LCFS price of $206/metric ton to $158/metric ton in March 2022. This is mainly because the demand for gasoline and LCFS credits has not recovered from the pandemic, whereas the production of low-carbon fuels keeps growing steadily. The biggest driver of recent LCFS credit generation is renewable diesel, followed by electricity, which has been boosted by the continuing adoption of electric vehicles.

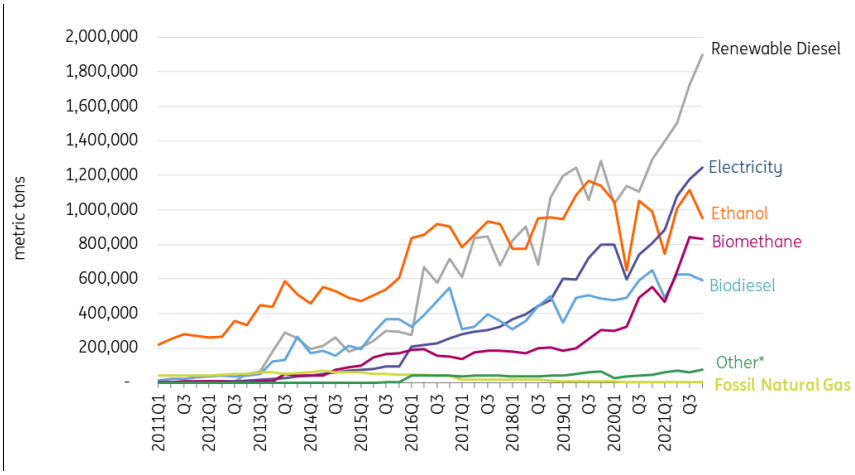
LCFS total credits and deficits for all fuels reported



Source: California Air Resources Board

Note: Cumulative bank refers to total number of banked credits

LCFS credit generation by fuel type



Source: California Air Resources Board

*Hydrogen, Renewable Naphtha, Propane, Innovative Crude & Low Complexity/Low Energy Use Refining, etc.. Note: Project based credits are issued post verification and may not be included.

It remains to be seen whether this deficit trend will be temporary or permanent; we also don't know how the expected implementation of similar programmes in adjacent jurisdictions will alter the LCFS system in California. In addition to the Clean Fuels Program in Oregon which is already in place, Washington State is expecting to implement its Clean Fuel Standard in 2023 and a federal fuel standard is set to come into force in Canada in the same year.

Other US states including New Mexico, Colorado, Minnesota, and states in the Northeast and Midwest are also in various stages of developing LCFS-style systems. These programmes will provide effective additions to the federal RFS programme in driving biofuels demand.

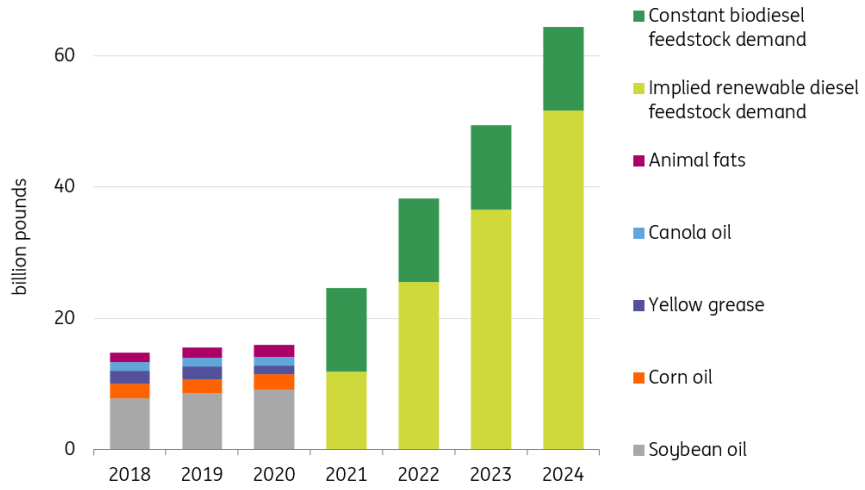
Renewable diesel takes the lead in advanced biofuel deployment

The production of biomass-based diesel – namely biodiesel and renewable diesel – has taken off in the US and is set to increase further. Of the two, biodiesel dominates the bio-based diesel market, but renewable diesel is seeing faster growth. This is partly because renewable diesel is compatible with existing distribution infrastructure and engines. With the same composition as fossil diesel, renewable diesel does not have a blending limit, whereas biodiesel typically accounts for up to 20% of fossil diesel in the US, because of insufficient regulatory incentives despite higher blends being available.

Renewable diesel's ability to lower carbon intensity, particularly in trucking and aviation, has prompted several US refineries to invest in greenfield projects and/or convert traditional plants to process renewable diesel. Refineries set for conversion include Marathon Petroleum's Martinez refinery in California, CVR Energy's Wynnewood refinery in Oklahoma and HollyFrontier's Cheyenne plant in Wyoming. Planned renewable diesel capacity in the US is expected to reach 6bn gallons by 2025, up from less than 2.4bn gallons estimated for 2021.

One major challenge to the growth of both biodiesel and renewable diesel is feedstock availability and costs. It is estimated by Bloomberg New Energy Finance (BNEF) that the demand for bio-based diesel feedstock will more than double from 2020 to 38.3bn pounds (17.4bn kilograms) in 2022, and soar to over 64bn pounds (19bn kilograms) in 2024. Prices for bio-based diesel feedstock have also climbed since 2020, causing some companies to postpone their renewable diesel projects.

US estimated bio-based diesel feedstock use and implied future demand from capacity additions



Source: Bloomberg New Energy Finance

In the long term, despite the growth momentum for bio-based diesel, the Energy Information Administration forecasts that bio-based diesel will remain a small part of the diesel market, accounting for less than 8% of US diesel production in 2050. This is partially due to competition from food consumption and electric vehicles (EVs), which will be discussed in a later section.

Nevertheless, that 8% still translates into roughly 0.23mn bpd of production, a considerable absolute amount.

RNG to see demand build up in the power sector

Another promising advanced biofuel which is set for growth is renewable natural gas (RNG), or biogas that has been upgraded to replace fossil gas. RNG production capacity in the US increased at a compound annual rate of 35% between 2017 and 2021, thanks to $1.7bn of investment from oil and gas companies. Looking forward, RNG demand is projected to jump from 0.2 trillion cubic feet (Tcf) today to between 2.3 and 3.2 Tcf in 2040, according to BNEF. The fuel is forecast to be capable of displacing 6-12% of the US natural gas demand.

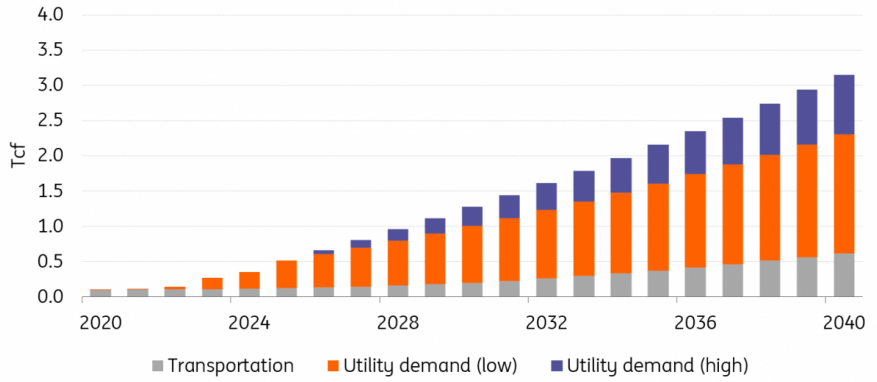
RNG can be produced from various sources. Landfill has the strongest supply and cost advantage – most landfill RNG projects can be economical at $10/MMBtu or lower; landfill accounts for more than 60% of the RNG credits generated under the RFS and more than 90% of the RNG credits under the LCFS. In contrast, RNG produced from manure is more costly – at $30/MMBtu or higher – but remains attractive under the LCFS as it offers one of the lowest carbon intensities of less than -300 gCO2e/MJ.

Importantly, although RNG demand from transportation dominates now, the majority of demand for RNG by 2040 will come from the power sector. In California, where the LCFS is advanced, RNG already contributes to 98% of natural gas used for transportation, mostly in municipal buses and trucking. This can add risks to future project returns if the produced RNG cannot be contracted in time. There is a potential in the long term for more RNG to be used in shipping, though it will encounter competition from other biofuels or synthetic fuels.

RNG producers are starting to pivot their focus away from the transport sector. Archaea Energy is aiming to sell its RNG to natural gas utilities through long-term offtake agreements. The company plans to allocate 65% of its RNG production to non-transport applications.

Admittedly, electricity generation from RNG today is more expensive than from conventional gas and the contribution of RNG to the grid is limited. Yet demand is likely to be sustained in the future, driven by climate commitments from commercial/residential customers and precuring requirements set for utilities. California now mandates utility company SoCalGas to increase RNG's share of gas deliveries from 4% in 2021 to 12.5% by 2030. Oregon passed legislation to allow RNG to account for 30% of a utility's purchases by 2045; the state is also letting utilities recover prudently incurred costs to meet the target. A handful of other states are considering similar policies.

Outlook for US renewable natural gas demand



Source: Bloomberg New Energy Finance

The favourable outlook for RNG/biogas can also augment the production of bio-fertilisers, which can be generated from the waste from biogas production. This will help meet the rising demand for bio-fertilisers in the US, spurred by growing preferences for organic food, as well as concerns over the likely harmful effects of chemical fertilisers on both health and the environment.

US to pioneer in BECCS development

The US is poised to lead the deployment of bioenergy with carbon capture and storage (BECCS) technology, a high-potential application of bioenergy. BECCS involves converting biomass to heat, electricity, or liquid fuels while capturing and storing the CO2 that is emitted during the conversion process. Since the growing of plant biomass absorbs CO2, BECCS can achieve net negative emissions when the emitted CO2 from bioenergy generation is permanently stored. Indeed, the UN's Intergovernmental Panel on Climate Change highlighted in its most recent report the need for carbon removal technologies for the world to reach net-zero emissions.

The US is already a front-runner in CCS – it is home to 36 of the 71 new CCS projects added worldwide during the first nine months of 2021. On top of this, several BECCS networks are emerging in the Midwest thanks to lower costs of bioethanol production. Summit Carbon Solutions, for instance, is progressing with a project to link more than 30 ethanol biorefineries across Iowa, Minnesota, Nebraska, North Dakota, and South Dakota. With a total potential capturing capacity of 8 Mtpa, the network would be the largest of its kind globally. Valero Energy and BlackRock are partnering with Navigator Energy Services to develop an industrial-scale CCS network that would connect biorefineries and other industrial plants across five Midwest states.

The challenges facing bioenergy

The use of bioenergy is not without controversy. The main challenge is the negative impact of bioenergy generation from excessive land use. From an environmental point of view, growing feedstocks such as soybeans and corn can lead to more deforestation, degradation of soil, and harmful changes to ecosystems. From a social point of view, despite yield growth potentials, the more feedstock is used for biofuels, the less there will be for food production. This has been exacerbated by the Russia-Ukraine war, which has disrupted the global food supply chain as both countries are major exporters of several leading crops. Hence, concerns have arisen in the US that the increasing use of crops for biofuels will limit food supply and add pressure to food prices.

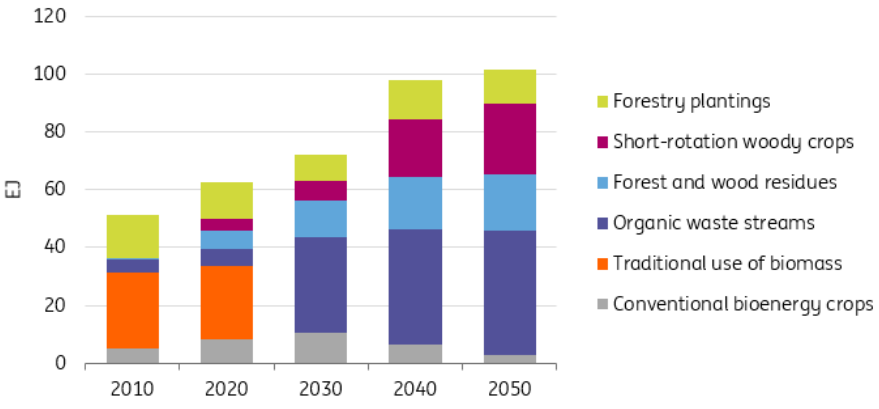
To tackle the problem in the long term, there needs to be a switch away from conventional, food-based biofuel feedstocks to advanced biofuels which use non-food crops, municipal solid waste, and agricultural and forest residues. The IEA forecasts that to achieve net-zero emissions by mid-century, 60% of the global bioenergy supply in 2050 will need to come from sources that do not need dedicated land use. Accelerating advanced biofuel production requires stronger incentives compared to those for conventional biofuels. In the US, the federal Biomass Crop Assistance Program provides financial assistance to producers of advanced biofuel feedstock. The Biden administration has also included in its FY23 budget $245m to accelerate the R&D of next-generation biofuel technologies.

Another challenge is that the traditional use of bioenergy (burning wood or traditional charcoal) remains controversial as it can cause more emissions and deforestation. The EU still categorises bioenergy as green in its Taxonomy, but has strengthened the criteria to exclude certain forms of wooden biomass from qualifying as “renewable”. In the US, the EPA sees bioenergy as a cleaner fuel, while also recognising its negative potential if not managed well.

Moreover, bioenergy-based solutions face scepticism that the supply chain – which involves biomass growing, transportation, storage, and processing – can emit more CO2 and harm the environment. That is why more precise monitoring and reporting of life-cycle emissions along a bioenergy technology’s supply chain needs to be in place.

Finally, competing low-carbon technologies can complicate the growth of bioenergy. In the transport sector, the massive adoption of EVs will be a major threat to the demand for biofuels. As mentioned above, RNG developers are expanding their business footprint to the power sector, though these developers will likely encounter competition from renewable energy. Nonetheless, biofuels are still likely to maintain their niche in transportation, especially in heavy-duty trucks and aeroplanes, as it will be challenging for EVs to provide long-haul services without a step-change in technology.

Global bioenergy supply in the Net-Zero by 2050 Scenario, 2010-50



Source: International Energy Agency

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Credit scenarios: credit cocktail shaking up to be bearish

Numerous risks and negative factors cast a shadow over the European credit market. Inflation still poses the largest risk for credit, but the ending of the corporate sector purchase programme (CSPP) adds flame to the fire. We take a look at the three scenarios for credit for the remainder of this year

2025 will be a year for yield and carry

Goldilocks

The story of goldilocks and the three bears is fitting for the three scenarios we face for credit. The first two scenarios are rather bearish outlooks on the market, while the third is just right for credit. We break down what each means for credit:

- Inflation
- Stagflation
- Everything is just right

Remembering that the third scenario, the one involving Goldilocks and not her bears, is the one that we have basically been exposed to over the last few years and that only a miraculous return to that environment will see spreads start to tighten and funding levels become attractive. But

involving any of Goldilocks' bears would basically create a negative credit picture, in one case for both spreads and credit yields and in the other for just spreads.

1 Inflation (too hot)

As inflation remains high, and central banks continue their tapering and rate hiking, rates will continue to rise.

What does this mean for credit?

- Credit markets will see some additional widening on the back of the continued high inflationary environment.
- As illustrated in the trading range charts below, spreads could break through this current range and reach a high stress point, particularly as the European Central Bank's Corporate Sector Purchase Programme ends.
- Sector positioning depends predominately on the inflationary sensitivity of the sector and the issuers within. How elastic is the demand for products/services and to what degree can the company pass on increasing input costs?
- Curves will remain flat, the underlying yield curve compensates for maturity and the short-end is more sensitive to the hikes the central banks will undertake.
- The primary market will need to continue to offer significant new issue premium (NIP), and we also expect issuance to be possible in selective windows.
- The underlying change in yields is a massive factor for credit. For a few years, we have seen credit yields and subsequent funding at historically low levels. The rates dynamic changes that in a number of ways:
    - The possibility of finding risk-free exposure in other markets means that credit loses some of its attraction.
    - Funding rates go up drastically, particularly for the higher beta investment grade and the high yield issuers. This creates a drag on earnings as historically high debt levels will see significantly higher debt servicing costs.
    - Any issue with a call date (whether subordinated or not) needs to be judged carefully for the possibility of extension risk.
    - Cash prices tumble creating low coupon and high coupon differences (also in asset swap (ASW) considerations).

2 Stagflation (too cold)

Under this scenario we do not just discuss the pure stagflation environment but also anything getting close, basically inflation is reasonably permanent but growth slows. With little to no economic growth, rates will subsequently fall. However, corporates will be under more pressure fundamentally, and as such spreads will widen out.

What does this mean for credit?

- Credit markets will see significant additional widening as company fundamentals suffer to a greater degree than under the inflationary scenario.
- As illustrated in the trading range charts below, spreads will widen significantly towards the high 'stagflation' range, a widening of at least 40bp from here (up to 50bp).
- Default rates will increase as pressures grow for corporates.
- As such, the short-end continues to underperform, pricing in a jump to default, therefore

curves flatten further, and perhaps even invert in places (for instance in BBB rates debt).
- The primary market will need to offer an even more significant NIP, and issuance will only be possible in selective windows. Yields remain high as spreads widen, despite rates falling.
- The pressure for assets under management will actually not be as bad, as credit will have decent attraction at these levels.

3 Soft landing (everything is just right)

This scenario assumes a soft landing for markets, where the central banks' efforts bring inflation back more promptly and orderly than expected, with growth not under too much considerable pressure. Neither inflation nor stagflation remain a medium or long-term risk. Thus there is less rates volatility and spreads will presumably again be driven by the technicals in the market.

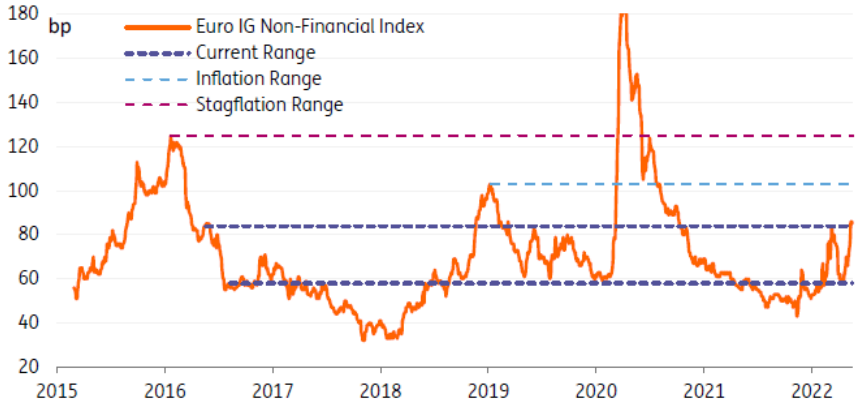
What does this mean for credit?

- A positive outcome for credit, opening up tightening potential for spreads. Significant value is then priced into credit.
- As illustrated in the trading range charts below, we will remain in this current trading range, likely tightening down towards the bottom end of the range.
- Technicals and geopolitical issues will then drive spreads. Technicals are still strong for 2022 with a notable drop in net supply forecast (supply expected at between €250-290bn, while redemptions total €223bn).
- The lack of CSPP leaves markets less supported, particularly in the primary market. But with lower net supply and a pick up in CSPP reinvestments in January 2023, credit has some tightening potential.
- Credit curves will steepen, as the short-end will outperform.
- Primary markets will likely need to still offer a smaller but decent NIP, as the large buyer (ECB) is no longer there.

Spread direction

EUR corporate spreads are once again at the high end of the current trading range. We compute the ranges for the ICE BofA EUR non-financial index (currently at 85bp) to be between 58bp and 84bp, as illustrated below. We determined the high end of the current range based on the wide levels seen in mid-2016 and mid-2019. The lower end of the range is based off the tight levels seen later in 2016 and the tight levels seen in mid-2019 until early 2020. Additionally, we also compute a higher end of the range under a high stress environment from the inflation scenario at 103bp, based off early 2019 levels, and we compute a target for spreads under the stagflation scenario at 125bp, based off the wides seen in early 2016.

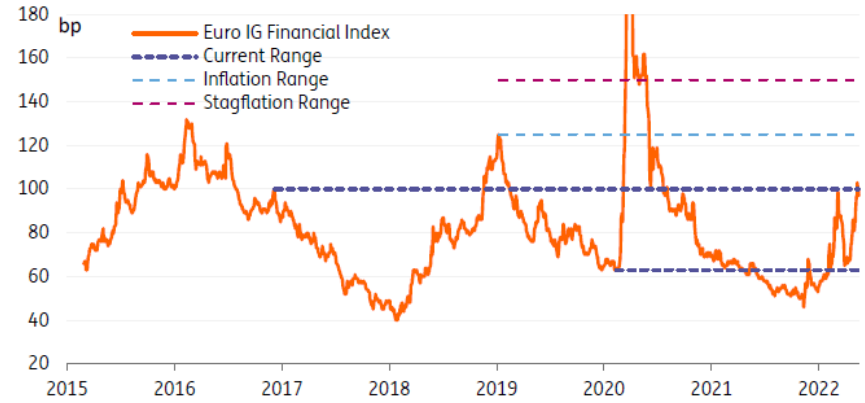
EUR IG Non-financial trading range



Source: ING, ICE

Similarly, EUR financials are also sitting at the high end of the current trading range. For the ICE BofA EUR financial index (currently at 97bp) we compute ranges between 63bp and 100bp, as illustrated in below. We determined the high end of the range from levels seen at the beginning of 2017 while the low end of the range is determined by the tight levels seen in early 2020 just prior to the Covid-19 crisis. The higher end of the range in a high stress environment from the inflation scenario at 125bp is based on the wide levels seen in early 2019. Then the target for spreads under the stagflation scenario is 25bp wider, at 150bp.

EUR IG Financial trading range



Source: ING, ICE

Over the past week, we have been testing the high end of the current trading range. For the coming weeks, we expect spreads to stay around these levels. But in the medium term, it will depend on which of our three scenarios will end up playing out.

As explained above in the three scenarios, we could see spreads widen from here under the inflation scenario, while in the case of stagflation we will see spreads widen significantly towards the highest range shown. Naturally, if we see neither, we will trade within the current range, perhaps tightening down from the high end of the range.

Primary markets

The primary markets will of course be under the most pressure as CSPP ends. Already, issuers bringing a bond to the market need to pay a significant new issue premium. In fact, due to the recent rise in rates and widening of spreads, many issuers were forced to actually pull their deals and not come to the market for the time being as volatility peaked.

Furthermore, new issues have not seen any performance after issuance, and in general, the rule of thumb is that the secondary curve is actually widening out to meet the new issue, as opposed to the new issue tightening down to the secondary curve. This is a clear indication of a bear market.

As a result, we would be cautious towards secondary market exposure to corporates that are potentially bringing new bonds to the market. We do see opportunity in new issues that are offering decent NIP, and in the widened out secondary curve.

Below, we outline a list of corporates that will see bonds maturing in the coming months and have not come to the market with the full redemptions amount, and thus may need to refinance. Given the risks in corporate credit markets and the high new issue premiums and subsequent widening to the primary levels, exposure to issuers with high refinancing needs should be minimised.

Corporates with larger refinancing needs in 2022

European corporates (All Currency)			Foreign Corporate's EUR Debt		
	Redemptions	Net Redemptions		Redemptions	Net Redemptions
Mercedes-Benz Group	14.5	14.5	General Electric Co	2.9	2.9
BMW	11.8	8.0	Petroleos Mexicanos -	2.9	2.9
Porsche Automobil	14.3	7.5	Verizon	2.8	2.8
Anheuser-Busch InBev	7.3	7.3	Honda Motor	2.3	2.3
BP	6.5	4.7	Takeda Pharmaceutical	2.3	2.3
Telefonica	4.5	4.4	Toyota Motor Corp	3.2	2.0
Deutsche Telekom	4.0	4.0	Coca-Cola	1.8	1.8
Shell	3.8	3.8	Booking Holdings	1.8	1.8
Medtronic	3.8	3.8	Telstra Corp	1.8	1.8
ENGIE	3.5	3.5	State Grid Corp of China	1.7	1.7
Renault	4.0	3.2	America Movil	1.5	1.5
Glencore	3.1	3.1	AT&T	1.5	1.5
LVMH	3.0	3.0			
Vodafone Group	3.0	3.0			
Electricite de France-EDF	3.8	3.0			
Reckitt Benckiser Group	2.9	2.9			
Siemens	4.8	2.8			
Philip Morris	2.4	2.4			
Imperial Brands	2.3	2.3			
Orange	2.7	2.2			
Novartis	2.1	2.1			
Danone	1.7	1.7			
VINCI	1.7	1.7			
Veolia	1.7	1.7			
Elo SA	1.5	1.5			
Merck	1.5	1.5			
Vivendi	1.5	1.5			

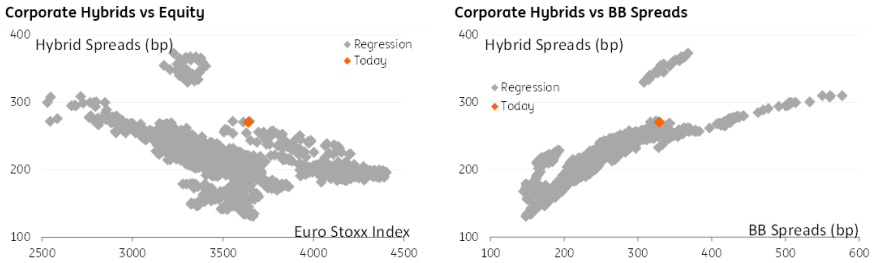
Source: ING, Dealogic

Note: Net Redemptions is the redemptions for the year minus what supply has already come to the market this year

Corporate hybrids

Corporate hybrids have been underperforming over the past months, and are now sitting 86bp wider on a year-to-date basis. We now see value priced into spreads. We see tightening potential in hybrid spreads up against equities and BB spreads. We favour hybrids from sectors such as Telecoms and Utilities.

Hybrids



With rates rising significantly and spreads widening, the all-in cost of debt has increased substantially. Many hybrids were priced at relatively lower costs, and therefore some issuers will be better off extending their hybrid bond, in order to lock in the lower rates.

In particular, under the inflationary or stagflation scenario the likelihood of the call becomes less certain. Typically, calls are structured in such a way that on the call date, the coupon is recalculated to a new 5yr mid-swap level plus the initial credit spread. Over the last couple of years, hybrid issuance has come to the market at very low coupons and this was not just the result of low underlying rates but also low hybrid spreads. Therefore, as we forecast credit spreads to rise under both scenarios it could be that senior spreads will be greater than the initial hybrid spreads paid. Therefore, it is mathematically possible to secure cheaper funding by not calling the hybrid, and the uncertainty to which issuers could contemplate doing so is a negative driver for hybrid spreads.

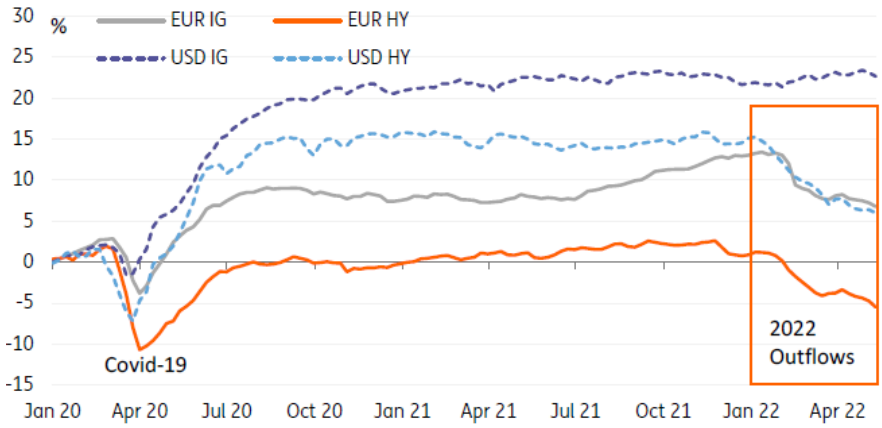
Particularly, the more infrequent hybrid issuers from more higher beta sectors or inflationary sensitive sectors seem to be most prone to this possibility, if and when they do not have significant outstanding curves (reputational risk would be detrimental to future capital funding).

Fund flows

EUR mutual funds have seen some significant outflows thus far this year. Outflows on a year-to-date basis have accumulated to 6.3% of assets under management in investment grade (IG) and 6.4% in high yield (HY). This is of course a negative factor for the technical picture. Much of the accumulated inflows since the Covid crisis have not been wiped out. HY flows have now dipped into negative territory once again in the 2.5yr accumulation. The HY market will be under relatively more pressure in the first two scenarios, particularly the stagflation scenario – in which case we will likely see more outflows from HY funds. The IG space is still positive for now, after substantial inflows over the past two years, especially in the second half of last year. With higher yields and the lack of CSPP making spreads tight, we may see inflows into the EUR IG market, as some investors were pushed into the high yield market in search of yield over the past years.

US IG flows, on the other hand, have not seen the same outflows. As illustrated in the chart below, the USD IG accumulation of flows is sitting at 23%. These fund flows are largely unaffected by the rising rates. Inflation is of course a global threat, but other geopolitical issues such as the war in Ukraine does not affect the USD market as much. USD IG credit could be seen as relatively more sticky, as inflows could remain.

EUR & USD mutual fund flows – outflows seen in 2022



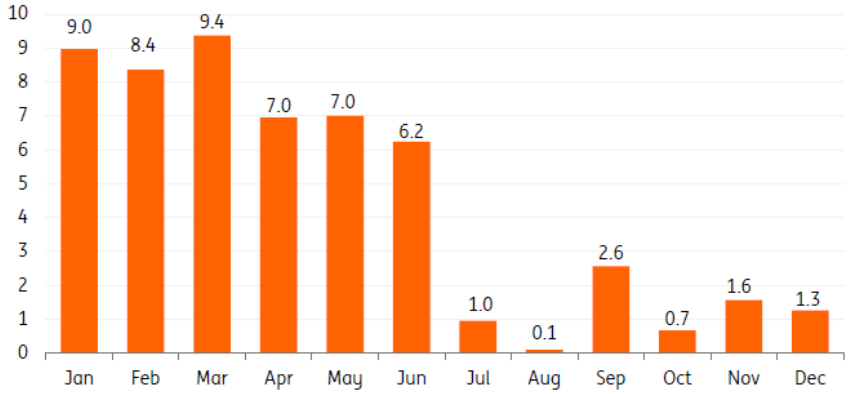
Source: ING, EPFR

CSPP

As active purchasing of corporate bonds under the CSPP will come to an end in 3Q, we take a look at the effects on credit markets. Of course, the ECB will still reinvest matured debt, but this will be particularly low in the second half of this year, therefore, purchases will **fall off a cliff edge**. This leaves the European credit market rather unsupported.

April already saw slightly lower gross purchases under CSPP than initially anticipated, as the majority of the increase into the asset purchase programme (APP) was reserved for the public sector purchase programme (PSPP). With APP/CSPP ending in either June or July, purchases will fall off a cliff as shown below. This will change the technical picture for credit come the second half of the year.

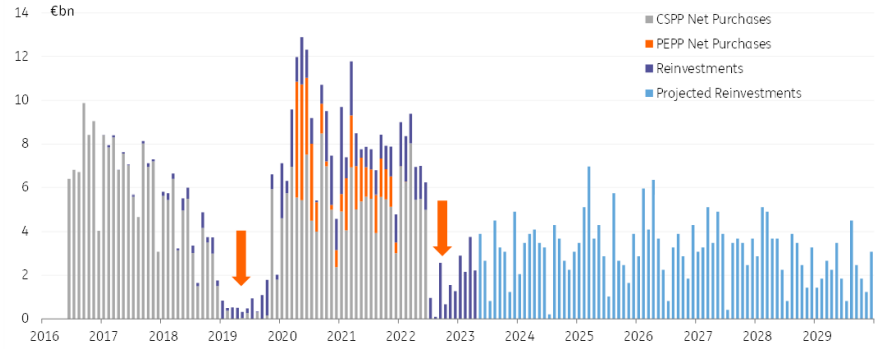
Realised and projected CSPP gross purchases for 2022 (€bn)



Source: ING, ECB

Reinvestments for the second half of this year are rather low, at an average of €1bn per month (apart from the €2.6bn in September), shown above. This leaves corporate credit very exposed in the second half of the year. Reinvestments pick up in January 2023 onwards with an average of €2-3bn per month, illustrated in the realised and projected CSPP (& PEPP) purchases and reinvestments chart below. This of course will give credit an extra bid throughout the year.

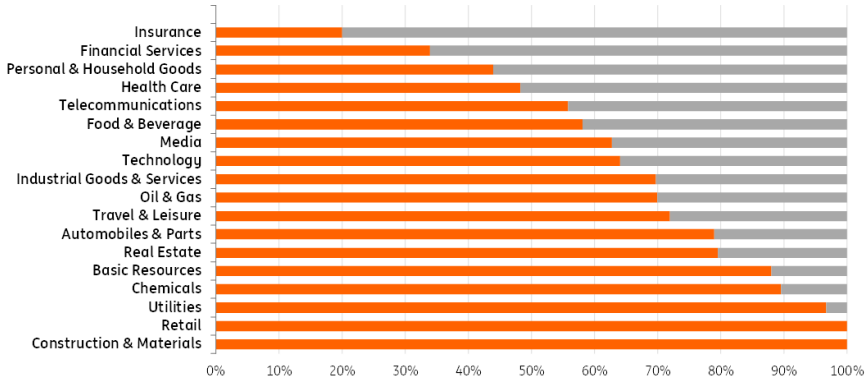
Realised and projected CSPP (& PEPP) purchases and reinvestments



Source: ING, ECB

As reinvestments are low in the second half of this year, monthly purchases will decline sharply, much like they did in 2019, as indicated with arrows in the chart above. At that time, spreads initially ballooned.

Amount of bonds held under CSPP as a percentage of the amount of bonds in iBoxx per sector

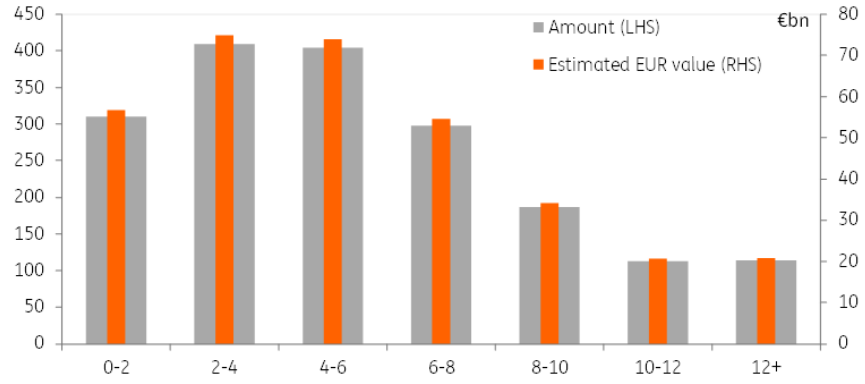


Source: ING, ECB

Higher beta sectors such as construction, retail, real estate, autos, travel, oil & gas and industrials have been favoured by the ECB. The end of CSPP will leave these sectors rather vulnerable. We expect these sectors to underperform.

The ECB is also holding a significant amount of utilities bonds. Normally this sector would be rather defensive and lower beta. However, at the moment the utilities sector has a question mark around it due to increased energy prices.

Years to maturity breakdown



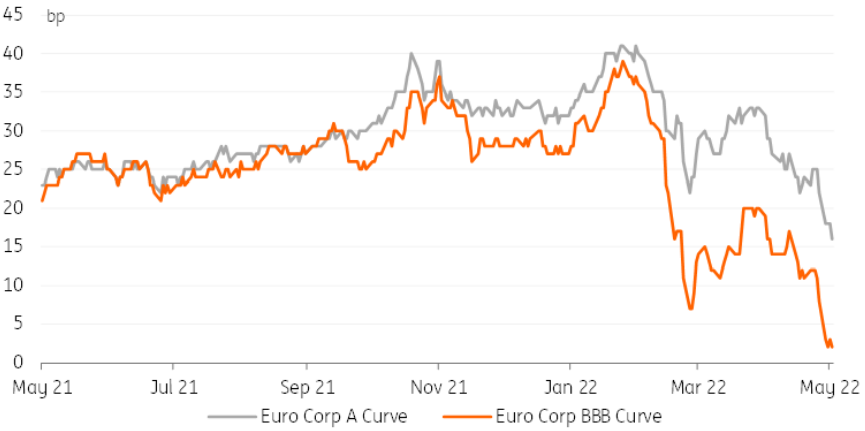
Source: ING, ECB

A significant portion of the ECB's holdings is on the shorter end of the curve. When looking at the year to maturity in the above chart, we see that most of the holdings will mature in the next eight years, with the 2-6yr area of the curve with the most amount of holdings.

Positioning in credit

We prefer the belly of the curve. The short end of the curve continues to underperform and widen more significantly, thus credit curves are flattening. Already the BBB segment's credit curves are looking very flat, as shown in the curves chart below. The long end of the curve remains more volatile and will be more negatively affected by rising rates. Thus we see the belly of the curve staying most firm in any case, and we identify the most value in the 5-7yr area of the curve.

Credit curves now looking very flat



Source: ING, ICE

We are more comfortable with defensive lower beta sectors in these uncertain times. We would be cautious when it comes to sectors that are favoured by the ECB for purchasing, as illustrated in the previous chart titled 'Amount of bonds held under CSPP as a percentage of the amount of bonds in iBoxx per sector' above. These sectors will likely underperform with the lack of a big player in the market.

We see buying opportunities in new issues that are offering a decent NIP and also see value in the widened out secondary curves when a corporate does bring a bond to the market.

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Article | 19 May 2022 United States | Video

Watch: Why inflation-led recession fears in the States are overdone

Equity investors appear to be spooked by concerns that the US could be facing a recession. Despite rising inflation and Fed rate hikes, ING's Chief International Economist, James Knightley, is far more upbeat

Why inflation-led recession worries in the States are overdone

The US Federal Reserve is actively slamming on the breaks as inflation hits 8% and unemployment falls below 4%. Might recession be looming in America? After all, the economy contracted in the first quarter. We don't think so. In fact, data shows that growth is rebounding strongly. ING's James Knightley in New York is looking for an annualised rate of 3%-plus this quarter.

Watch video

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Snap | 19 May 2022

ECB minutes show that the hawks are calling the shots

The European Central Bank hawks are calling the shots. The minutes of the ECB's April meeting just confirmed that the hawks increasingly have the upper hand in discussions. A rate hike in July is no longer uncertain, the only uncertainty is whether it will be 25bp or 50bp

The minutes of the ECB's April meeting provided more evidence that a majority of policymakers at the ECB have become increasingly concerned about the inflation outlook. The most important elements of the minutes are:

- Pipeline inflationary pressure. "The war in Ukraine and the pandemic measures in China suggested that pipeline pressures and bottlenecks were likely to intensify further, affecting consumer prices over a relatively long period of time."
- Fear of stronger wage growth. While the ECB currently only sees moderate wage pressure, "there could be little doubt that workers would eventually ask for compensation for the loss in real income." There was also evidence from different countries pointing to some heterogeneity across the eurozone.
- Greenflation. The accelerated decarbonisation and the attempt to increase Europe's energy independence was another factor structurally pushing up prices. Also, reshoring efforts could reduce the disinflationary impact of globalisation on wages and inflation.

Not whether the ECB will hike in July but by how much

As regards the next policy steps, several members claimed that the accommodative monetary stance "was no longer consistent with the inflation outlook", arguing for a faster normalisation process. Otherwise, inflation expectations could continue to rise further from a level that is already above the Governing Council's target. Acting too late could also lead to second-round effects and "might have high economic, financial stability and credibility costs if the Governing Council were forced to tighten more aggressively at a later stage in order to re-anchor inflation expectations."

All in all, the minutes confirmed the increasingly hawkish tone of many ECB members since the April meeting. There seems to be an eerie feeling that the ECB is acting too late and quickly needs to join the bandwagon of monetary policy normalisation. This means that the question is no longer whether the ECB should hike interest rates in July but by how much. Former ECB President Mario Draghi once said that "when in a dark room you move with tiny steps. You don't run but you do move". It currently looks as if there is a growing majority at the ECB that wants not just to run but to sprint.

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Article | 16 May 2022

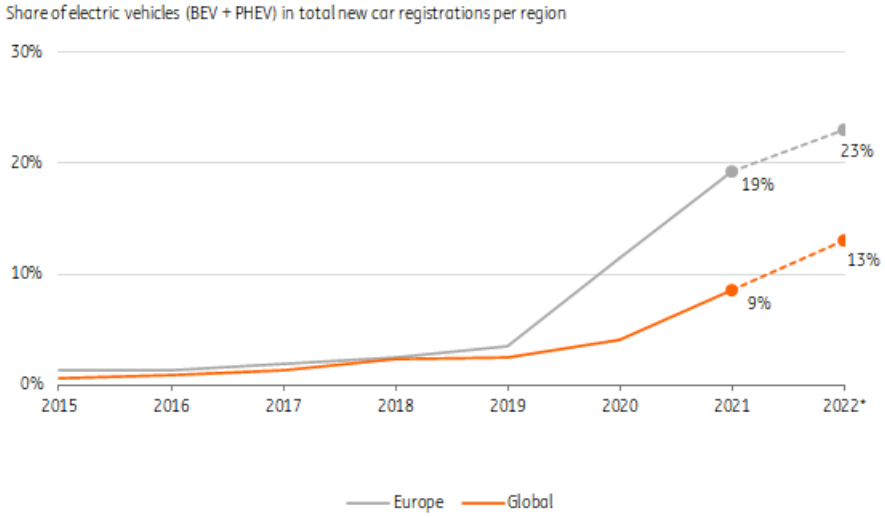
Electric vehicle uptake exceeds expectations

The global share of electric cars in new deliveries surpassed expectations in 2021. Governments and corporates also made regulatory and strategic progress. Keeping up production remains a challenge and high raw material prices cloud the outlook. But the share of electric cars is expected to increase in 2022 and strong orders signal more progress in 2023

Global uptake of EVs beats expectations

The global uptake of electric vehicles (EVs) (battery electric vehicles BEV + plug-in hybrid electric vehicles PHEV) is ahead of earlier expectations. The global share in new registrations hit 9% in 2021 (6.6 million) against earlier expectations of 6% (BNEF). The global figure was supported by an acceleration in Europe (with a 19% share) and China (14% share). The US lags in the electrification of new cars (total EV share was just 4.5% in 2021), but times are changing here. Ford – for instance – received 200,000 reservations for the new all-electric F150 light truck in a few months' time. With production kicking off, this will add to the EV share.

Global EV uptake gained momentum, Europe still in the lead



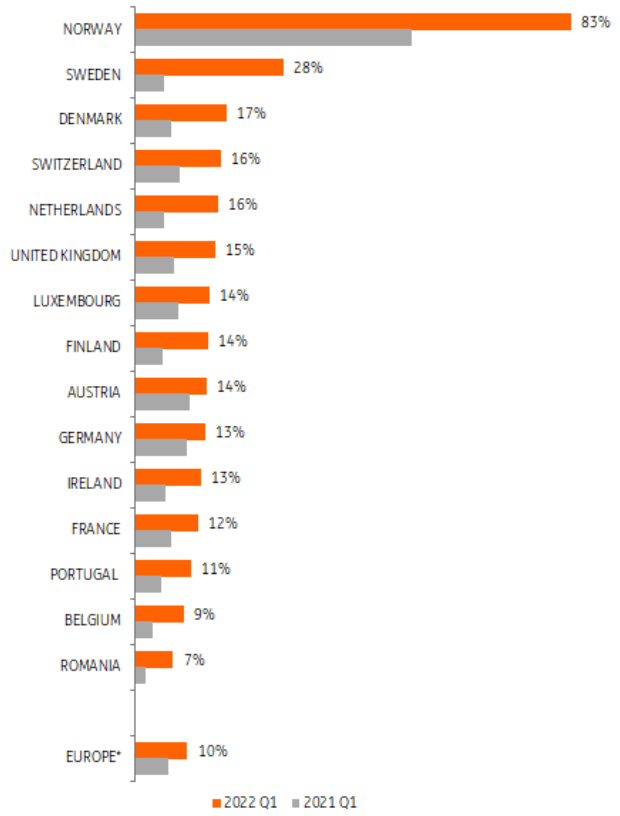
Source: BNEF, IEA, ACEA *ING Research, Europe = EU + UK + EFTA

Largest European car markets gear up, lifting the continent

Looking at the breakdown of the EV share in Europe's new registrations over 2021, both fully electric vehicles (10%) and plug-in hybrids (9%) continued to rise, helped by new models entering the market. Within Europe, the largest car markets of Germany (14%), the UK (12%) and France (10%) have seen double-digit growth in BEV sales. A doubling of the fully electric share in Germany, the largest European car market, has pushed up the European average. A large car market which is still notably behind is Italy, at just 5% in 2021.

Europe's full electric share in new car sales started 2022 at 10%

European top 15 full electric vehicles (BEV) as % of new car registrations



Source: ACEA, ING Research

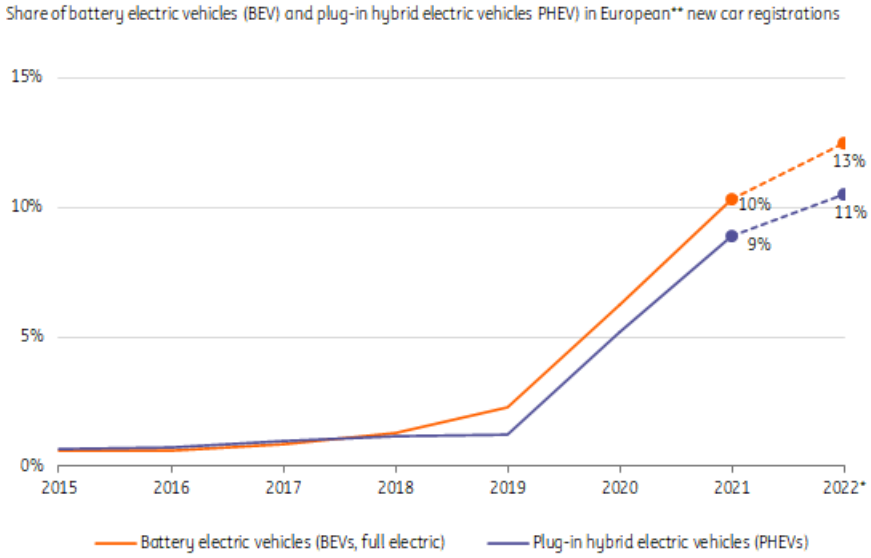
Production constraints limit potential in 2022

The total production of new cars has been significantly hampered by semiconductor shortages over the past year. These shortages are not over yet and several European production sites including those of VW and BMW have faced new hiccups in supply chains due to interruptions at Ukrainian wire harnasses suppliers. Delays from lockdowns in China might trickle down as well later on this year. This means underproduction will remain throughout this year.

EVs require more chips but car makers also prioritise production

Full electric vehicles, which have more complex digital designs, require some 2,000 chips on average, roughly double the amount needed for conventional cars. Mature chips, which are still used in electric cars, have been in short supply as most of the capacity expansion has been focused on high-end chips. These supply issues have led car manufacturers to prioritise the types of cars they produce. But manufacturers are still trying to increase production of chip-consuming EVs (including E-SUVs) in order to keep up with competitors in the green transition and to comply with European CO2-reduction targets in average production.

Share of full electric cars in European new sales on its way to 15%

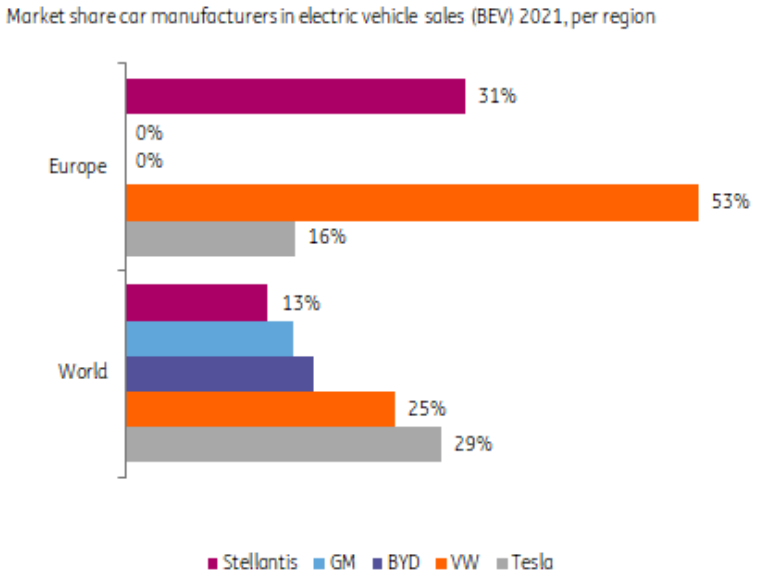


Source: ACEA, *ING Research **EU + UK + EFTA

European BEV-share heading to next milestone of 15%

The share of battery electric vehicles got off to a slow start this year, standing at 10% in the first quarter, though this is still up from 6% in the same quarter a year earlier. The number of cars entering the market this year is fully directed by production capacity. Amid filled order books and ambitious plans, we expect a further step up from 10% this year, although the ability to accelerate is limited. Tesla has started production at its Berlin factory this year, which will gradually lead to more deliveries. Chip supply shows some signs of improvement, which could offer some flexibility and support production figures in the second half of 2022.

Tesla still leads the global EV market, VW dominates in Europe



Source: IEA, ING Research

Orders support short-term uptake – higher fuel prices help

Amid the headwinds on the supply side, the demand side is strong and order books for EVs are well filled, revealing growing consumer interest. Demand is fiscally supported and is clearly there. Europe's market leader in EVs, VW, indicated in April that it had an order book of 300,000 EVs for Western Europe alone (three times its global deliveries in 1Q), although new EV orders will only be delivered in 2023.

Higher fuel prices due to the war in Ukraine may also fuel consumer interest in BEVs. Although electricity prices have also soared, electric engines are more energy-efficient than combustion engines and in combination with cheaper charging options at home or work, this could be beneficial for demand.

Strategic push supports further electrification

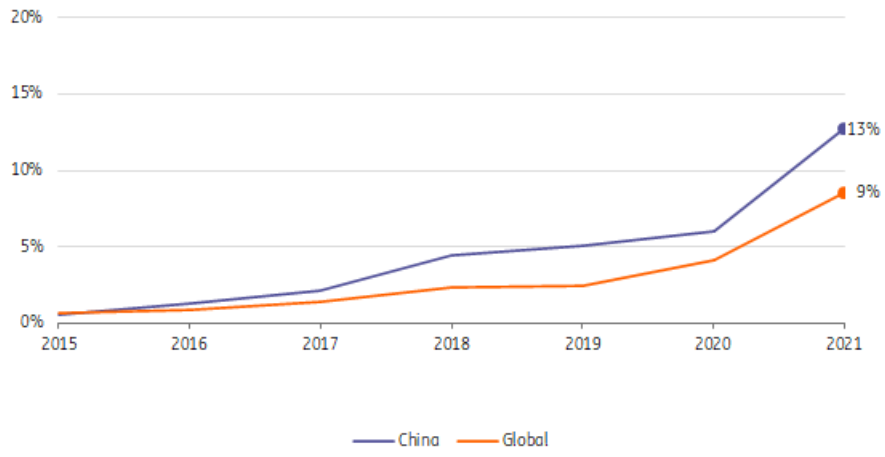
Governments and corporates stepped up plans for electrification during the pandemic. In the run-up to the presentation of the European green deal strategy ('Fit for 55') and country and company pledges for 2040 at COP26, all large manufacturers announced plans to phase out internal combustion engine cars (ICE) in Europe before 2035. Several brands including Volvo aim to make the shift by 2030. These announcements came with large investment programmes and plans to introduce new models. Although an electric future is in little doubt, some manufacturers like Honda and Toyota are leaving multiple options open, pointing to constraints like required charging infrastructure and lagging supply of battery metals.

Large European plug-in hybrid countries start to shift to full electric vehicles

In most European countries, full EVs are already very prevalent. In Nordic countries such as Sweden, Denmark and Finland as well as in Belgium, the plug-in hybrid (PHEV) share was much higher than the European average (13%-26% of new sales). In Sweden and Denmark, in particular, new registrations have started to shift to full electric vehicles, boosting the BEV uptake in these countries. Average European plug-in hybrid sales continue to increase due to the hybridisation of existing models and electrification within the large middle class. Nordic countries have shown that these hybrids can provide an intermediate step to full electrification once the range of models is extended, and buying a fully electric car becomes attractive to a larger group of consumers.

China shifting faster towards EV sales than the global average

Share of electric vehicles (BEV + PHEV) in total new car registrations per region



Source: BNEF, ING Research

China helps the global uptake as largest global EV market

Although China is behind Europe in terms of its EV share, it is already (by far) the largest EV market by unit volume. Total EV registrations tripled to 3.35 million in 2021 (including 1.3 million fully electric cars). VW, as well as Chinese market leader BYD, both reported a surge in total EV demand in China at the start of 2022, which is promising as lockdowns continue to weigh on the car market. The total EV share ended up at 13% in 2021, which also implies the Chinese market is closing in on the European market in terms of the share of sales.

Higher battery metal prices and lagging supply could limit the medium-term pace of electrification

For the medium term, the story may be somewhat different. Soaring prices for battery metals could limit the pace of electrification by the end of the decade. Supply growth of battery metals like lithium lags demand and battery prices won't decline as they have before. This makes electric vehicles more expensive relative to traditional cars and could slow the shift to EVs, although fiscal policy also plays a role.

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