

Euro Watch

Group Economics
Financial Markets Research

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Green bond issuance to explode

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- Europe has set an ambitious agenda for climate and energy policies for the coming decades ...
- ... with the ultimate goal of achieving a climate-neutral Europe with net-zero greenhouse gas emissions by the middle of this century
- The main elements of the policy agenda are related to greenhouse gas emissions, energy from renewables and energy efficiency ...
- ... for which the EU has set binding climate and energy targets for each individual member state
- Support for green political parties is highest in the countries that pollute the most, which should put extra pressure on governments to meet their targets
- We take stock of the policy plans in the six largest eurozone economies and the amount of extra climate and energy related investment needed in the coming years
- Based on the climate and energy plans of the six biggest eurozone countries, we have calculated that investment needs related to these plans would be around EUR 460bn during the period 2020-2023 in the eurozone as a whole ...
- ... with the national plans showing that roughly 25% of the investment will be financed by the public sector and the rest by the private sector
- Financing the climate transition creates ample room for sovereign and corporate green bond issuance
- We expect the green EGB market to triple ...
- ... and the green corporate bond market to double by 2023 ...
- ... with corporate issuance dominated by utilities and companies in the financial sector

Introduction

Following the Paris climate agreement of December 2015, the EU set out an ambitious climate and energy framework, which includes EU-wide targets and policy objectives for the end of 2030. The agenda would frame the EU's contribution to achieving the Paris Agreement temperature objectives. Moreover, the end-goal is to achieve climate neutrality by 2050, implying net-zero greenhouse gas emissions (any remaining emissions in certain sectors need to be compensated for by absorption on other sectors, with a specific role for the land use sector, agriculture and forests).

A key-element of the policy agenda is that binding targets have been set for three variables in all the individual EU member states. These targets are related to 1) greenhouse gas (GHG) emissions, 2) energy from renewables and 3) energy efficiency. In order to reach these targets, all member states have presented a draft National Energy and Climate Plan (NECP) to the European Commission at the end of 2018, after which they have received feedback from the EC. They should present their final NECPs by the end of this year. In this research note, we look at the main targets that have been set in the six largest eurozone countries (Germany, France, Italy, Spain, the Netherlands and Belgium) as well as at the progress that has been made in meeting these targets. Moreover, we estimate the amount of investment that will be needed during the next years and the potential amount of additional green bonds that can be issued.

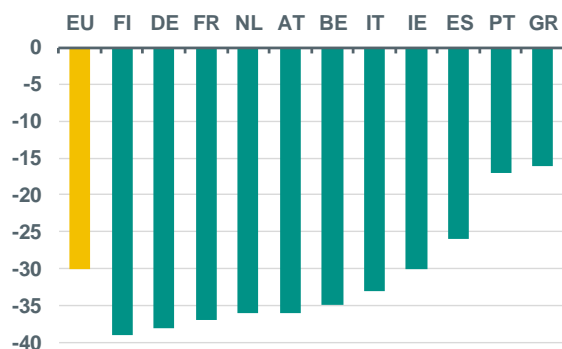
THE EUROPEAN UNION'S CLIMATE AND ENERGY FRAMEWORK

Target I: Greenhouse gas emissions

The EU's goal is to reduce GHG emissions by at least 40% by 2030 compared to 1990. The EU has set two different targets (see the text box below), one for reductions by sectors that are covered by the EU's ETS (Emissions Trading System) and one for reductions by sectors that fall outside the scope of the ETS. If implemented, these targets (which both are for reduction in 2030 compared to the 2005 levels) would result in total emission reductions of around 45% by 2030 compared to 1990 levels, and of at least 40% compared to 2005 levels.

Targets for Greenhouse gas emission 2030 – non-ETS

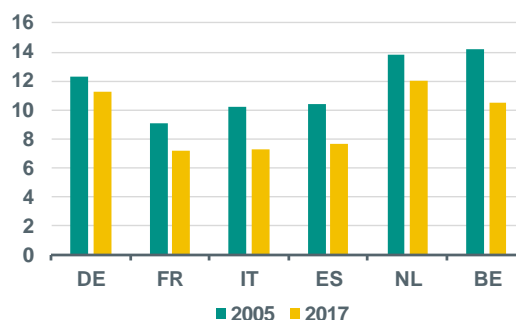
Required % reduction 2030 compared to 2005 – non-ETS only



Source: European Commission

Greenhouse gas emission per capita, Big-6

Tonnes of CO2 equivalent per capita



Source: European Commission

Text Box: Targets for the reduction of GHG emissions:

A. Reduction under the ETS system: GHG emission by sectors that are covered by the EU's Emission Trading System (ETS) (i.e. heavy energy-using installations, such as power stations, industrial plants and airlines – in total covering around 45% of the EU's emission) will decline during the coming decades as the system is based on the principle of 'cap and trade'. This implies that a cap is set on the total amount of emissions, that this cap is reduced over time, and that companies receive or buy emission allowances, which they can trade with one another as needed. A single EU-wide cap on emissions applies. According to the EU's ETS rules GHG emissions will have to be cut by 43% in 2030 compared to 2005. During phase 4 of the trading system (2021-2030) the cap on emissions will be subject to an annual linear reduction factor of 2.2% (up from 1.75% during the period 2013-2020).

B. Reduction by sectors not covered by ETS: The sectors of the economy that are not covered by the EU's ETS must have reduced GHG emissions by 30% in 2030, compared to 2005. With regard to the non-ETS sectors (mainly transport, buildings, agriculture and waste), the EU has agreed to a system of Effort Sharing (adopted in May 2018). The Effort Sharing Regulation (ESR) translates the EU commitment into binding annual emission targets for each individual member state for the period 2021–2030, based on the principles of fairness, cost-effectiveness and environmental integrity. It recognises the different capacities of member states to take action by differentiating targets according to GDP per capita. Higher income countries take on more ambitious targets than lower income countries. However, the targets are adjusted to reflect cost-effectiveness for those member states with an above-average GDP per capita. The resulting national 2030 targets range from 0% to 40% compared to 2005 levels (see left-hand graph above). The system has set a linear reduction trajectory per country, but some flexibility is allowed, for instance eligible member states will be allowed to achieve their national targets by covering some emissions with EU ETS allowances (see [here](#)).

An important feature of the ESR is the possibility of '*banking, borrowing, buying and selling*'. This allows countries to bank surpluses in years where emissions are lower than their annual emission allocations, to borrow a limited amount of allocations from the following year in years when emissions are higher than the limit, and to buy and sell allocations from and to other member states. In case a member state still does not meet its annual obligation in any year, the shortfall is multiplied by a factor of 1.08 and this penalty is added to the following year's obligation.

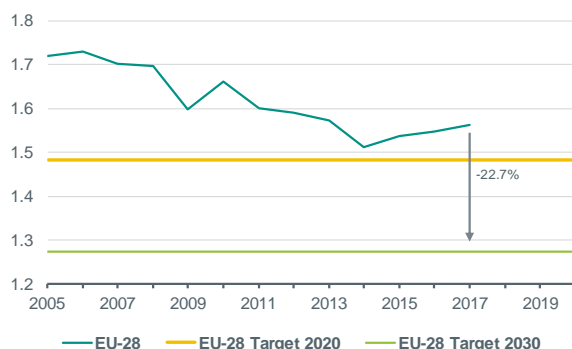
Target II: Energy efficiency

EU countries are required to use energy more efficiently at all stages of the energy chain, including energy generation, transmission, distribution and end-use consumption. The EU has set energy efficiency targets for 2020 and 2030. The criteria for establishing these targets are primary energy consumption (PEC) and final energy consumption (FEC). PEC means Gross Inland Consumption used for energy consumption and therefore excludes energy in production of chemicals, for

example. FEC is all energy supplied to industry, transport, households, services and agriculture. However, it excludes the energy transformation sector and the energy industries themselves. The EU has set energy efficiency targets at 20% and at least 32.5% for 2020 and 2030 respectively (Energy Efficiency Directive 2012/27/EU).

Energy consumption to fall by almost 25%

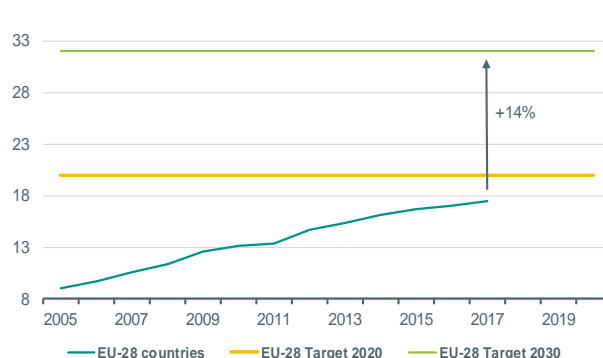
Primary energy consumption (Mtoe in thousands)



Source: European Commission, ABN AMRO Group Economics

Renewable energy to almost double by 2030

In % of total energy consumption



Source: European Commission

Target III: Renewable energy

Renewable energy is energy from a source that is not depleted when used, for instance wind, solar, hydro, tidal, geothermal and biomass. The EU has set a binding target of 20% and 32% of final energy consumption from renewable sources by 2020 and 2030, respectively (Renewables energy directive 2009/28/EC and 2018/2001). The target for 2030 may be revised upwards by 2023. Compared to the 2017 level of final energy consumption, renewable energy must increase by 14 percentage points to reach the target in 2030 (see graph above).

EC's assessment of draft National Energy and Climate Plans 2021-2030

	Greenhouse gas emission <i>non-ETS</i> (% reduction target)	Energy efficiency (more efficiency)	Renewable energy (change in share)
	Gap between projections based on existing policy measures and EU-obligations (pps)	qualitative assessment of national plans in draft NECP	Gap between projections based on plans in draft NECP and EU-obligations (pps)
Germany	15	plan lacks clarity, no conclusion possible	plan lacks clarity
France	11	of sufficient ambition	-1 (clear, detailed plan)
Italy	7	of sufficient ambition	details in the plan not sufficient
Spain	10	of sufficient ambition	3 (more details needed)
Netherlands	4	rather modest, more details needed	1 to 9 (further elaboration needed)
Belgium	22	low level of ambition	-7 (significantly below target)

Source: European Commission

TARGETS AND PROGRESS IN THE SIX LARGEST EUROZONE ECONOMIES

Germany ... final plans already announced

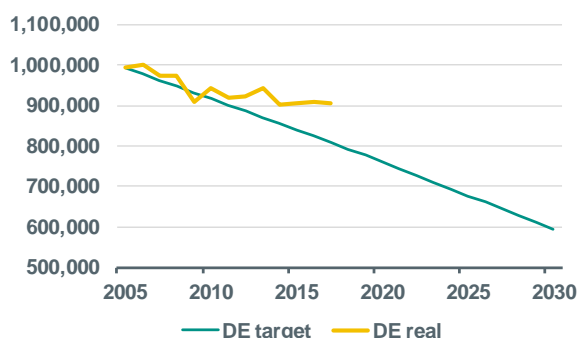
Germany's government presented its final climate plans on 20 September 2019. According to the EU-rules, the country must have reduced its (non-ETS) GHG emissions by 38% by 2030 versus the 2005-level. The EC's June 2019

assessment of Germany's draft NECP stated that the country was running behind schedule, missing the target by 15 percentage points (see table above). Moreover, as the graph below shows, Germany's total GHG emissions (ETS and non-ETS) currently are higher than the target path towards 2030. In its final plans, the government has set a target for the reduction of GHG emissions of -55% versus 1990. This means that Germany would also comply to the EU-target related to the 2005-level. An important element of Germany's climate plans is that it wants to have shut down all of its coal-based energy plants by 2038 at the latest.

According to the government, total climate related spending of EUR 150bn will be needed until 2030, this would be around EUR 13.5bn per year, which is equal to around 0.4% of GDP per year. The main measures included in Germany's plans is that a national emissions trading system (nEHS) will be introduced, similar to the European ETS. Under the new German system (which covers the non-ETS sectors Traffic and Heating) companies that produce and sell petrol, coal, heating oil and similar fuels are obliged to buy certificates to offset the GHG emissions from their product. The starting price is EUR 10 per tonne in 2021, which will gradually rise to EUR 35 by 2025. From 2026 onward, a maximum amount of emissions will be fixed, which will be reduced annually in subsequent years. Also starting in 2026, the emission price will have to move within a range of EUR 35-60 per tonne. The government will use the income of the certificates to compensate households. Moreover, electricity prices for households and companies will be reduced when the nEHS takes off. Other elements of Germany's plans are a comprehensive set of detailed measures, covering each and every sector of Germany's economy. For instance, subsidies and tax measures will be introduced to promote train travel and river transport, make air traffic more expensive, reduce the costs of electric cars and increase the cost of heavily polluting cars, phase out fossil fuel heating of buildings, achieve a climate neutral building stock in 2050, and guarantee that in 2030, 65% of all energy use is from renewable sources.

Greenhouse gas emission versus target: Germany

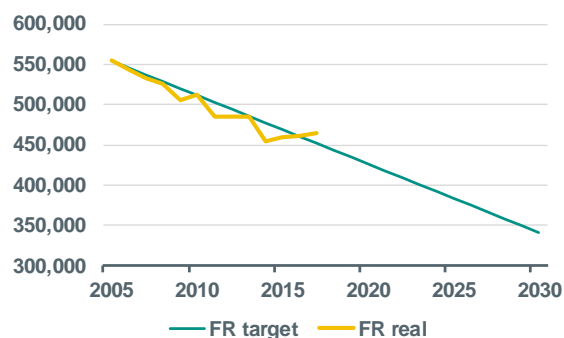
Thousand tonnes, total ETS and non-ETS



Source: Eurostat

Greenhouse gas emission versus target: France

Thousand tonnes, total ETS and non-ETS



Source: Eurostat

France ... well on track

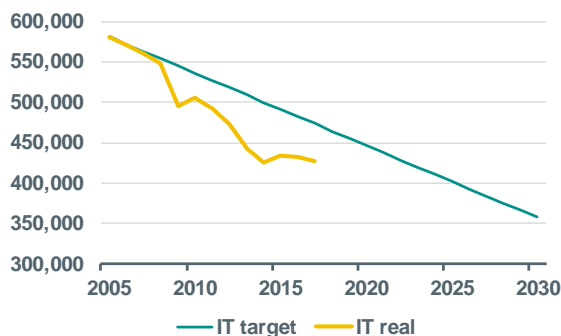
According to the EU rules, France has to reduce its non-ETS GHG emissions by 36% between 2005 and 2030. In July 2017, the country had already set itself a target of being carbon neutral in 2050 and has presented a trajectory toward this

target. Another element of France's long-term energy and climate plans is that it aims to reduce the share of nuclear power in electricity production from around 70% now, to around 50% in 2035. In its comment on France's draft NECP, the EC mentions that France would exceed its EU greenhouse gas emissions target by 2030, if the country's national plans were implemented, but that extra policy measures still need to be clarified. Without these extra policy measures the country would miss its EU-target by around 11 percentage points (see table above). With regards to renewable energy, France has announced that it will triple the generating capacity of onshore wind and achieve a fivefold increase in solar energy by 2030.

In the assessment of France's draft NECP, the EC mentions that France's analysis of investment needs can be considered a good practice. Moreover, the EC states that the plan already takes advantage of the role NECPs can play in providing clarity to investors and attracting additional investment in the energy transition. France's additional investments for realising its plans are estimated to be EUR 25bn per year (equal to around 1% of GDP) during the period 2019-2023, EUR 30bn per year (1.3% GDP) during 2024-2028 and EUR 38bn per year (1.6% GDP) during 2029-2033. These costs include only the direct climate related part of the extra investment needs. The total costs of the extra investments (also including the part that is not directly related to climate standards) is around twice as high during each time period. Of these costs around a third is related to buildings (mainly renovation), around 40% to transportation, and around 25% to energy and electricity networks.

Greenhouse gas emission versus target: Italy

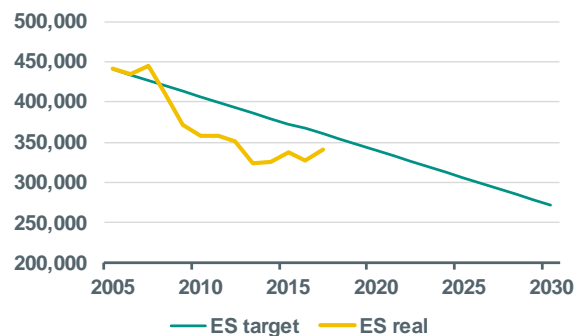
Thousand tonnes, total ETS and non-ETS



Source: Eurostat

Greenhouse gas emission versus target: Spain

Thousand tonnes, total ETS and non-ETS



Source: Eurostat

Italy ... challenge to meet targets and also meet budget rules

Italy's target for non-ETS GHG emissions is a reduction by 33% between 2005 and 2030. The EC's comment on Italy's draft NECP states that the planned policies and measures would be sufficient for Italy to meet this target, with a particularly important contribution coming from the transport and building sectors. Having said that, part of the plans to reduce GHG emissions is a phasing out of coal for electricity generation by 2025, which 'could be further substantiated with a detailed action plan' according to the EC. Regarding investment needs, Italy has provided a lot of information according to the EC's analysis, but more clarity is needed and the

assessment of expenditure and funding sources is not comprehensive enough to allow for an assessment of the overall investment needs and to analyse the investment gap.

Italy's draft NECP outlines that during the period 2017-2030 extra investment of EUR 13bn per year (around 0.7% GDP) will be needed to meet the energy and climate targets. Of this total amount around a third will be invested in the residential sector (building renovation, heating pumps etc), some 20% in the services sector (mainly building renovations and lighting), 3% in industry, 15% in transportation (cars, vans, lorries etc), 20% in the electrical sector (photovoltaic system, wind and bio energy) and around 10% in electrical systems (redevelopment of distribution and storage plants). The EC stresses that Italy needs to take into account the EC's recommendations about government finances that are based on the European fiscal rules, when preparing its overview for investment needs and related sources of funding for the final NECP.

Spain ... transport sector a major target

Spain's national energy use is characterised by a high dependence on fossil fuels (74% versus an EU average of 54%). Also, the transport sector is the sector with the highest energy consumption, with a share of 40% in final demand (versus 25% industry and 33% residential and agriculture). Therefore, a majority of measures in Spain's national NECP are aimed at the transport sector, which should reduce its emissions by one third. For instance, 5 million electric passenger cars and light duty vehicles should be on the market by 2030, which would be around 20% of the total stock. This seems very ambitious as in 2018, around 11,000 new electric cars and light vans were registered, which is less than 1% of total registrations. The change in car use will be supported by grants for the purchase of electric vehicles and infrastructure development. The extra investment needs as quantified in Spain's draft plan are EUR 236bn for the next 10 years (which would be equal to 2% of GDP per year), of which 20% would come from public sources.

Spain's target for GHG emissions (non-ETS), is a reduction by 26% in 2030 compared to 2005. According to the EC's comment on Spain's draft NECP, its policy plans are ambitious and would exceed the emission target by 12 percentage points. However, significant additional measures need to be taken according to the EC, and with the existing policy measures the reduction would fall short of the target by around 10 percentage points. Meanwhile, Spain targets that 42% of energy will come from renewable sources in gross final energy consumption by 2030 (EU-rule is 32%), although existing measures would merely result in 35% according to the EC, while Spain would need to elaborate further on policies and measures in its final NECP (see table above). Finally, the energy efficiency target is a reduction of 39.6% compared to the baseline projection, which according to the EC is sufficiently ambitious, albeit that more details of the policy measures are needed.

Netherlands ... ambitious plans

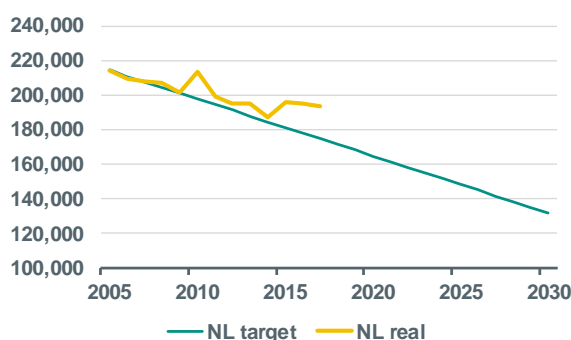
The NECP of the Netherlands is based mainly on the existing policies of the Dutch government, specifically the Coalition Agreement (2017) and the Energy

Agreement (2013). The main elements of the Netherlands' draft NECP are a phasing out of coal-fired power plants by 2030 and ending gas extraction operation in the Groningen gas field. The Netherlands' 2030 target for GHG emissions (non-ETS) is -36% compared to 2005. The draft NECP also includes a national total GHG emissions target of -49% by 2030 compared to 1990, which is very ambitious according to the Commission. Indeed, it notes that without additional policies and measures, the EU-rule could be missed by a short margin (see table above). Furthermore, the Netherlands has set a target range of 27% to 35% for the share of energy from renewable sources. This range is above the target of 26% for the Netherlands as calculated by the Commission, but according to the EC the final NECP would need further elaboration on the policies and measures. In addition, the energy efficiency contribution has been set in primary energy consumption of 46.6Mtoe by 2030, which the EC assesses to be a rather modest ambition.

With regards to the investment needs, the Netherlands' draft NECP does not contain an analysis. In its 2020 Budget Memorandum, the government states that it plans to spend around EUR 220 million a year from 2020-2024 on climate-related policies, which is equal to just 0.03% of GDP. Meanwhile, the government has announced that it will create a long-term investment fund, which could be partially used to finance its climate and energy plans. Details will be announced in 2020.

Greenhouse gas emission versus target: Netherlands

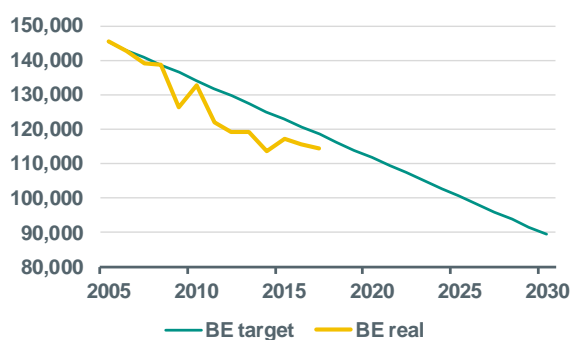
Thousand tonnes, total ETS and non-ETS



Source: Eurostat

Greenhouse gas emission versus target: Belgium

Thousand tonnes, total ETS and non-ETS



Source: Eurostat

Belgium ... lagging, policy making difficult

The EC points out that Belgium is a federal state with decision-making power being shared between a federal government, three regions and three communities, which presents a challenge to arrive at an integrated NECP. Still, Belgium's nationwide 2030 target for GHG emissions not covered by ETS, is -35% compared to 2005. However, the EC judges that policies that have been adopted so far would lead to merely a 13% reduction, leaving a gap of 22 percentage points, which is the largest gap of all six countries discussed in this research note. In addition, Belgium proposes an 18.3% share of energy from renewable sources in gross final consumption of energy in 2030, which is below the EU's rule for 25%. Furthermore, the target for energy efficiency has been set at a level of 39 Mtoe in primary energy consumption and 33.1 Mtoe in final energy consumption in 2030, which according to the EC 'can be seen as a low level of ambition'.

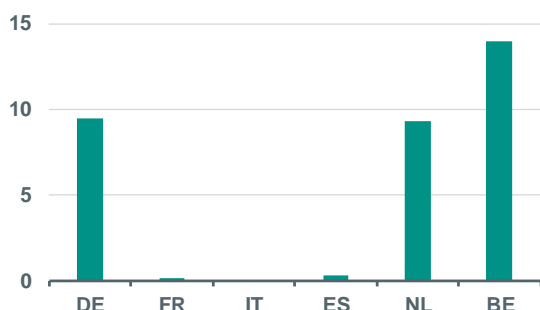
All in all, the EC sees a lack of detail and clarity in Belgium's draft NECP, although 'the approach followed to promote regional cooperation is an example of good practice'. For instance, on research, innovation and competitiveness 'more attention could be given to the desired outcome by setting clear and measurable objectives for 2030'. Moreover, 'the draft NECP does not yet contain an impact assessment of planned policies and measures, which is needed in the final plan', according to the EC analysis.

Support for Green parties highest in countries that pollute the most

Green parties have gained support in recent years in Europe, which is part of a broader tendency of fragmentation of the political landscape. At the elections for the European Parliament (EP) of May 2019, the green group Greens/EFA won 10% of the seats, up from 6.6% at the 2014 elections. Looking at the six individual countries that we are discussing in this research note, it turns out that support for green parties is highest in the countries with the highest greenhouse gas emission per capita (see graph above) which are Germany, the Netherlands and Belgium. Due to France's election system green parties have no seats in national parliament. Still, Greens/EFA won 12 out of France's total of 74 seats in EP at the elections of May 2019, up from 6 in 2014. The relatively high support for green parties in the countries that pollute the most should put extra pressure on governments to meet their European targets.

Green parties in national parliaments

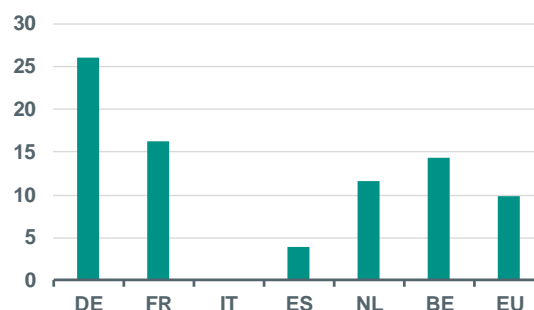
Share of the total seats in national parliament, %



Source: various national parliaments

Green parties in European Parliament

Share of the total seats of the country in EP, %



Source: European Parliament

INVESTMENT NEEDS AND GREEN BONDS

Estimated investment needs is roughly EUR 460bn for the eurozone up to 2023

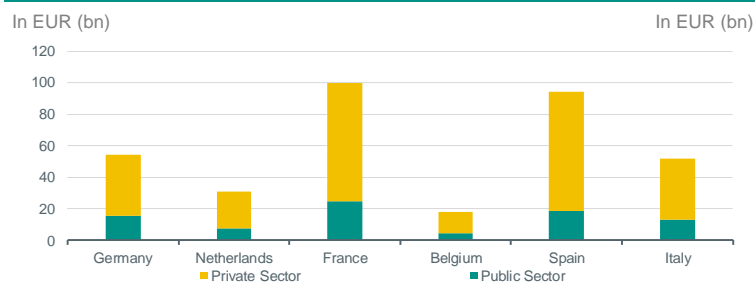
The investment needs resulting from the energy and climate plans are roughly 1% of GDP based on the 6 biggest countries of the eurozone. For the eurozone as a whole this would be about EUR 115bn per year. This is close to the first estimate by the EC (December 2018) of around EUR 180bn per year for the EU, which is equal to around 1.1% of EU GDP. The total eurozone investment needs amounts to roughly EUR 460bn during the four years up to 2023. Below we set out how much the investment needs are of the public and private sector and what the impact might be on the green bond market up to 2023.

The largest chunk will be financed by the private sector

Our estimate based on the draft NECPs is that the public sector will finance around 25% of the investment needs and that the private sector will finance the remaining part, which is the largest chunk. As a result, the public and private sector have an annual investment need of about EUR 30bn and EUR 85bn, respectively, to finance the climate transition. This brings the total funding need for sovereigns to about EUR 120bn during the period 2020-2023.

We estimate that the total climate-related investment needs for the 6 biggest countries is about EUR 350bn in the period 2020-2023. Moreover, the public sector of these countries will finance roughly EUR 85bn and the private sector about EUR 265bn (see graph below). Germany, Spain, Italy and France have indicated their investment needs up to 2023 in its NECPs, which is respectively EUR 55bn, EUR 95bn, EUR 52bn and EUR 100bn. Furthermore, the investment needs for Belgium and the Netherlands are still unknown. Based on the average of 1% of GDP for the other countries, this would be EUR 18bn for Belgium and EUR 31bn for the Netherlands.

Investment needs highest for France and Spain 2020-2023



Source: Draft NECPs, ABN AMRO Group Economics

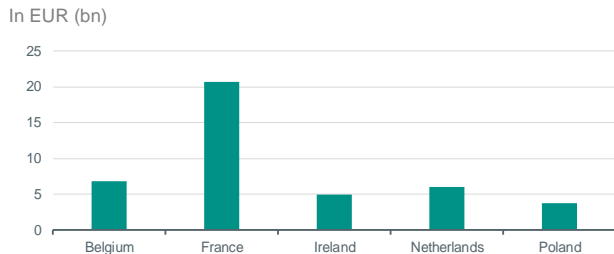
In addition, the French and Spanish private sectors have the highest investment needs of EUR 150bn in total. Furthermore, the first estimate of the climate-related investment needs for the private sector of Germany and Italy is for both EUR 39bn. For the Netherlands and Belgium we estimate the investment needs for the private sector at about 75% of the total investment needs, which is EUR 23bn and EUR 14bn respectively.

The green EGB market is expected to triple by 2023

The European green government bond market is about EUR 42bn at the moment. The estimated investment needs of the six largest sovereigns to finance the climate transition is about EUR 85bn in the four years up to 2023. In addition, countries can also issue green bonds by identifying other expenditures in the central government budget, as the Dutch State Treasury Agency (DSTA) did with the green DSL 2040. Based on this, the market is likely to expand even further, even though we do not expect that all countries will issue green bonds. Issuing green bonds means that sovereigns have to establish a green bond framework and have to provide impact reports. This leads to additional work and costs, which so far do not seem to be compensated by cheaper funding for sovereigns. Taking into account that not all countries will issue green bonds, while also assuming that

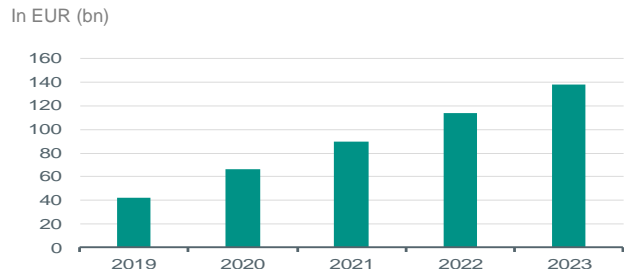
some countries will issue green bonds by identifying other expenditures on the government budget, we judge that the green bond market will triple by 2023. Below we will take a more detailed look at the expected green issuances by the 6 biggest countries up to 2023.

Green EGB market is roughly EUR 42bn...



Source: Bloomberg, ABN AMRO Group Economics

...and we expect the green EGB market to triple by 2023



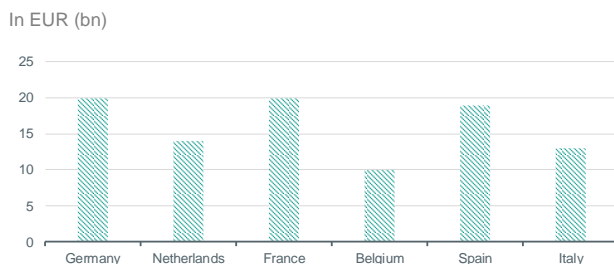
Source: ABN AMRO Group Economics

First estimate of green bond issuance is roughly EUR 95bn up to 2023

Germany has announced that it will issue a green bond in 2020. Normally, the size of a new DBR will be increased to about EUR 20bn within a few years. In addition, the DSTA has announced that it will increase the outstanding amount of the DSL 2040 from EUR 6bn to approximately EUR 10bn in the next years. On top of the reopening of the green DSL 2040, we expect that the DSTA will launch a new green DSL. We judge that the size of the new green DSL will be around 10bn in the end. As such, we estimate that additional issuance of green DSLs will amount to roughly EUR 14bn by 2023.

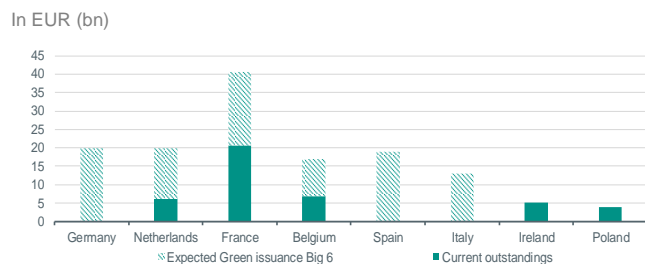
Meanwhile, France has already issued a green bond, the OAT 2039, with an outstanding amount of EUR 20.7bn. Moreover, its climate-related funding need is roughly EUR 25bn up to 2023. Consequently, we judge that France will issue a new green OAT for an amount of EUR 20bn. In addition, Belgium has stated that the green BGB 2033 is issued to finance the transition. It is therefore likely that Belgium will issue more green bonds to finance its investment needs of EUR 5bn and we judge, that it will also finance other expenditures in the central government budget. Furthermore, Spain and Italy have not issued green bonds yet, but have already indicated being willing to do so. Indeed, we believe that Italy and Spain will enter the market due to the fact that they have relatively high investment needs to finance the climate transition. Finally, Ireland and Poland will likely continue to tap their outstanding green sovereign bonds (see right graph below).

Expected new green sovereign issuance up to 2023...



Source: ABN AMRO Group Economics

... is massive compared to the green EGB market

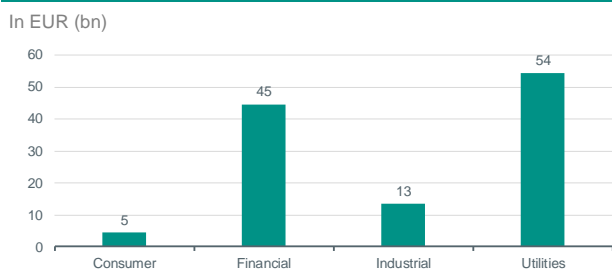


Source: Bloomberg, ABN AMRO Group Economics

The green corporate bond market is expected to double by 2023

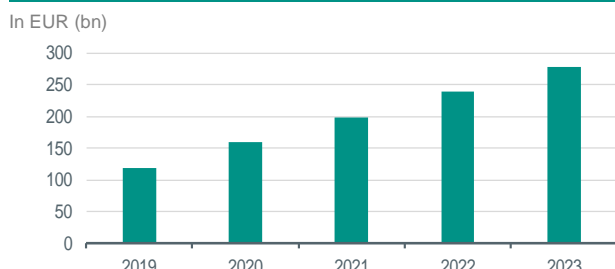
The total climate-related investment needs for the private sector in the eurozone is estimated at EUR 340bn of which EUR 265bn for the 6-biggest countries during the period 2020-2023. The total amount of green bonds issued by corporates (financials and non-financials) is about EUR 120bn to date. In addition, most of the green bonds are issued by corporates in the financial and utilities sector. These sectors issued about EUR 100bn (see left graph below). The estimated annual funding need is about EUR 85bn per year to fight climate change. We judge that corporates will finance this by issuing equity shares, issuing green bonds and retained earnings. Moreover, we think that corporates do not want to issue too much debt, because of possible rating downgrades. As a result, we expect corporates to issue green bonds amounting to around EUR 40bn a year, which is roughly half of their climate-related funding need. Based on this, we expect the green corporate bond market to double by 2023 (see right graph below). In addition, we expect the utilities sector to finance relatively more compared to other sectors. Consequently, green bonds issued by utilities might increase even more.

Corporate green bond market is roughly EUR 120bn...



Source: Bloomberg, ABN AMRO Group Economics

... and we expect it to double by 2023



Source: Bloomberg, ABN AMRO Group Economics

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