

## Core Matters

# European Green Deal: A game changer?

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- The European Green Deal is the EU Commission's new growth strategy. It aims to turn the climate and environmental challenges into an opportunity to modernise the EU economy, endorsing a large investment program. The plan targets emissions reduction of at least 55% by 2030 and climate neutrality by 2050.
- To foster the change the EU will deploy its budget aiming to mobilise about 0.7% of GDP annually. Overall, investment needs are estimated at about 2% of EU GDP annually until 2050. The deal implies substantial structural changes. The most involved sector is Energy but the plan basically cuts across the whole economy.
- The Green and sustainable bond market is now at a turning point. Forthcoming sizeable green issuance in the EU will help growing and greening European finance in a more balanced and standardised way. Meanwhile the ECB will likely add green layers to both its monetary policy and regulatory objectives.
- Among sectors, building and materials are the main beneficiaries while Utilities and Autos will have to adapt.

## European Green Deal – A new growth strategy

The **European Green Deal (EGD)** is the EU Commission's new growth strategy. It tries to turn the climate and environmental challenges, that the Commission sees as *"this generation's defining task"*, into an opportunity to modernise the economy. It thereby embeds a large investment program that some compare to the US New Deal (1933) or the Marshall plan (1947). The goals of the program are primarily environmental, but generally much broader. Quite ambitiously, the EU Commission aims:

- to transform the EU into a fair and prosperous society,
- with a modern, resource-efficient and competitive economy,
- where there are no net emissions of greenhouse gases from 2050 on,
- and economic growth is decoupled from resource use.

While the deal intends to protect the environment in the first place, it also contains a distributional dimension. It acknowledges that the needed structural change will see winners and losers. Accordingly, it tries to *"put people first, and pay attention to the regions, industries and workers who will face the greatest challenges"*.

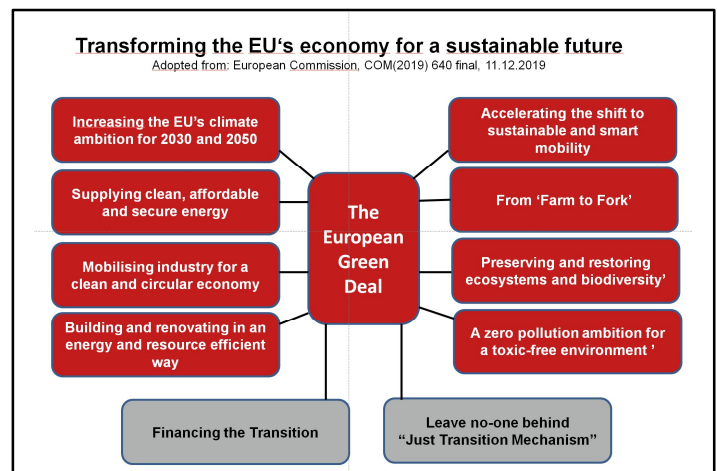
In what follows, we first summarize the plan's goals and policy areas, the timeline, and the investment tools. Then, we look into the European Energy statistics to identify who will be most affected by the need to reduce emissions. We dig deeper into the investment side by outlining the structure of the developing Green Bond market and a possible ECB impact. We close with implications for the sectors most affected.

## I. Dimensions of the Deal

The EGD is a complex endeavour. Policies for clean energy comprise the whole economy ranging from industry and production to consumption, construction, infrastructure, transport, food and agriculture, taxation and social benefits. These policies must be formulated, coordinated with member states and internationally, put into law, be implemented and updated as well as financed. We outline the EGD and its implications along the following three dimensions:

### 1. Aims and policies

The EGD explicitly lists eight goals and policy areas. It details the climate ambition – which we will see in more detail in the statistics chapter – and outlines the sectors most affected, i.e. energy production, industry, buildings and traf



fic It covers broader environmental and health goals such as agriculture, biodiversity and pollution. In more detail the deal specifies:

- **EU's climate ambition for 2030 and 2050**

The EU aims at climate neutrality, i.e. no net greenhouse gas (GHG) emissions by 2050. Current policies will not be sufficient. Thus, the Commission proposed on Sept. 17, 2020, to cut GHG emissions by 55% by 2030, up from the previously proposed 40% (all compared to 1990). The Council still needs to confirm the goal. The announcement came with an [impact study](#) which we discuss below. Policy instruments will be reviewed by June 2021. This will include the Emissions Trading System and energy taxation. Internationally, as long as other countries lag behind these goals (potentially at a competitive advantage<sup>1</sup>), the Commission will propose a carbon border adjustment mechanism for selected sectors. This already led to protests from China and may generally cause substantial trade tensions.

- **Supplying clean, affordable and secure energy**

To reach the 2030/2050 climate objectives, the production and use of energy must be largely de-carbonised. It implies that the power sector must strongly rely on renewables. Their less certain supply due to weather conditions also requires building a smart infrastructure, including smart grids, energy storage, [hydrogen networks](#) or carbon capture. Member states play a large role with their national energy and climate plans. However, energy must also remain affordable for firms and households. The EC will assist in avoiding energy poverty for households.

- **Mobilising industry for a clean and circular economy**

The EU's industry accounts for a substantial part of GHG emissions. Globally, around half of total GHG emissions and more than 90% of biodiversity loss come from resource extraction and processing of materials, fuels and food. Only 12% of industrial materials come from recycling.

To decouple growth from resource use, the EGD aims to transform this linear “*extraction to consumption to waste/pollution*” economy into a clean and [circular economy](#). The transition is expected to last a generation but must be set on track within the next five years.

- **Building and renovating in an energy and resource-efficient way**

Buildings (new and existing ones) need to become more energy efficient. Today, the annual renovation rate varies from 0.4 to 1.2% across EU members. This rate will need at least to double to reach the EU's energy efficiency and climate objectives (old goal). To that end, the Commission will reinforce legislation concerning new buildings and renovation. It will also discuss including buildings' emissions into the European emissions trading schemes.

- **Accelerating the shift to sustainable and smart mobility**

Transport is a large GHG polluter. To achieve climate neutrality, a 90% reduction in these emissions is needed, incl. road, rail, aviation and ships. The Commission will adopt a

strategy for sustainable and smart mobility in 2020. 75% of inland road freight should shift onto rail and inland waterways. Fossil-fuel subsidies (air transport, shipping) should end. The EU should in parallel ramp-up the production and deployment of sustainable alternative transport fuels.

- **From ‘Farm to Fork’: designing a fair, healthy and environmentally friendly food system**

Food production needs to become much more sustainable. Currently, it still results in air, water and soil pollution while it reduces biodiversity and damages the climate. It demands excessive amounts of natural resources. At the same time, low-quality diets contribute to obesity and diseases such as cancer. Farmers and fishermen are of course key to the strategy. The plan aims at directing at least 40% of the common agricultural policy's overall budget and at least 30% of the Maritime Fisheries Fund towards climate action over 2021-2027. Strategies will aim at significantly reducing the use and risk of chemical pesticides, as well as the use of fertilisers and antibiotics. Organic farming will also need to increase. The [Farm to Fork Strategy](#) will also foster a circular economy by taking action on transport, storage, packaging and food waste. Currently it looks that compromises with some countries will water down the ambition.

- **Preserving and restoring ecosystems and biodiversity**

The EU is not meeting important environmental objectives such as the [Aichi targets](#) under the Convention on Biological Diversity. The EU and its global partners need to halt biodiversity loss. The Conference of the Parties to the Convention on Biological Diversity in China (the meeting was postponed from October 2020 to May 2021) is an opportunity for the world to adopt a robust global framework to halt biodiversity loss. To ensure that the EU plays a key role, the EC presented a [Biodiversity Strategy](#) in May 2020, to be followed up by specific action in 2021.

- **A zero pollution ambition for a toxic-free environment**

Creating a toxic-free environment requires more action to prevent pollution from being generated as well as measures to clean and remedy it. The Commission will adopt in 2021 a zero pollution action plan for air, water and soil. It will also present a chemicals strategy.

## 2. EU timeline

The EGD is not yet a complete set of defined policies but instead under development and discussion. The Commission sets “milestones” by publishing strategies and action plans. The EU political process then applies. We highlight a few dates with special attention on the upcoming policy papers. For a more complete list, please refer to the box.

The EGD was first presented in December 2019. In March 2020, the new European Climate Law was proposed to enshrine the 2050 net-zero GHG emissions objective into law. The legislation is expected to pass the EU Parliament before the end of 2020.

The ambition to cut GHG by 55% until 2030 was officially announced in September 2020. The consent of the Council

<sup>1</sup> The process of losing domestic production to countries with less strict environmental standards is also dubbed as carbon leakage.

has recently been put off to December. Further delays might well be possible as Hungary and Poland have recently blocked the approval of the EU's budget. Both countries want to prevent that funding it tied to adherence to the rule of law. By June 2021, the Commission will review and revise the EU carbon emissions trading scheme (ETS). The last revision in 2018 calibrated the ETS to the 40% reduction target. The new more ambitious goal has fostered controversial discussions with regard to extending the ETS to new sectors, such as transport (aviation, maritime and auto industries) and the heating of buildings. The main obstacle is the inelastic demand in most of these sectors. In 2023 the member states are due to update their national climate and energy plans. These should reflect the EU faster reduction plans.

### 3. European Green Deal Investment Plan (EGDIP)

The transition of the EU to a climate-neutral, resource-efficient and competitive economy entails huge investment needs. The sums are dependent on how ambitious the targets are. Therefore, we first present goals and instruments, before discussing numbers in the next chapter.

In mid-January 2020, the Commission laid out its ideas regarding the investment side in the [European Green Deal Investment Plan](#) (also called the Sustainable Europe Investment Plan). The Commission is in no financial position to reach the goals to transform the economy alone; it needs support from national as well as private resources. The EU will deploy its budget to promote investments but total investment needs are much larger. The plan specifies three objectives:

- First, it intends to mobilise at least EUR 1 trillion of sustainable investments over the next decade through the EU budget and associated instruments, in particular InvestEU (see below);
- Second, it will create an enabling framework for private investors and the public sector to facilitate sustainable investments (see below EU taxonomy)
- Third, it will provide support to public administrations and project promoters in identifying, structuring and executing sustainable projects.

The plan also includes the so-called Just Transition mechanism, which is especially geared towards facilitating public sector investments in the regions most negatively affected by the structural change.

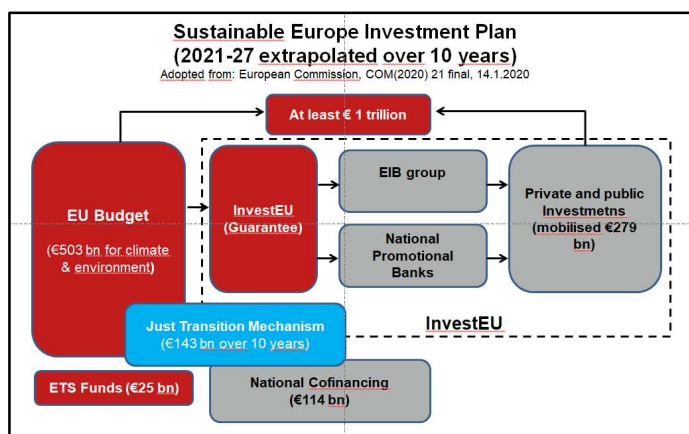
#### How can this €1 bn over ten years be mobilised?

As the graph below shows, the EU plans to mobilise the sum by a combination of the EU budget (about €500bn), national co-financing, leveraged InvestEU funds, Just Transition and other resources (in sum €540 bn):

**EU budget and Recovery Fund:** The EU budget will play an important role. EU member states just agreed on a new long-term budget for 2021-2027 worth €1.074 tr. The European Parliament and the Council have reached a compromise. The EU Council has also agreed to a €750 bn recovery fund, intended to support the member countries most affected from the Covid-19 crisis. In the original EC proposal, the spending target for climate action was 25% but was eventually increased to at least 30%. The same figure will be applied to the recovery programme. Spending will also be guided by a sustainable finance taxonomy and the

“do not harm” condition (see below, e.g., cannot be spent on nuclear, coal).

<b>Climate ambition</b>	
Proposal on a European 'Climate Law' enshrining the 2050 climate neutrality objective	Mar-20
Comprehensive plan to increase the EU 2030 climate target to at least 50% and towards 55% in a responsible way	Summer 2020
Proposals for revisions of relevant legislative measures to deliver on the increased climate ambition, following the review of Emissions Trading System Directive; Effort Sharing Regulation; Land use, land use change and forestry Regulation; Energy Efficiency Directive; Renewable Energy Directive; CO2 emissions performance standards for cars and vans	Jun-21
Proposal for a revision of the Energy Taxation Directive	Jun-21
Proposal for a carbon border adjustment mechanism for selected sectors	2021
New EU Strategy on Adaptation to Climate Change	2020/2021
<b>Clean, affordable and secure energy</b>	
Assessment of the final National Energy and Climate Plans	Jun-20
Strategy for smart sector integration	2020
'Renovation wave' initiative for the building sector	2020
Evaluation and review of the Trans-European Network – Energy Regulation	2020
Strategy on offshore wind	2020
<b>Industrial strategy for a clean and circular economy</b>	
EU Industrial strategy	Mar-20
Circular Economy Action Plan, including a sustainable products initiative and particular focus on resource intense sectors such as textiles, construction, electronics and plastics	Mar-20
Initiatives to stimulate lead markets for climate neutral and circular products in energy intensive industrial sectors	From 2020
Proposal to support zero carbon steel-making processes by 2030	2020
Legislation on batteries in support of the Strategic Action Plan on Batteries and the circular economy	Oct-20
Propose legislative waste reforms	From 2020
<b>Sustainable and smart mobility</b>	
Strategy for sustainable and smart mobility	2020
Funding call to support the deployment of public recharging and refuelling points as part of alternative fuel infrastructure	From 2020
Assessment of legislative options to boost the production and supply of sustainable alternative fuels for the different transport modes	From 2020
Revised proposal for a Directive on Combined Transport	2021
Review of the Alternative Fuels Infrastructure Directive and the Trans-European Network – Transport Regulation	2021
Initiatives to increase and better manage the capacity of railways and inland waterways	From 2021
Proposal for more stringent air pollutant emissions standards for combustion-engine vehicles	2021
<b>Greening the Common Agricultural Policy / 'Farm to Fork' Strategy</b>	
Examination of the draft national strategic plans, with reference to the ambitions of the European Green Deal and the Farm to Fork Strategy	2020-2021
'Farm to Fork' Strategy	Spring 2020
Measures, including legislative, to significantly reduce the use and risk of chemical pesticides, as well as the use of fertilizers and antibiotics	2021
<b>Preserving and protecting biodiversity</b>	
EU Biodiversity Strategy for 2030	Mar-20
Measures to address the main drivers of biodiversity loss	From 2021
New EU Forest Strategy	2020
Measures to support deforestation-free value chains	From 2020
<b>Towards a zero-pollution ambition for a toxic free environment</b>	
Chemicals strategy for sustainability	Summer 2020
Zero pollution action plan for water, air and soil	2021
Revision of measures to address pollution from large industrial installations	2021
<b>Mainstreaming sustainability in all EU policies</b>	
Proposal for a Just Transition Mechanism, including a Just Transition Fund, and a Sustainable Europe Investment Plan	Jan-20
Renewed sustainable finance strategy	Autumn 2020
Review of the Non-Financial Reporting Directive	2020
Initiatives to screen and benchmark green budgeting practices of the Member States and of the EU	From 2020
Review of the relevant State aid guidelines, including the environment and energy State aid guidelines	2021
Align all new Commission initiatives in line with the objectives of the Green Deal and promote innovation	From 2020
Stakeholders to identify and remedy incoherent legislation that reduces the effectiveness in delivering the European Green Deal	From 2020
Integration of the Sustainable Development Goals in the European Semester	From 2020
<b>The EU as a global leader</b>	
EU to continue to lead the international climate and biodiversity negotiations, further strengthening the international policy framework	From 2019
Strengthen the EU's Green Deal Diplomacy in cooperation with Member States	From 2020
Bilateral efforts to induce partners to act and to ensure comparability of action and policies	From 2020
Green Agenda for the Western Balkans	From 2020
<b>Working together – a European Climate Pact</b>	
Launch of the European Climate Pact	Mar-20
Proposal for an 8th Environmental Action Programme	2020



The EGDIP is still based on the old figures (to be revised with the updated plan). Moreover, numbers are extrapolated from the de-facto 7-year budget horizon to ten years. This results in €503 bn of spending geared towards environmental purposes.<sup>2</sup> It should trigger additional national co-financing of €114 bn over the same period. The EU budget is also intended to contribute to the climate objectives on the revenue side. The EU could be given own resources (Own Resources initiative) via environmentally geared levies (e.g. on non-recycled plastic-packaging) or from auctioning rights in the Emissions Trading System (share of 20% at the expense of national governments). The topic is still under negotiation with the [EU Parliament](#).

**InvestEU:** The InvestEU programme is the successor of the European Fund for Strategic Investments and 13 other EU financial instruments. It tries to de-risk private sector investment by providing a partial EU budget guarantee. It explicitly aims at crowding in private investments. It is built along the lines of the successful Juncker plan. According to the original EU budget plan, it shall mobilise €650 bn over seven years<sup>3</sup>, of which at least 30% should contribute to fighting climate change and related purposes ( $€650 \times 0.3 \times 10/7 = €279$  bn, i.e. over 10 years). However, InvestEU got less funding in the final deal (reduced from €30.3 bn to €5.6 billion) putting the figures into doubt.

**Just Transition Mechanism:** The [Just Transition Mechanism](#) is a new facility that intends to tackle the structural change. It will include financing from the EU budget, co-financing from the Member States as well as contributions from InvestEU and the EIB to reach a mobilization of €100 billion of investments over 2021-27. Extrapolated over 10 years, it should reach €143 bn towards “green” restructuring.

In sum<sup>4</sup>, the figures detailed above add up to about €1 tr (about 0.7% of 2019 EU GDP on an annual basis in a ten-year horizon) from the EU budget and induced spending (via InvestEU, national co-financing, Just Transition Mechanism etc, comp graph) towards green purposes. The updated investment plan will change the details but not the fundamentals. Also, the EU intends to strengthen the EIB and will help to define “Green” bonds by a taxonomy.

<sup>22</sup> These are mainly the European Agricultural Fund for Rural Development, European Agricultural Guarantee Fund, European Regional Development Fund, Cohesion Fund, Horizon Europe and Life funds.

<sup>3</sup> [Invest EU 2021-2027 budget](#)

<sup>4</sup> Another small sum (about €25 bn) will come from the Innovation and Modernisation Fund which is not part of the EU budget.

Finally, the ECB could play an important role in the market which we will discuss in more detail in Chapter III.

**The role of the European Investment Bank (EIB):** The EIB uses its resources and various EU programmes to help finance climate/environmental investments. In 2019, about 30% of the EIB operations contributed to this goal. The EIB is expected to become the “EU climate bank” as this share is expected to rise to 50% by 2025. A large part of this will be carried out under InvestEU.

**EU taxonomy:** The EU will also monitor that investments are truly sustainable. Apart from a reporting and monitoring system, the EU Taxonomy will determine whether an economic activity is environmentally sustainable. It sets out three criteria: investment needs to make a substantive contribution to one of six environmental objectives, do no significant harm the other five and meet minimum safeguards (e.g., OECD Guidelines on Multinational Enterprises and the UN Guiding Principles on Business and Human Rights). While the taxonomy was initially designed for private investors, it could – once sufficiently developed – also be used by public sector entities. The Commission will enhance the Taxonomy concerning the climate change objectives in 2020 and on the other environmental objectives by the end of 2021. It also is finalising EU Green Bond Standards.

**ECB:** [In a recent speech](#), Isabel Schnabel, Member of the ECB Executive Board, discussed the potential role of the ECB within the EGD. “Climate change, if not addressed swiftly, can be expected to affect the economy in a way that poses material risks to price stability in the medium to long term.” She discusses several options for the ECB, i.e. 1) through involvement in defining rules and standards, 2) in promoting research, and/or 3) by taking up climate considerations into monetary policy operations (e.g. accept collateral only if it can assess climate-related risks). So far it is not fully clear which role the ECB will finally opt for. Currently, there are two opposing views. One view is that the central bank would overstep its mandate if it were to discriminate among assets according to green criteria (non-neutrality). The other view is that central banks have to respond to the far-reaching risks that climate change poses to price stability. The ECB’s strategy review, that is scheduled to be finalized by mid-2021, will bring more clarity.

## II. Sector implications

To effectively reduce emissions, it is key to target the activities contributing most to pollution. To present a detailed breakdown of the current energy resp. CO<sub>2</sub> print of economic sectors, we use the [Eurostat energy statistics](#). Reduction targets depend on political ambition while investment needs in turn follow from the reduction goals. The EU Commission has presented an [impact study](#) alongside its increased GHG reduction ambition. Also, the International Renewable Energy Agency<sup>5</sup> (IRENA) provided important insights in its Energy Transformation [Outlook 2050](#) report.

<sup>5</sup> The International Renewable Energy Agency (IRENA) is an intergovernmental organisation mandated to facilitate and promote the adoption of renewable energy. The IRENA Statute stipulates that membership in the agency is open to those states that are members of the United Nations, and to regional intergovernmental economic-integration organisations. As of 2019, 161 states and the European Union are members of IRENA.

## EU-27 Energy Consumption by Sectors in 2018

Source: Eurostat, Energy balance sheets, 2020

	Final Energy Consumption	in %	Solid fossil fuels, oil, petroleum products	Natural gas	Renewables and biofuels	Electricity	Heat	others
<b>Total</b>	<b>939,681.9</b>	<b>100.0</b>	<b>39.1</b>	<b>21.4</b>	<b>10.5</b>	<b>23.0</b>	<b>4.9</b>	<b>1.1</b>
Industry sector	242,166.7	25.8	15.5	31.1	9.2	34.0	6.2	4.0
- Iron & steel	26,567.8	2.8	13.0	29.9	0.0	36.3	1.5	19.1
- Chemical & petrochemical	49,136.4	5.2	21.6	34.5	0.6	29.6	12.7	1.1
- Non-ferrous metals	9,970.2	1.1	7.3	35.8	0.0	54.9	1.6	0.5
- Non-metallic minerals	33,712.1	3.6	28.3	38.8	4.8	16.6	1.0	10.5
- Transport equipment	7,665.4	0.8	4.9	30.4	0.2	56.6	7.5	0.4
- Machinery	17,431.5	1.9	6.1	33.9	0.7	55.8	3.4	0.1
- Mining & quarrying	3,799.3	0.4	28.2	19.6	2.1	46.1	3.7	0.3
- Food, beverages & tobacco	27,559.3	2.9	10.7	46.3	3.9	34.3	4.6	0.1
- Paper, pulp & printing	32,030.7	3.4	4.5	19.2	40.6	28.2	6.4	1.1
- Wood & wood products	8,686.2	0.9	2.8	6.5	57.4	25.7	7.2	0.4
- Construction	9,020.1	1.0	56.5	16.6	2.4	24.1	0.4	0.0
- Textile & leather	3,720.3	0.4	5.3	46.9	0.6	42.9	4.3	0.1
- Not elsewhere specified (industry)	12,580.2	1.3	6.5	15.5	4.8	53.3	19.8	0.2
Transport sector	286,777.6	30.5	91.6	1.2	5.4	1.8	0.0	0.0
- Rail	5,458.2	0.6	23.0	0.0	0.5	76.5	0.0	0.0
- Road	267,714.9	28.5	93.6	0.6	5.8	0.1	0.0	0.0
Households	245,194.9	26.1	14.8	32.1	19.5	24.7	8.7	0.1
Commercial & public services	133,600.9	14.2	8.8	29.8	6.6	47.4	7.2	0.2
Agriculture & forestry & fishing	28,586.0	3.0	61.6	11.6	10.1	15.5	0.9	0.2
Others	3,355.8	0.4	48.0	2.6	41.8	5.8	1.8	0.0

### 1. Eurostat energy statistics

Energy statistics are not easy to read. There is a huge discrepancy between the input (supply) and the output (consumption) side, largely due to transformation and distribution losses. Energy-saving targets refer to both ends, highlighting the importance of keeping them separate.<sup>6</sup> Only 15.4% of the total EU27 2018 energy supply<sup>7</sup> relied on renewables, vs. 13.6% on nuclear heat and about 70% on fossil fuels. Obviously, the energy sector will need to undergo the most profound change.

Regarding 2018 energy consumption<sup>8</sup>, the industry (25.8%), the transport sector (30.5%), and the household sector (26.1%) rank highest. Heavy industries rely strongly on carbon-based energy, and are often considered hard to decarbonize. The EU focusses on hydrogen and new technologies.

#### EU 27 Total Energy supply

2018, in kilotonnes of oil equivalent (ktoe), in %  
Source: Eurostat, Energy balance sheets, 2020

<b>Total energy supply</b>	<b>1,438,360.2</b>	<b>100.0</b>
- Solid fossil fuels	210,257.7	14.6
- Oil and petroleum products	463,173.2	32.2
- Natural gas	324,600.0	22.6
- Renewables and biofuels	222,070.5	15.4
- Nuclear heat	195,737.9	13.6
- Others	22,520.4	1.6

<sup>6</sup> Eurostat provides a flow chart which clears the structure (Appendix 1)

<sup>7</sup> Total energy supply is the sum of domestic production plus net imports (unlike the graph exports are already netted out) but corrected by net

#### EU 27 Final Energy Consumption

2018, in kilotonnes of oil equivalent (ktoe), in %

Source: Eurostat, Energy balance sheets, 2020

<b>Final Energy Consumption</b>	<b>939,681.9</b>	<b>100.0</b>
- Solid fossil fuels	22,535.9	2.4
- Oil and petroleum products	345,079.2	36.7
- Natural gas	200,766.0	21.4
- Renewables and biofuels	98,902.1	10.5
- Electricity	215,972.9	23.0
- Others	56,425.7	3.9

### 2. EU impact study and IRENA outlook

**EU 2019 baseline scenario:** Under the “old” 2030 GHG emissions reduction target of at least 40%, the Commission estimated that additional green investments of €260 bn per year until 2030 were needed (i.e. about 1.5% of 2018 GDP).

#### **The new target implies even higher investment needs:**

The September-2020 EU [impact study](#) evaluates how to reach the more ambitious 50% or 55% targets with the help of different models and policy options. The main variables are carbon prices and direct regulations as well as various combinations. Not surprisingly, the energy sector will be at the forefront of efforts. Like in the IRENA study (see below), the switch to renewables needs to be accompanied by a rise in energy efficiency and large electrification.

According to the EU calculations, a 50% GHG reduction ambition implies that the renewables share needs to rise to about 35%, accompanied by a need of a similar increase of final energy savings. The 55% GHG reduction target can only be reached by a ca. 38%-40% renewable energy share while final energy savings need to improve by about 36%-37%. Compared to the current situation, the share of renewables has to rise by a factor 2.3x-2.8x, while at the same

change of stocks, recovered and recycled products, international maritime bunkers and international aviation:

<sup>8</sup> [Eurostat, Energy balance sheets, 2020](#)

time energy production and use has to shrink significantly. The models make full use of carbon sinks.<sup>9</sup> Moreover, some sectoral data are available: the share of renewables in heating & cooling has to rise to 37%-42%, in electricity to 58%-67% and in transport to 20%-26%. Finally, the EU study estimates additional annual investment expenditures by €312-377 bn, up from € 260 bn before. This is about 2% of GDP, compared to around 1.5% of GDP in the 40% GHG reduction scenario.

EU 27 Energy system impacts		
2018, in megatonnes of oil equivalent (Mtoe), in %		
Source: EU impact study, 2020, p129		
	Current	55% target
Total energy supply (Mtoe)	1,438.0	1,109 - 1,117
- Solid fossil fuels	14.6	4 - 7
- Oil and petroleum products	32.2	33 - 34
- Natural gas	22.6	20
- Renewables and biofuels	15.4	26 - 31
- Nuclear heat	13.6	11 - 13
- Others	1.6	n.a.

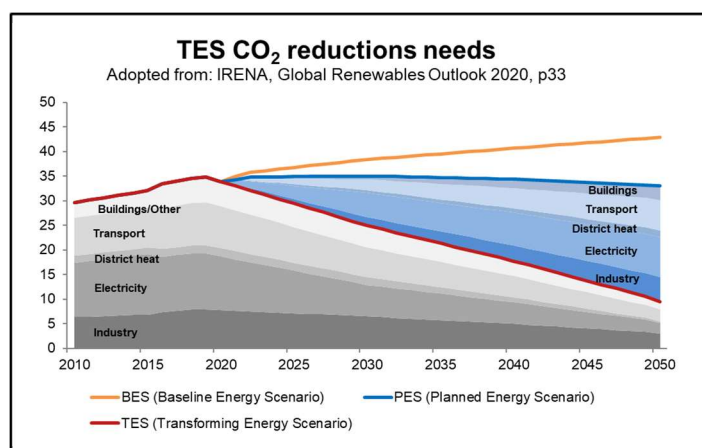
**Global view from IRENA:** The EU cannot reach the Paris Agreement targets (to keep global warming well below 2°C and pursuing efforts to limit the increase to 1.5°C) alone. IRENA focuses on the global situation but also provides regional numbers in different scenarios. Its so-called “Transforming Energy Scenario (TES)” reaches this goal but is less ambitious than the EU plan of net zero emissions by 2050. Moreover, IRENA focuses more on the 2050 numbers and thus makes clear the 2030 targets are just a preliminary step. The IRENA scenario implies:

- Globally, CO<sub>2</sub> emissions have to shrink from currently about 34 Gt to 25 Gt in 2030 (-26%) and 9.5 Gt in 2050 (about -72%). Broken down to the EU, CO<sub>2</sub> emissions need to be cut from currently 3.4 Gt to 1.9 Gt in 2030 (-45%) and 0.6 Gt in 2050 (-82%).
- Second, in TES the share of renewable energy in final energy supply would need to increase from currently about 15% to 28% by 2030 and 66% by 2050. Broken down to the EU, this share has to rise to 39% in 2030 and to 71% in 2050.
- Moreover, the calculation assumes constant global energy demand, relying on strong gains in energy efficiency. On average, the improvement was 1.8% per year over the last decade. In TES, this rate needs to improve to 3.2% per year.

According to the IRENA scenario (which is a bit less ambitious than the EU one), the share of energy from renewables needs to rise to 66% by 2050. This makes clear, that the 2030 targets are just a first step. Like the EU, IRENA sees the main road to change emissions in electrification. On the supply side, this implies a strong switch to renewables energy production. On the demand side, it is intended

to replace the millions of small sources of fossil fuels combustion by electric energy, i.e. most importantly by a switch to electric vehicles (EV) but also to heat pumps. Given the more energy unsteady supply of renewables, the flexibility and integration of power systems is a second pillar. Apart from wind and solar energy, hydropower, bioenergy, solar thermal and geothermal renewable energy all have large unused potential. Hydrogen can offer a solution for energy demand that is hard to electrify directly. Moreover, similar to the EU models raising energy efficiency plays a major role. IRENA estimates that in the TES scenario global investments would need to reach a cumulative US\$ 110 tr. over 2016-2050 or US\$ 3.2 tr annually on average. This compares to a current average investment of around US\$ 1.8 tr per year. IRENA also sees investment needs at around 2% of average annual GDP. By far the largest share of investments will go to renewables, energy efficiency, end-use electrification, power grids and flexibility. A smaller share will also go to the modernisation of fossil fuels power generation.

EU impact study and IRENA			
Sources: EU impact study, 2020; IRENA, Global Renewables Outlook 2020			
	EU "old" baseline	EU 55% target	Global IRENA TES 2030/50
GHG reduction	-46.9%	-55%	-26%/-72%
Share of renewable energy sources	32.0%	37.5 - 40.4%	28%/66%
Energy savings			
- primary energy consumption	-34.2%	-39.2 - -40.6%	
- final energy consumption	-32.4%	-35.5- -36.7%	
Investment expenditure (av. annual)	1.5% GDP	2% GDP	2% GDP



<sup>9</sup> Carbon sinks are dubbed LULUCF (Land Use, Land-Use Change, and Forestry) in line with the LULUCF Regulation on emissions and absorptions of the LULUCF sector: Regulation (EU) 2018/841

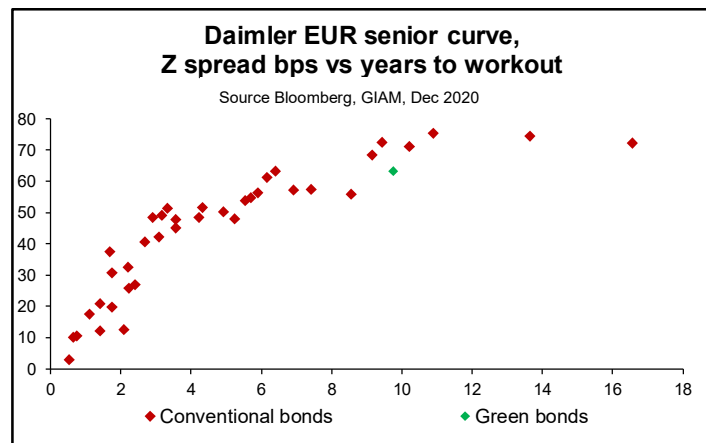
### III. Growing and Greening European Finance

The transition towards a green economy is not only a political matter; it has also become an unavoidable trend in financial markets. The ambitious targets set by the EU will only be achieved if the transition accelerates rapidly. EU institutions are reinterpreting their statutes and consider changing their rules to support the transition towards green finance. The green and sustainable bond market is now at a turning point, especially ahead of the EU massive green issuance in the coming years. Below, we examine the main features of the developing green bond market and possible future developments, especially with the ECB.

#### 1. Green assets: A widening supply-demand gap

First, a very important point is that institutional investors are incentivized for commercial reasons to substantially raise their green holdings. Banks, insurers and asset manager's respective regulations could push this demand further in the coming years. Thus, the supply, not demand is the bottleneck. Indeed, even during the corona virus-induced market sell-off, ESG funds proved more resilient than conventional ones.

As a result, both on the primary and secondary markets green assets are trading at a premium relative to conventional assets. For instance, Daimler issued an inaugural green bond in September that priced 13bps inside the secondary 'conventional' curve. Usually, new bonds come at a discount versus the secondary market.

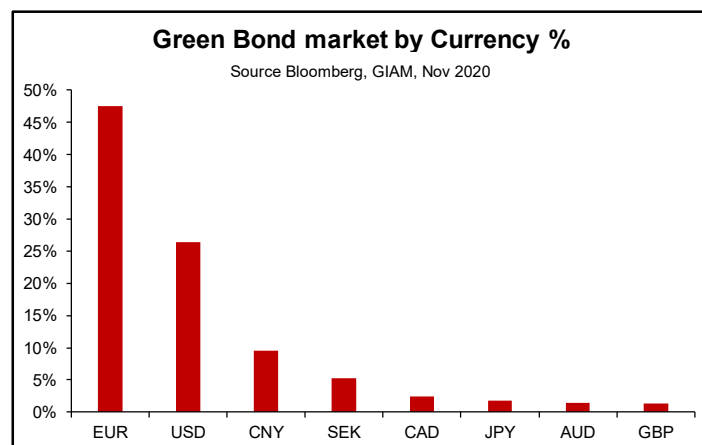


Despite recent demand growth, the green bond market remains a fairly young market, quite small in size and still lacking a proper official standard. Hence the green deal is a clear opportunity for European public authorities to structure a sustainable finance sector that is strategic in many aspects.

#### 2. The Green deal will likely reinforce European dominance of the green bond market

As a direct result of the increasing focus on climate change and sustainable finance, the green bond market has been growing rapidly, reaching around €350bn in 2020. The majority of green bond issuance has so far been in euros, but dollar-denominated issuance has also contributed significantly (see chart below). Hence, the Green deal may help

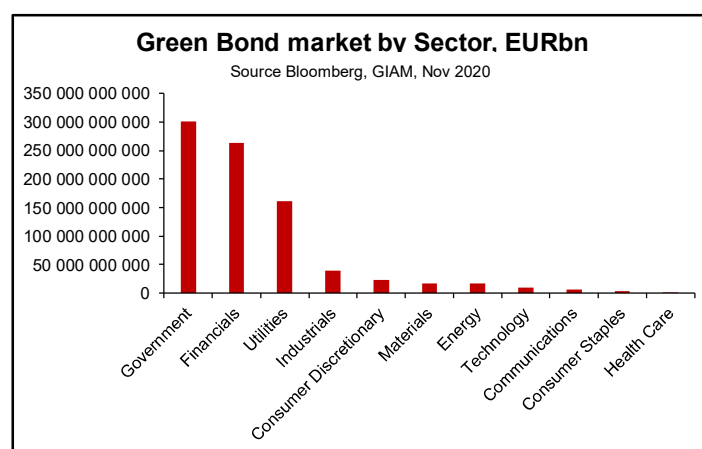
Europe to consolidate its top position in terms of sustainable finance, which may prove a strategic economic advantage.



#### 3. EU will become the largest green bond issuer

The EU generally wants to support ESG markets. For instance, it announced that EUR100bn issuance for [SURE](#) will be made via social bonds. The EU is set to become a big issuer in the green bond space. €260 bn of its €750 bn Recovery Fund will be issued as green EU bonds, largely relying on the European Commission's work on EU Taxonomy and [EU Green Bond Standards](#).

Corporate issuance will also soar over the coming years, with a greater sector diversification compared to a market currently dominated by utilities. But as of today, there is not yet a clear standard to define green bonds.



#### 4. A standardization of green standards is a necessary step for a proper asset class to emerge

The EU is also doing its part to help achieve climate targets by publishing the EU [Taxonomy](#) for companies engaging in sustainable activity (which will be fully operational in 2022 after the adoption of its delegated acts). The EU Green Bond Standards are still being discussed. The emergence of the EU Green Bond Standards could be a game-changer both for ECB decisions but as well for the market. They will create a clear, EU-endorsed structure for such instruments, which will be of particular interest for sovereign issuances, and possibly act as a standard for other regions. This will likely be a further catalyst to the expansion of the market.

#### 5. Climate change is high on the agenda of the ECB's strategic policy review

Over the recent quarters, also the ECB has endorsed socially responsible goals. President Lagarde (and other Governing Council members) have made clear that climate change initiatives will be high on the ECB's agenda. We expect the Strategic Review, expected to be completed by late summer 2021, to detail specifically how it will be taken into account. There are several options on the table and the key challenge for the ECB will be not to crowd out private investors in a structurally overcrowded market. The ESG market development must itself be sustainable.

#### a. Greening both Banks and Insurance Prudential supervision

On the banking supervision side, the ECB could ensure that banks properly assess climate risk, which could lead green assets to receive preferential treatment. The ECB is currently working on a robust analytical framework to improve the modelling of climate risks, which should enable more accurate pricing of assets. The European Banking Authority (EBA) could also possibly include this approach into its stress test exercises. Similarly, the European Insurance and Occupational Pensions Authority (EIOPA) has recently launched a [consultation](#) on the supervision of the use of climate change scenarios in ORSA, with the same objective of incentivizing Insurers to support the transition towards the green economy.

#### b. New TLTROs with green objectives could be launched

Many options are on the table, such as green TLTROs to support green loans, as recently suggested by ECB President Lagarde. Under the current framework for the TLTROs, banks can borrow from the ECB at a rate linked to their credit extension. A green TLTRO could be based on bank lending activities that are compliant with the EU Taxonomy. The ECB would thereby increase banks' appetite for supporting green projects. To structurally support green projects the ECB would need to make green TLTROs part of its regular liquidity operations as part of its new strategy.

#### c. Collateral rules are also starting to evolve towards more favourable rules for green assets

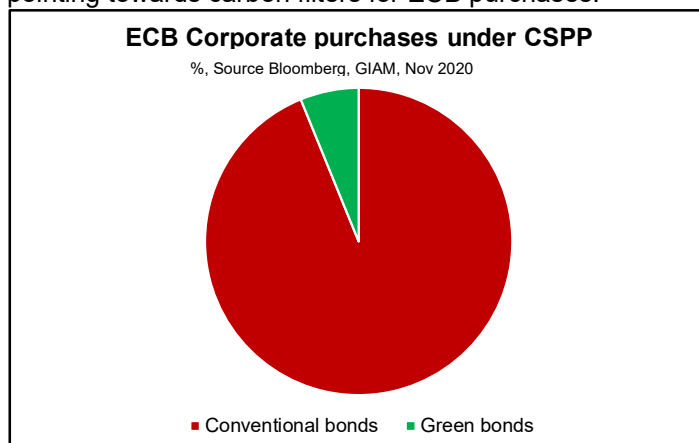
Recently the ECB took another measure to support green financing by making step-up (variable coupons) sustainability-linked bonds (SLBs) eligible collateral from 2021 onwards. Unlike traditional green bonds, SLBs' coupons are linked to sustainability performance targets. The ECB had to change the rules to make them eligible since bonds as step-ups are usually not collateral eligible. This move was rather important in terms of communication with only a handful of those bonds currently outstanding. The Italian utility corporation Enel was the first to issue such a bond last year, and in recent week's issuance has continued to grow. Further adjustments on collateral rules will also likely be considered. Applying more favourable haircuts for green bonds could be easily envisaged, which would encourage banks to hold more green assets than conventional ones. Last but not least, the greater impact will likely come from the monetary policy.

#### d. The ECB has shown a desire to address climate issues via its monetary policy which is not trivial

Alongside other measures, such as discussing with central banks globally to support the transition to a low-carbon economy through the Network of Central Banks and Supervisors for Greening the Financial System (NGFS network), the ECB has been an active investor in (eligible) green bonds through its QE programs. It already owns 20% of the eligible PSPP and CSPP green bond universe (as of July 20).

However, we view this rather as a communication operation than a proper green QE. Those purchases have probably been just in due proportion of the ECB usual purchases. The ECB mandates do not encompass yet an outright climate objective. The decision will come with the ECB's policy review but we expect some incorporation of green criteria.

There are various options regarding what the ECB could practically do. It will have to decide whether applying new criteria to the current QE program or whether to launch a specific one dedicated to green assets. The ECB also could use its non-monetary policy portfolio to support environmental-friendly investments. A crucial question is also whether the ECB would apply its criteria to the issuer or each bond. A recent [study](#) by the Bank of International Settlements (BIS) would in our view rather suggest that the ECB would favour the first option. In terms of which criteria could be applied, recent [comments](#) from Pascal Canfin, chair at the European Parliament Environment Committee, are also pointing towards carbon filters for ECB purchases.



*\*It is purely a % of the Bonds having a green tag in the CSPP, not a % of green holdings as the ECB doesn't disclose the held amounts on an isin by isin basis.*

#### 3. The green deal is supporting the Automotive sector through a highly disruptive transition towards the electric car

As transport accounts for a quarter of the European Union's greenhouse gas emissions (of which road transport are 71.7% with a growing trend), the EU seeks a 90% reduction in emissions by 2050. The Green Deal implies stricter standards on pollution by cars as well as a boost in the supply of sustainable alternative transport fuel (Electric and Hybrid vehicles). By 2025, about 1 million public recharging and refuelling stations will be needed for the 13 million zero and low-emission vehicles expected on European roads. This compares to a network of c. 140k of charging stations



and 975k low-emission vehicles at the end of 2019. In a nutshell, on the one hand, the Green Deal will support the sector and save jobs as car-makers have to cope with stricter emission regulations; but on the other hand, demand is now set to be skewed toward low-emission vehicles (EVs & PHEVs) which typically have a dilutive effect on profitability, compared to Internal combustion engines (ICEs).

We expect to see more and more automakers to tap the green bond market as it could play a crucial role in financing the EV transition while helping OEMs to diversify their funding base. The EU has set a target for emissions of new passenger cars at 95g CO<sup>2</sup>/km by 2021, with further reductions of 15% and 37% by 2025 and 2030, respectively. The incentive to comply with these stringent targets is quite persuasive since OEMs could be forced to pay 95€ per car for every gram of CO<sup>2</sup> above the maximum threshold. This would represent up to €1.7b in fine in the case of a 5g miss for VW (or 7% of its 2019 adj EBITDA) given its scale and substantial exposure to the European car market.

The cornerstone of a Green Bond is the utilization of the proceeds which should provide clear environmental benefits. Green bonds can therefore support the sales and the development of production platform for numerous EV and other alternative or low-emissions vehicles as it falls in the "Clean Transportation" segment and is recognized as impactful by the 2018 Green Bond Principles (GBP). Similarly, green bonds could be used for financing charging infrastructure (e.g. Modular-Electrification Toolkit at VW) as well as plants dedicated to the production of EVs and Hybrids. In the wake of more stringent emission regulations resulting in a strong push towards EVs, we believe the need for massive investment in the production and recycling of battery packs (30% of the cost of an EV on average €8,000) will further support the issuance of green bonds.

Only two weeks after Daimler, VW entered the green-bond market in 2020 as both carmakers aim to introduce many new electric car models over the next ten years. More specifically, Volkswagen plans to develop no less than 75 Electric Vehicles by 2029, according to its green-finance framework, published in March. While both carmakers' image remains affected by the diesel-emissions cheating scandals, recent demand for their offering shows that investors' appetite for green bonds remains strong. Volkswagen €2bn offering, which received bids above €11bn, priced on average 14.7 basis points tighter than its conventional curve, according to Bloomberg's valuation. The German carmaker will save almost €3bn a year in borrowing costs due to lower interest payments from the green-bond deal, representing another incentive to tap environmental funds.

All in all, while we believe that the strong appetite for green bonds will continue to support the funding of upcoming EV projects, the gradual shift away from ICE powertrain will be lengthy and costly for automakers. With electric cars representing only 3% of 2019 global passenger vehicles, the volume of EV sales remains too low to be profitable. Also, a large proportion of carmakers and suppliers entered the COVID-19 crisis with relatively stretched profitability figures amid plateauing volume in mature markets (EU & US). Therefore, we remain cautious on issuers such as which

have been hit by a raft of adverse rating actions since the beginning of the year, mainly driven by depressed profitability as well as company-specific issues.<sup>10</sup>

<sup>10</sup> The statements presented in this document represent the opinion of Generali Insurance Asset Management S.p.A. Società di gestione (GIAM) del risparmio at the date when this document is published. The opinion of

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