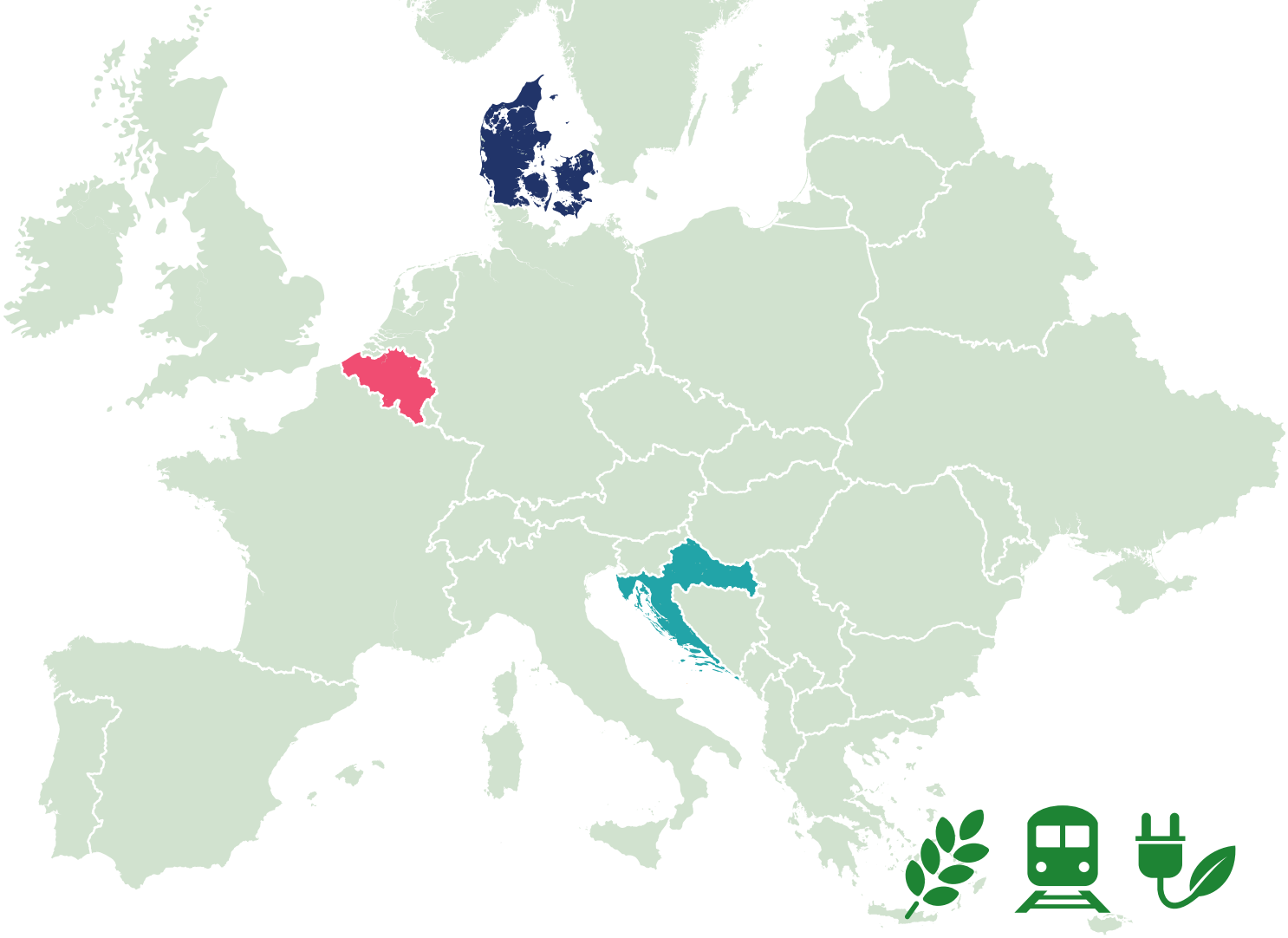
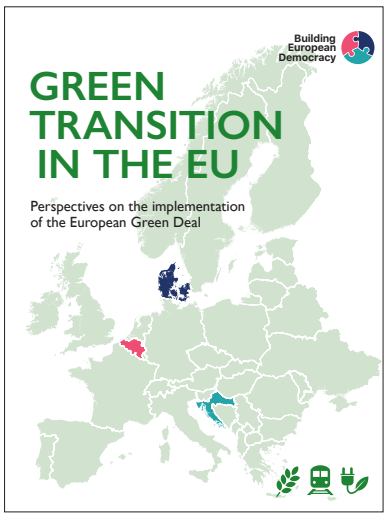
Building European Democracy

GREEN TRANSITION IN THE EU

Perspectives on the implementation of the European Green Deal





Building European Democracy

Building European Democracy is a cooperation between the Danish organisation Democracy in Europe Organisation, the Croatian organisation Crosol and the Belgian organisation Europahuis Ryckevelde working together to strengthen the EU debate between 2022 and 2024.

The partnership is grateful for the support of the contributing organisations who inspired and informed this e-book. A special thanks to all the persons who were interviewed in Denmark, Croatia and Belgium and who gave their perspectives on the green transition of the EU.

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Foreword

The purpose of this e-book is to have a look at how the EU, national politics, and civil society are intertwined in the challenge of changing the course of climate change in the EU. By presenting the targets and visions from the EU level, we will provide an insight into how and why policies directed at mitigating climate change are developed. We will go deeper into EU member states' concrete attempts at fulfilling the green transition and how it varies from country to country.

This e-book includes three specific sub-themes within the Green Deal: transport, agro-food systems and energy. These constitute the most significant areas of GHG emissions in the EU and therefore represent the most important sectors when it comes to the green transition of the European Union.

The following chapters will be divided into three national perspectives in which we will explore the translations and implementations of the EU strategy. Denmark, Croatia and Belgium were picked as they represent EU members with different histories, opportunities and challenges regarding the green transition.

Denmark has for years been seen as one of the green frontrunners among EU member states representing high ambitions and a highly developed green energy industry. Ambitions are good but not enough in itself and when it comes to the actual implementation of the green strategies, Denmark faces many of the same obstacles as other EU member states.

As one of the founding members of the EEC, which later became the EU, Belgium is at the core of the European community. When it comes to the green transition, Belgium however faces several challenges as it consists of three communities, three regions and a federal level with different competences regarding the green transition. As a union within itself, Belgium has a lot of work in finding solutions within its own federal borders. Due to the complex division of competence, a large part of the Belgian chapter will keep a focus on the regional level. In this case the Flemish region as the participating organisation is placed in Flanders.

As the newest member of the EU, Croatia may face other difficulties achieving the climate goals of the European Union. The country is amongst others challenged by infrastructure and technology, economic considerations, historical legacy, institutional and regulatory frameworks, and public awareness and engagement. Despite these challenges, Croatia, like the rest of the EU members, will have to find a way of achieving its climate obligations given by the European Union within the following years.

The e-book also includes interviews with citizens who experience the challenges of the green transition in different ways. Lastly, the e-book will provide exercises which shows that climate change can be debated and dealt with on all levels of society and requires action from all citizens within the European Union.

The green transition of the European Union

Credit: EC - Audiovisual Service

"This is a very special day," Ursula von der Leyen started her speech on the 11th of December 2019 in front of two EU flags at the EU Commission headquarter in Brussels. What made this Wednesday special according to the newly appointed president was the launch of the European Green Deal. A plan with the ambition of making the EU climate neutral in 2050 through a common political framework translated and implemented in the 27 different national contexts.

The plan was officially adopted in 2020 and during the following years a range of additional initiatives was launched. In July 2021, the EU Commission presented a plan called Fit for 55 with additional objectives to reduce greenhouse gas emissions by at least 55 percent by 2030, compared to 1990. Fit for 55 also aims at securing 40% renewable energy in the energy mix by 2030, as well as accelerating energy efficiency in buildings, industries and the transport sector from 32% to 39% in 2030.

To understand the European Green Deal it is beneficial to know the history of climate politics within the EU. During the years, a long list of initiatives have been launched in order to bring down greenhouse gas emissions - with varying success. In the following sections we will present some of the overall programmes as well as specific ones for the energy, transport and agricultural sectors.

The Emissions Trading System

One of the longer existing programmes trying to push the green transition is the so-called EU Emissions Trading System (ETS) which has been active since 2005. ETS is designed as a market for buying and selling GHG emission permits granted for certain industries. The idea is to provide incentives for companies to reduce emissions in the most cost-effective manner.

During the years, the ETS has been criticised for several reasons. In the beginning, free permits for certain industries were granted on a large scale causing little incentives for reducing emissions. The prices of the permits were for a long time too low to make a difference. In recent years, efforts have been made to fix the problems and increase the price of greenhouse gas emission. For instance by decreasing the amount of free permits. Eventually, the ETS has successfully brought down emissions from power generation and energy-intensive industries by 42.8% between 2005 and 2021, according to the EU Commission.

At the launch of ETS, only energy-intensive industrial sectors as well as power and heat generation were included in the system. In 2012, it was extended to the airline industry within the European Economic Area (EEA). As a part of the Fit for 55-package, the EU Commission has proposed to include emissions from maritime transport as well.

Regulation of non ETS sectors

While energy supply is widely covered by ETS, the transport and agricultural sectors are not. In 2018, the so-called Effort Sharing Regulation (ESR) was adopted by the EU which sets national targets for emission reductions for sectors not included in the ETS. These include road transport, heating of buildings, agriculture, small industrial installations and waste management - all accounting for about 60% of EU greenhouse gas emissions.

In November 2022, negotiators reached an agreement on regulations of these non ETS sectors in which member states now will have to cut emissions by 40 percent in 2030 compared to 2005 levels. An increase of 11 percentage points compared to the previous target of a 29 percent emission reduction.

As a part of the Effort Sharing Regulation, all EU countries are given different national targets to cut emissions in the sectors covered by the plan. These targets are set between -10 and -50 percent reduction. Member states with higher GDP per capita get higher reduction targets.

Up to 25% of unused emission quotas from one year can be saved to subsequent years until 2030. At the same time, if emissions one year exceed the national quota, a member state can "borrow" allocations from the following year. The EU countries will also be able to buy and sell emission quotas between each other.

Besides being covered by ESR, the road transport and buildings sectors will also be included in a new separate emissions trading system.

Green funding

Another way of pushing the green transition forward is the inclusion of climate relevance in the various EU funding systems. One of the newer ones is the framework called NextGenerationEU launched following the covid pandemic to make the EU members stronger and more resilient in different ways.

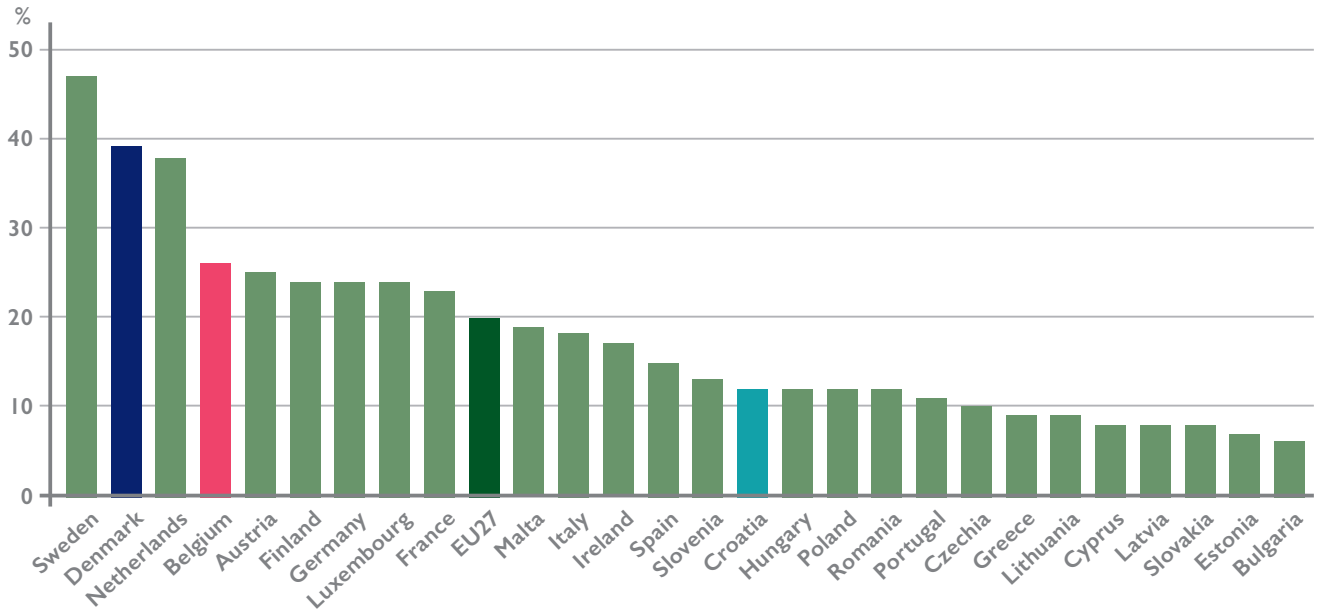
In July 2020, a recovery plan of 723.8 billion euro mobilised between 2021-2023 was launched. As a part of the plan, at least 37% of the spending had to be used on green investments. Therefore, in order to receive the support, member states needed to submit national Recovery and Resilience Plans explaining how they intended to contribute to the green agenda. All grants and plans were since published through the official webpage.

Another fund being used for the green transition is the European Regional Development Fund (ERDF). It was created in 1975 with the purpose of strengthening economic, social and territorial cohesion by reducing imbalances between different regions. For instance remote locations or sparsely populated areas within the member states. The budget of 2021-27 is 392 billion euro, of which at least 30% will support investments to make regions "greener, low-carbon and resilient".

Subsidies for the green transition

Free market economy has since the foundation been an essential part of what would later become the European Union. The EU Commission is highly aware of potential state aid within member states which can dilute the purposes of the internal market with free trade and

The environment and climate change as one of the two most important issues facing the EU at the moment.



Source: Eurobarometer, Februar 2023

competition between industries across member borders.

In March 2023, the EU Commission however decided to loosen the state aid rules until the end of 2025 regarding green investments through the so-called Temporary Crisis and Transition Framework. The policy is partly a response to the intense green substitutes in the USA which will also affect the green industry within the EU. The proposal will allow member states to provide subsidies for their own industries when investing in the green transition and to use existing EU funds for these investments. Furthermore, the EU Commission wants to speed up permissions for green technology companies to build production facilities for renewable energy within the EU.

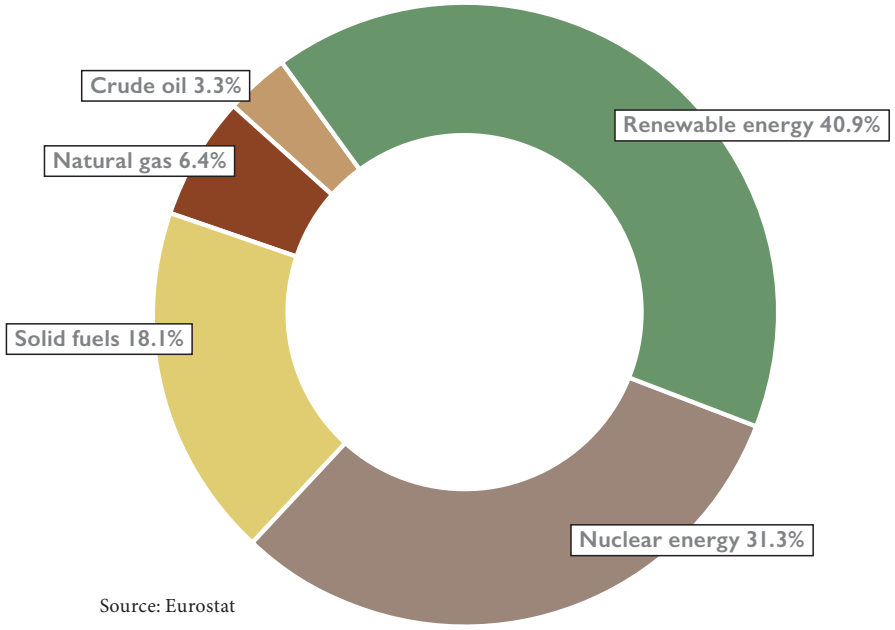
EU citizens' opinion on the green transition

According to the latest Eurobarometer survey from February 2023, 20% of EU citizens consider the environment and climate as one of the two most important issues facing the EU at the moment. It is surpassed by rising prices/inflation/cost of living (32%), the international situation (28%), and energy supply (26%).

The environment and climate change only ranks first in Sweden (47%) and Denmark (39%), while it ranks second in the Netherlands (38%), Austria (25%) and Luxembourg (24%), and third in Belgium (26%), Finland (24%) and France (23%).

Despite the relatively low concerns about the climate, 86% of EU citizens agree that the EU should support the green transition by investing massively in renewable energies. 85% are convinced that increasing energy efficiency of buildings, transport and goods will make the member countries less dependent on energy producers outside the EU.

Share of primary energy production in the EU, by energy source in %, 2021



Source: Eurostat

ENERGY

Energy is important for our daily lives and enables everyday activities such as turning on the lights, cooking, heating or cooling our homes, and using our mobile phones, computers and the internet. However, energy can also have significant environmental impacts when based on fossil fuels contributing to climate change. Therefore, understanding and managing our energy use is essential for ensuring a sustainable future for ourselves and future generations. The green transition of the energy sector is essential for the overall transition as the decarbonisation of buildings, industry and transport sectors is relying on massive growth in available green electricity.

Energy production and consumption accounts for over 75% of the total greenhouse gas emissions in the EU and is responsible for the largest share of emissions. The transition to sustainable energy as well as energy savings therefore plays a central role in the EU's effort to fulfil its climate goals. The energy supply sector is the largest of the sectors covered under the EU Emissions Trading System (ETS). It includes power and heat production, oil and gas extraction and refining and coal mining. Energy is consumed by different sectors such as households, transport, industry, services and agriculture & forestry.

The sectors consuming most energy in the EU in 2019 were the transport sector (30% of final energy consumption), the industry sector (27%), households (26%), services (13%) and agriculture (3%). The EU produces 42% of its own energy of which 40% is renewable and 30% is nuclear. Two thirds of the imported energy in the EU is petroleum products, mostly crude oil, followed by natural gas (27%) and solid fossil fuels such as coal (5%). Total share of renewable sources is estimated to be about 22% in 2021. Between 2005 and 2020, the share of renewable sources in electricity consumed in the EU grew from 16% to estimated 38%.

Taxonomy for sustainable activities

One way of pushing the green energy transition is to establish what can be labelled as green. The EU Commission has launched a so-called "Taxonomy for sustainable activities" with the purpose of attracting pri-

vate investments to the green transition. The taxonomy provides companies, investors and policymakers with definitions for investments that can be considered environmentally sustainable.

Reaching an agreement on these definitions became quite a struggle as different member states were pulling in different directions depending on their national interests. Therefore, according to critics, the taxonomy ended up somewhat diluted. For instance, the EU Commission ended up proposing to include natural gas in the taxonomy - as long as it contributes to a reduction of emissions from existing energy production. Natural gas makes up approximately 40% of the share for heating in the EU. Since it emits 50% less GHG than coal, it is suggested to play a role in the green transition as a "transitional fuel". However, as a fossil fuel primarily consisting of methane with heavy contribution to climate change, natural gas should never be labelled as a sustainable investment, according to critics.

The plans of a green transition reliant on a steady gas import came to a halt after the Russian invasion of Ukraine with related disruptions of gas supplies. As a response, the EU Commission decided to phase out gas by 2/3 from Russian pipelines by 2023 and completely end imports of fossil fuels from Russia by 2027. Instead, import of natural gas from other countries was increased as well as the use of liquefied natural gas (so called LNG-terminals) which can be transported by ship.

REPowerEU

In May 2022, the policy package REPowerEU was launched with a total budget towards 2030 of 310 billion euro. By 2030 the amount of renewable energy should be at minimum 45% and energy consumption reduced by 15%, according to the plan. The main pillars of the plan are to save energy, diversify suppliers, and to quickly substitute fossil fuels for other forms of energy by accelerating the clean energy transition.

While the disruption of the gas distribution creates a risk of short-term setbacks, REPowerEU also puts forward investments in renewable and green energy. The EU is planning to double its solar capacity by 2025 and require solar rooftops for commercial and residential buildings by 2027 and 2029 as well as more than doubling energy from wind power by 2030. Hydrogen plants are also being planned, and though the technology is still young, by 2030 there should be in total 20 million tons of self-produced and imported hydrogen for consumption.

Since 2005, the share of renewable energy in the final energy consumption has grown by an average 0.8 percentage points per year. According to The European Environment Agency, this would have to increase to 2.5 percentage points per year towards 2030 in order to meet the 45% renewable energy target from REPowerEU.

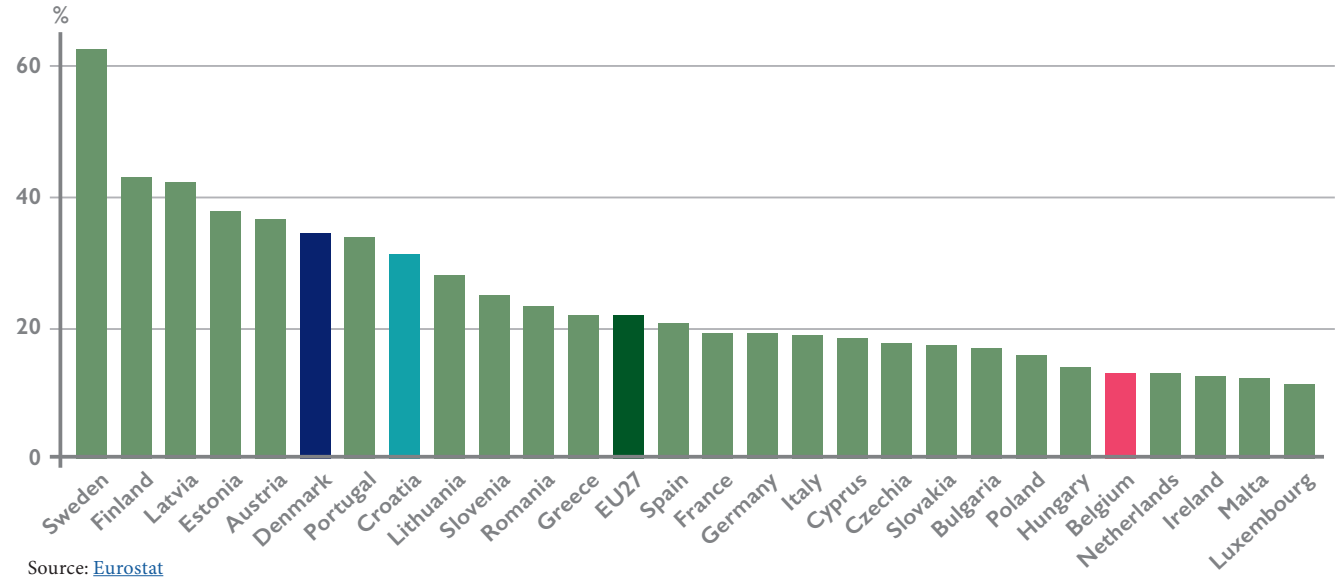
Focusing on a transition to green energy is not enough to reach the climate goals as the production will not be able to meet the growing energy demands in the near future. Therefore, energy savings will also have to increase substantially over the coming years. The 2030 target of REPower EU requires more than a doubling of annual energy savings in the period 2022-2030.

Controversial biomass

In March 2023, EU institutions and member states landed a compromise of a legally-binding target to raise the share of renewable energy in the EU's overall energy consumption to 42.5% by 2030. The renewable energy directive had been 18 months under way with countries fighting for reduction rates between 40 and 45%.

A central fight in these negotiations has been the controversial use of biomass as an energy source. The enormous amounts of wood, of which a lot are taken directly from the forests and burned to provide electricity and heat, today count as renewable energy even though in reality it emits CO_2 directly into the atmosphere. Experts have warned that the EU's increased targets for renewable energy may lead to increased burning of wood. Biomass is heavily subsidized in the EU

Share of energy from renewable sources in %, 2021



Source: Eurostat

and for some countries burning wood will be a cheaper and more accessible solution than building wind or solar farms.

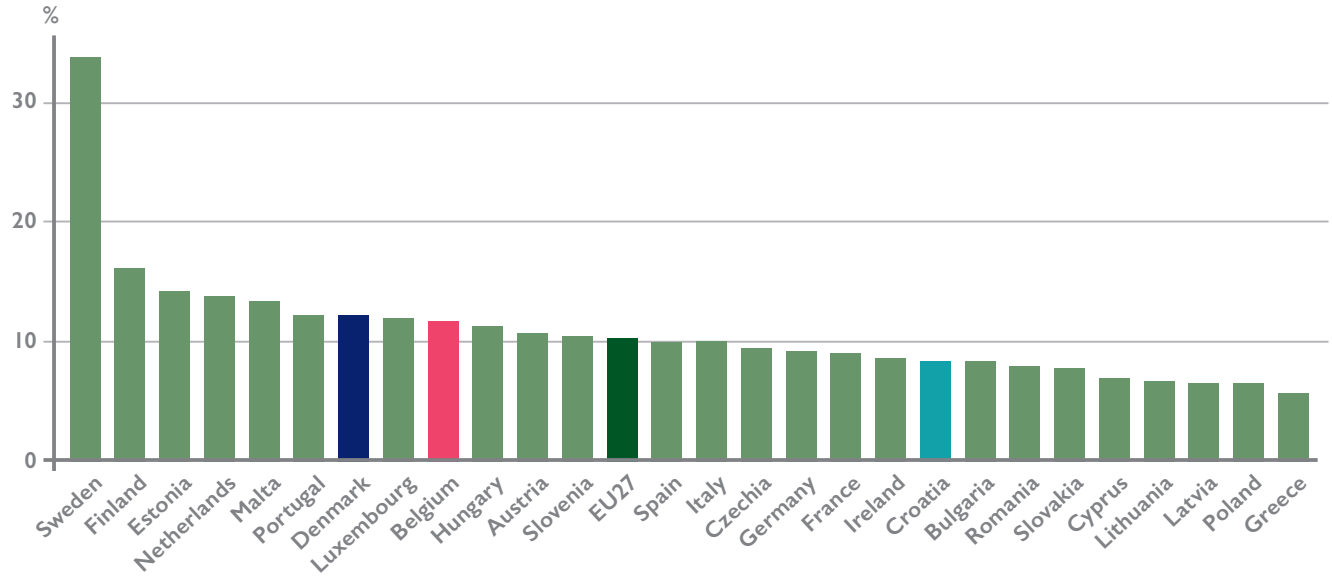
Therefore, the EU Parliament proposed that only some forms of biomass could count as renewable energy in the future. They did however not succeed. Even though requirements for the use of biomass will be tightened, the countries can still continue to burn so-called primary biomass from forests as renewable energy.

EEA suggestions

The new energy targets put pressure on the ambitions in the national energy and climate plans (NECPs) which member states are required to make. By mid-2023, member states will have to submit draft updates on these plans and final updates in 2024.

The European Environment Agency (EEA) has listed a range of concrete targets necessary in order to reach the green transition of the energy sector. Amongst others, it is essential that all EU countries improve energy efficiency, reduce energy use from all sources and accelerate the introduction of renewable sources for electricity generation. Additionally the EU needs to support the decarbonisation of other sectors by electrification with renewable energy. For heating, industrial transformation, cooling and transport purposes, the use of renewable energy sources will also need to increase substantially, according to EEA. As shown in the table above, there are big differences in the share of renewable energy between the member states.

Share of energy from renewable sources in transport in %, 2021



Source: Eurostat

TRANSPORT

Transport is a part of many people's daily lives. From the daily transport to work, visiting family and friends and going on vacation, to the fundamental role it plays for the global supply chains for the goods in our stores and industrial production. While transport matters to many people in different situations, it does not come without consequences for society. Among the costs are greenhouse gas emissions, air and water pollution, traffic noise and biodiversity loss.

Transport is responsible for about a quarter of the EU's greenhouse gas emissions. Although efforts have already been made to decrease the climate impact of transport, the greenhouse gas emissions from the sector have increased by 33.5% between 1990 and 2019. Within the sector, road transport is by far the largest greenhouse gas emitter by an emission of 71%. Aviation accounts for 14.4% of emissions, ships for 13.5% and trains for 0.5%.

The main factor in driving emissions upwards is a growing need for transport. Between 2000 and 2019, land-based passenger transport increased by 16.6% and inland freight transport by 22%. The inland freight transport is forecasted to rise by 31% in 2030 compared with 2015, and an increase of 55% by 2050, according to the European Environment Agency.

The European Green Deal states that a 90% reduction in GHG emissions from transport by 2050 compared to 1990 is necessary to achieve climate neutrality for the economy as a whole. However, in June 2022, The European Environment Agency projected that with existing policy measures, transport emissions would only decrease by 22% in 2050 compared with 1990.

Sustainable and Smart Mobility Strategy

In 2020, the EU Commission presented a "Sustainable and Smart Mobility Strategy" and a related Action Plan of 82 initiatives.

The objectives are:

By 2030:
1. At least 30 million zero-emission vehicles will be in operation on EU roads.
2. 100 EU cities will be climate neutral.
3. High-speed rail traffic should double.
4. Scheduled public travel of under 500 km should be GHG neutral within the EU.
5. Automated mobility will be deployed at a large scale.
6. Zero-emission vessels at sea will become ready for market.

By 2050:
1. Nearly all cars, vans, buses as well as new heavy-duty vehicles will be zero-emission.
2. Rail freight traffic will double.
3. High-speed rail traffic will triple.
4. The multimodal Trans-European Transport Network (TEN-T) equipped for sustainable and smart transport with high-speed connectivity will be operational for the comprehensive network.

Another goal is that zero-emission aircraft will become ready for market by 2035. Transport is also included in the Fit for 55 packages, focusing on alternative fuels for all vehicles, the aviation sector, and maritime transport.

Alternative fuels in the transport sector

Renewable energy sources only accounted for estimated 10.2% of the transport sector's gross final energy consumption in 2021. Most of the energy used in the transport sector relies on oil, and the EU imports approximately 87% of its crude oil products from abroad. According to the EU Commission, clean energy in the transport sector faces three main barriers: 1) high costs of vehicles, 2) low level of consumer acceptance, and 3) lack of recharging and refuelling stations.

The EU Commission has pushed for legislative policy agendas for member states that require a larger investment into four energy sources: 1) electricity, 2) liquefied natural gas (LNG), 3) compressed natural gas (CNG), and 4) hydrogen to make the transport sector more sustainable.

Emission free engines

Energy efficiency is one of the main factors in reducing emissions in the transport sector. This includes improvements of combustion engines which is already the main reason for why the GHG emissions have not been even higher despite increased transport activities. However, at some point fossil fuel engines will have to be fully eliminated.

Therefore, in March 2023, the EU decided for a ban on sale of new petrol and diesel cars in the European Union from 2035. The law will also set a 55% cut in GHG emissions for new cars sold from 2030 versus 2021 levels which is a raise from the previous target of 37.5%.

Another solution suggested by the European Environment Agency is to focus on modal shifts to the less GHG-emitting transport modes. The climate impacts of a passenger-kilometre travelled by car are currently substantially higher than those of public transport and not least active travel modes such as walking and cycling.

Credit: Freepik.com

THE AGRI-FOOD SYSTEM

Agriculture plays an essential role in our everyday lives providing the raw ingredients of the food we eat and materials for many of the products we use. The agri-food system is more than just agriculture and covers everything from design and production phases to consumption and waste management. The agri-food sector is however also a large contributor to negative consequences on the climate and environment. According to the European Environment Agency, about 11% of greenhouse gas emissions in the EU come from agriculture and 70% of those come directly from livestock agriculture. The main sources of agricultural GHG emissions are:

- Methane and nitrous oxide (N_2O) from livestock
- N_2O from agricultural soils
- CO_2 from energy combustion (off-road vehicles, fishing boats, greenhouses)
- CO_2 from land use and land use changes in cropland and grassland.

While total greenhouse gas (GHG) emissions in the EU have fallen by a third since 1990, reducing emissions in the agriculture sector has been a slower process stagnating since 2005. Existing policies and measures across the EU indicate nearly no emission reductions in agriculture by 2030, with additional policies and measures expected to have only a minor effect. Based on the EU countries' current policies and measures, only a 1.5% decrease of GHG reduction is expected between 2020 and 2040.

The increase in agricultural production significantly drives the overall emission levels of the sector. Despite reductions in the emission intensity of production for some products per unit at EU level, emissions have remained relatively stable over the last couple of decades. For instance, between 2000 and 2019, the level of enteric fermentation per litre of milk produced declined by 17%. However, increased milk production has caused the overall emission levels to increase.

As shown in the table below, there are big differences in the development of emissions within the agricultural sector between the member states.

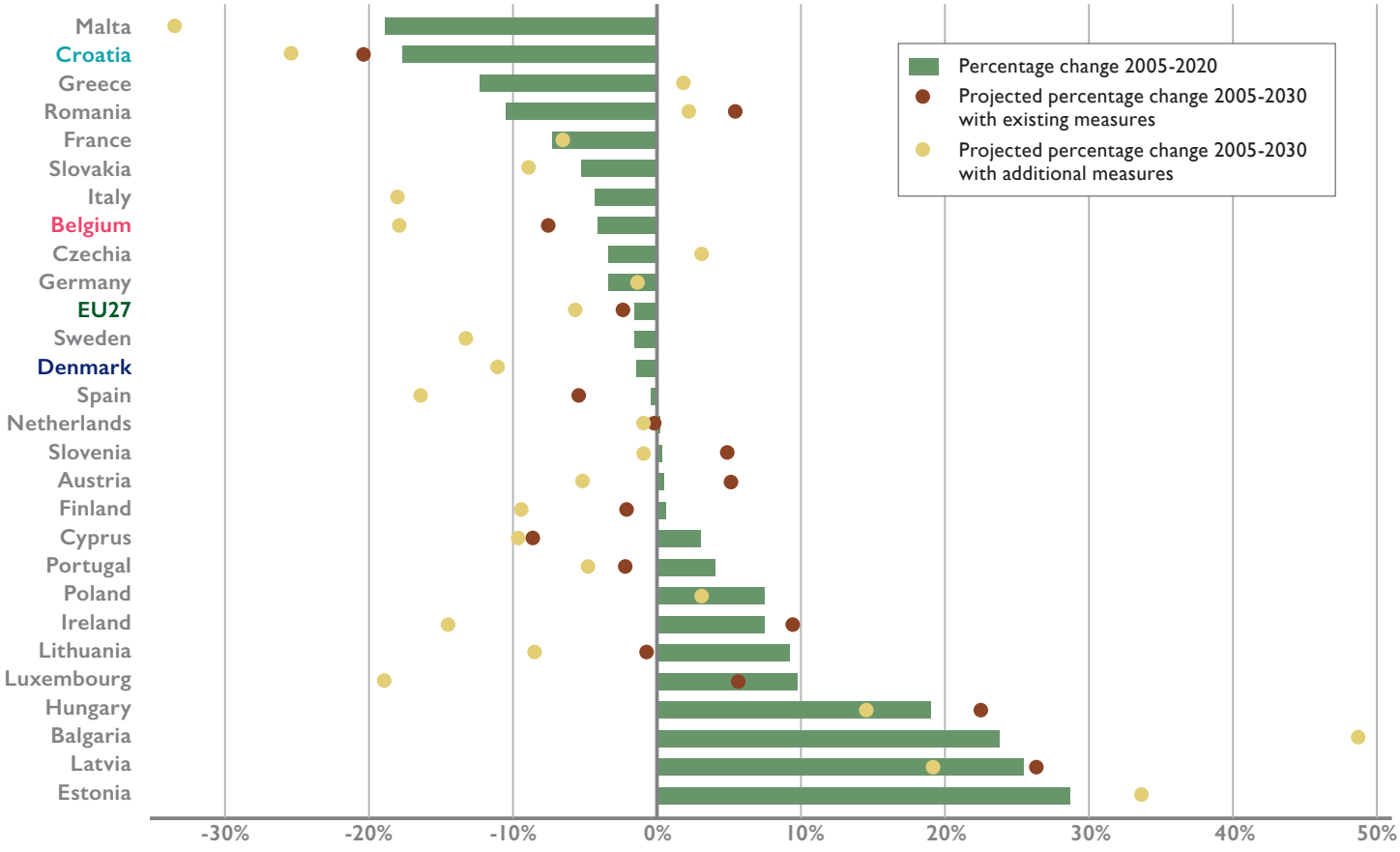
The Common Agricultural Policy

Agricultural policy has always played a major role in the European Union and its preceding constellations. Since 1962, the Common Agricultural Policy (CAP) has provided subsidies for farmers and food production in the member states. The CAP budget accounts for about a third of the total EU budget.

During the years, CAP has been criticised for several reasons. One of them related to the negative climate impact of farming activities financially supported by the EU. The EU Commission has tried to meet the criticism in several ways. For instance, in the 2014-2020 CAP budget spending, a quarter was earmarked for tackling climate change. However, despite the effort, the CAP 2014-2020 did not significantly reduce greenhouse gas emissions of the agri-food sector, according to The European Court of Auditors.

As a part of the European Green Deal, a reform of CAP has been formally adopted to take effect from 2023. According to this, at least 40% of the CAP budget has to be climate-relevant by 2028. As a result, each EU country will have to identify their strengths, weaknesses, opportunities and threats (a so-called SWOT-analysis) related to their territory and agricultural sector. From this the member states will have to make action plans for how to contribute to the European Green Deal targets. In the future, every updated national CAP strategy plan will have to be more climate ambitious than the previous one.

Agricultural emissions and projected emissions by EU Member State



Source: EEA

This figure shows the change in agricultural emissions in all the EU member states between 2005 and 2020 and the projections of the emissions until 2030.

Strategy for the agri-food system

As a part of the European Green Deal, the EU Commission has made a strategy for the agri-food sector for handling and mitigating climate changes. The overall goals are to 1) ensure food security in the face of climate change and biodiversity loss, 2) to reduce the environmental and climate footprint of the EU food system, 3) to strengthen the EU's food system's resilience, 4) to lead a global transition towards a competitive sustainability, and finally 5) to contribute to bringing the EU to climate neutrality in 2050.

In 2020, the EU Commission proposed the initiative Farm2Fork to be the most impactful initiative on the green transition in the agricultural sector. The Farm2Fork strategy aims to accelerate the EU's transition to a sustainable food system and keep the food industries accountable for contributing to a climate neutral union in 2050.

The overall strategic goals of the Farm2Fork strategy include a neutral or positive environmental impact from the agri-food sector; slowing down the processes of climate change and adapting to its impacts, and reversing the loss of biodiversity. Other initiatives are targets and plans for food waste reduction. According to Eurostat, 20% of food production is wasted within the European Union. At the same time, 33 million EU citizens cannot afford a quality meal every second day.

Increasing emissions in the European Union

Following a period of falling greenhouse gas emissions due to covid-19 lockdowns, the economic recovery has led to an increase in emissions, according to a 2022 report from the European Environment Agency. Especially in the transport, industry and energy supply sectors. In 2022, the EEA stated that despite substantial progress, the current policies and measures of the member states were not sufficient to meet the climate and energy targets. To reach the 2030 target of 55% GHG reductions, all sectors need to significantly step up their efforts in mitigating greenhouse gas emissions.

The EU Commission has provided concrete examples of measures that member states could take to reduce emissions and achieve their targets. For instance by promoting public transport, retrofitting buildings, more efficient heating and cooling systems, and more climate-friendly agricultural practices. By mid-2023, all member states will have to submit updates of their national energy and climate plans for the period up to 2030. These will have to reflect the EU ambitions and the goal of climate neutrality.

In the following chapters we will take a look at the status of the green transition in three of the 27 EU member states: Denmark, Belgium and Croatia.

Credit: Freepik.com

Climate perspectives from Denmark

"We have a deal!!" Former climate minister Dan Jørgensen wrote with great enthusiasm on Twitter in 2019 posting a selfie with colleagues from the political opposition. The occasion was a new climate agreement which managed to get support from a majority of party members from a broad political spectrum of the Danish parliament.

The following year, the climate law was officially adopted which made it legally binding and committed Denmark to reach its targets: A reduction of greenhouse gas emissions by 70% compared to 1990 by 2030, and becoming climate neutral in 2050.

In addition to the Danish climate law, a climate council was set up to watch over the political development of the climate policy. Each year, the climate council presents a report on the effort to reduce GHG-emissions and reach climate neutrality.

Credit: Twitter.

"We have a deal!! #climate law".

Climate change in Denmark

Like most countries in the world, Denmark is experiencing more dramatic weather due to climate change. Data from 1991-2020 show that the Danish climate has changed considerably over the last 30 years. The damage from climate change and the threat to people's lives have become more visible in recent years. Denmark already experiences more heavy rain which causes problems for homes and infrastructure and contributes to flooding. There has been an increase in rainfall by 47 mm per year compared to the period between 1961-1990.

In the future, the weather in Denmark will generally become more extreme. The kind of severe storms, which Denmark previously would only experience every twenty years, will likely become an annual event. Storms like "Malik" in January 2022, which was the worst storm in six years, will most likely become "normal".

Rising sea levels will become another problem as Denmark is a very low-level country. Denmark furthermore has a very long coastline which makes initiatives to mitigate the impact of this very expensive. Denmark will also experience more frequent heatwaves such as the summer of 2022. Here, Denmark experienced the highest temperature ever measured in the country of 35,6°C.

Over the past 30 years, the temperature in Denmark has risen by an average of 1.5 degrees compared to pre-industrial time. In the past 10 years, the temperature has been 2.0 degrees higher and in the past five years 2.2 degrees.

The increase in temperature is actually expected to make it easier to grow certain vegetables in Denmark. However, a warmer climate can also cause an increase in pests as well as plant and livestock diseases. Furthermore, it will impact biodiversity as a lot of plants and animals will disappear while invasive species are going to take over.

Public climate debate in Denmark

Credit: Jonas Drotner Mouritsen

The general election in Denmark in 2019 changed the importance of climate change in the Danish political environment. Both during the election campaign and after the election, it became known as a climate election. Questions of climate change and Denmark's role in a changing global environment became the main worry for many voters and almost all political parties began adopting 'green' profiles. Before the election in 2019, 60% of the voters said that the most important issue they cared about was climate change. That is the largest number before any election in Denmark. Among the reasons for the climate focus were extreme weather events worldwide as well as the release of serious reports from the UN warning against climate hesitation.

While Denmark is in the global top (number 15) regarding GHG emissions per capita, 50% of the Danish citizens are positive towards bringing down the emissions through national reduction targets. In general, citizens are positive towards renewable energy initiatives. However, some voices in the public debate are in strong opposition to certain installations on land due to noise and nature disturbance. This has shown to be an issue when Danish authorities have wanted to establish and develop wind turbine parks. As climate change has become a highly important issue the public opposition towards wind turbines is falling.

Another discussion in Denmark is about the responsibility of the green transition. Whether it should mainly be handled structurally by political investments in technology while the citizens can keep the same living standards. Or to what extent individual citizens should take action and make changes in their own climate impact. 63% of Danish citizens consider individual changes to be necessary, while 11% consider letting technology solve the issue to be the only solution.

Other issues on the agenda

In the latest Danish parliament election in 2022, the number of citizens saying that the climate was the most important issue had fallen to 22%. The most important reason for this was the Russian invasion of Ukraine which sparked a large debate about security issues dominating the public debate.

Despite the war in Ukraine, the covid-19 pandemic, inflation, and the energy crisis, climate change remained an important issue for the Danish voters before the election. In November 2022, 88% still considered climate change to be a serious issue. Along with this, 66% stated that it would be crucial for their own vote in the election how well the political parties manage to deal with climate change issues.

There was a continuous majority (51%) of citizens supporting the introduction of a climate tax in 2022, while only 20% were against it. There is also strong support for further public investments in the green transition with 67% for and only 13% against it.

Civil society

In Denmark there is a large civil society engagement in the green transition. There are several Danish green think tanks as well as movements such as the People's Climate March. In 2019, more than 40.000 Danes marched the streets in order to ensure a focus on cli-

Credit: Jonas Drotner Mouritsen

mate in the subsequent governmental elections. The civil society groups are generally critical towards Danish climate politics for not being ambitious enough and pushing the problems to the next generation.

Industry

There are also strong interest groups within the private business sector. The largest interest organization for Danish companies in the renewables sector in Denmark is the Confederation of Danish Industry (DI). In their perspective, the green transition is a massive opportunity as Danish companies can provide the solutions needed to reach the national target. Furthermore, the green transition is a massive export opportunity for Danish companies which can create thousands of jobs. They are calling more ambitious political initiatives that for instance would make it easier to make public investments in the green transition.

Denmark already has a strong tradition for public private partnership with regards to green technologies. One example of such a partnership is the development of the wind turbine sector. Danish wind turbines are a big export success, and the company Vestas is a big player in the windmill sector globally. According to experts, the success of the Danish wind turbines sector was only made possible due to 20 years of state subsidizing of technological development in the beginning.

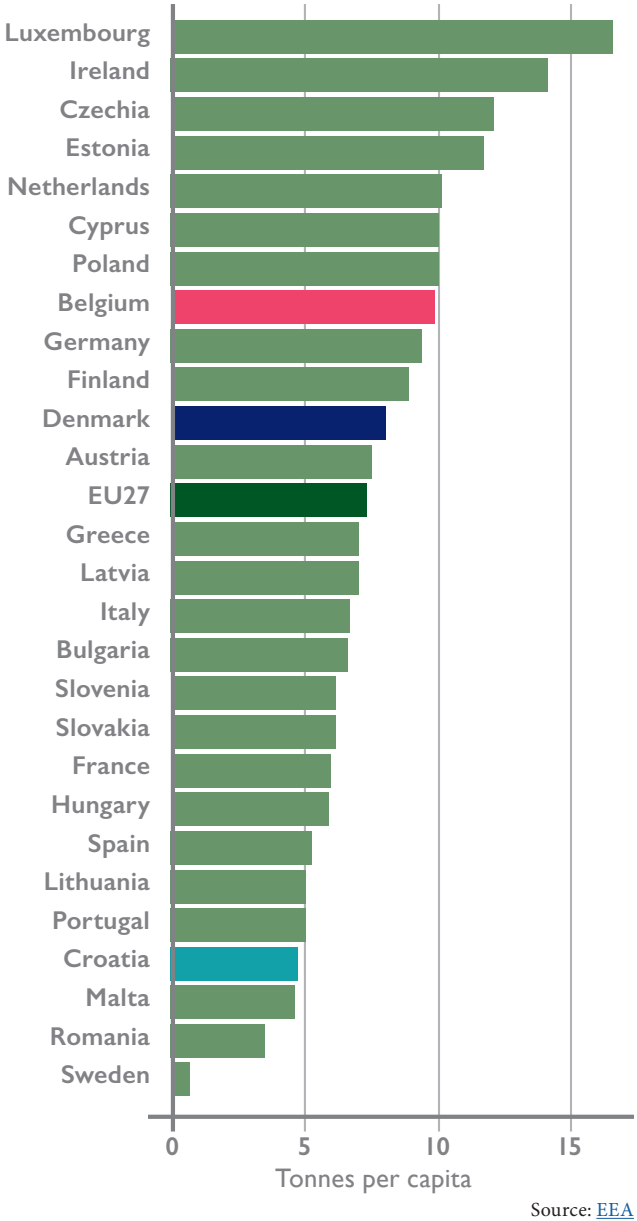
As you can read in the agriculture section, the lobby interests in this area are also strong which historically and still today makes it difficult to make sufficient changes in this field.

Danish contribution to climate change

As a small country of nearly 6 million people, the Danish total net greenhouse gas emissions is in the lower end of the EU. However, Denmark has high emissions per capita. In 2021, the number was 8.1 tonnes per capita.

Net greenhouse gas emissions, 2021

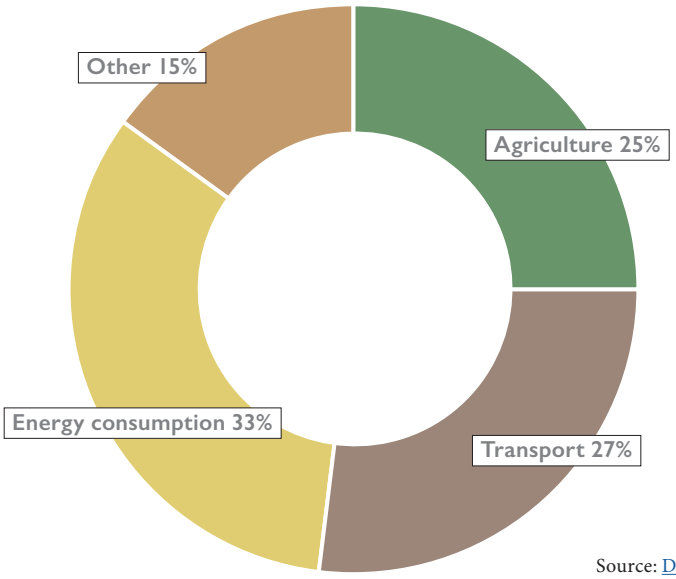
Total (excluding memo items, including international aviation)



Source: EEA

The total amount of emissions of greenhouse gasses within the borders of Denmark in 2021 was 44 million tonnes of CO^{2e}. The main contributors to greenhouse gas emissions in Denmark are the energy consumption which is responsible for 33%, transport which is responsible for 27%, and agriculture which is responsible for 25% of the total greenhouse gas emissions in 2020.

Total greenhouse gas emissions in Denmark by sector (2020)



Source: DST

According to a study by the consulting firm Oliver Wyman, Denmark was placed second of the EU countries in reducing emissions of greenhouse gasses in the period from 2008 to 2018, trailing closely behind the Netherlands.

Expectations from the EU

During EU negotiations regarding the goals of partial reductions by 2030, there was much disagreement between the member states. For instance the Višegrad countries wanted a less ambitious goal of 40% GHG reduction. In Denmark, the *Fit for 55 plan* has in large been positively welcomed and the government has proposed even loftier ambitions on reductions surpassing the EU targets.

The Danish climate law puts the EU goals into a Danish context and can be seen as Denmark's plan to accomplish the targets from the European Green Deal. While being on par with the European Union's goal of climate neutrality by 2050, the climate law adds an additional 15% of reduction to the Fit for 55 agenda: 70% by 2030 and a partial goal of 50-54% reduction of greenhouse gas emissions in 2025.

In September 2021, the Danish government decided to accelerate the green transition. All new climate initiatives must be in place by 2025 in order to reach the 70% reductions in GHG emissions no later than 2030. The deadline of 2025 is backed up by a policy roadmap consisting of a total of 24 green initiatives which will be put in place in the years between 2021 and 2025. The new Danish government as of 2022 has increased their ambitions so that the new goal is climate neutrality in 2045 instead of 2050.

As the EU climate legislation is in constant development, the Danish Council on Climate Change estimates that Denmark will still not live up to the EU's tightened reduction demands for non-quota sectors for area use and forest if continuing with the current policy. The non-quota section primarily covers GHG emissions from transport, residential heating, farming, garbage and minor industries. Another non-quota sector is LULUCF which covers changes in the amount of carbon stored in the earth, forest and other forms of vegetation. These sectors create an accumulated reduction need of around 18 million tonnes of CO_2e for the entire binding period of 2021-2030.

Therefore, if Denmark is to fulfill their reduction obligations to the EU, it is not sufficient to just fulfill the Danish climate goals for 2025 and 2030. Further reductions of at least six million tonnes of CO_2e are likely needed. According to experts, this could for instance be achieved by reductions in the agricultural sector, higher taxes on diesel or purchasing and annulment of emission quotas. The latter would however only be a short term solution and not contribute to Denmark's long term green transition.

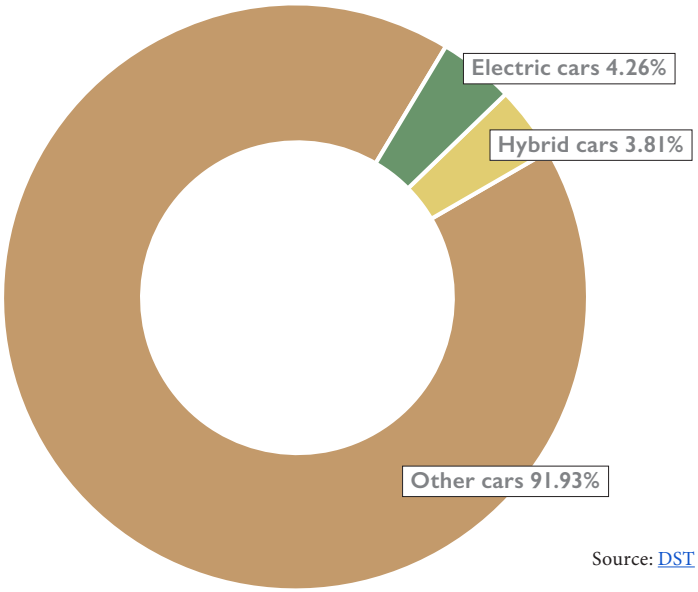
TRANSPORT

In 2020, the transport sector accounted for 27% of Denmark's total greenhouse gas emissions. The yearly emissions from the transport sector are around 13,5 million tonnes of CO^{2e}. Emissions in the transport sector only decreased by 0.2% since 2005.

Freight traffic emits approximately 1.7 million tonnes of CO^{2e} according to the Danish Council on Climate Change. The Danish government wants to promote electrification and development of green fuels for trucks in order to promote green freight traffic. In this way, Denmark would be able to continue transport of goods around Denmark without affecting the emission accounts. This however also requires electric charging stations for these vehicles.

The largest emitter in the transport sector within the Danish borders is road traffic, accounting for approximately 12.3 million tonnes CO^{2e}. This is largely because the number of private cars on the roads has not been reduced in the past decade and the transition to electric vehicles has been slow.

The stock of passenger cars - February 2023



Source: DST

Of the 2.8 million cars on the roads in Denmark in the beginning of 2023, 127,000 of the cars were electric vehicles, which is 65.4% more than a year ago. Even though this is more than double the number of cars in comparison to 2021 where Denmark only had 52,000 electric cars on the roads, electric cars only make up 4.26% of the total amount of cars in Denmark in 2023. This is a low number in comparison to the neighboring country Norway where electric vehicles accounted for 20.9% in the beginning of 2023.

A new climate agreement on road transport was introduced in December 2020, which includes a special tax reduction for electric cars and plug-in hybrids and a target of having one million 'green' cars on the roads by 2030. In the beginning of 2023, Denmark had almost 200,000 electric cars and plug-in hybrids on the roads. In that way, 20% of the 2030 vision has been achieved so far, although "green cars" only make up 8.07% of the total amount of cars in 2023. At the end of 2025, the Danish Energy Agency expects seven times as many electric cars compared to 2020.

Denmark has also focused on a greener transport sector with more green buses, electric car sharing and charging infrastructure for electric vehicles. Currently, Denmark is making an effort to speed up the rollout of charging stations. In June 2019, Denmark only had 2,500 public charging stations. In March 2023, over 600 new publicly accessible charging stations were set up and there are now 6,500 places to charge electric vehicles. Denmark also plans to test the so-called zero-emission zones where only electric and hydrogen cars will be allowed to drive. This will contribute to the goal of the capital city of Copenhagen to become climate neutral.

Freight traffic, shipping and aviation

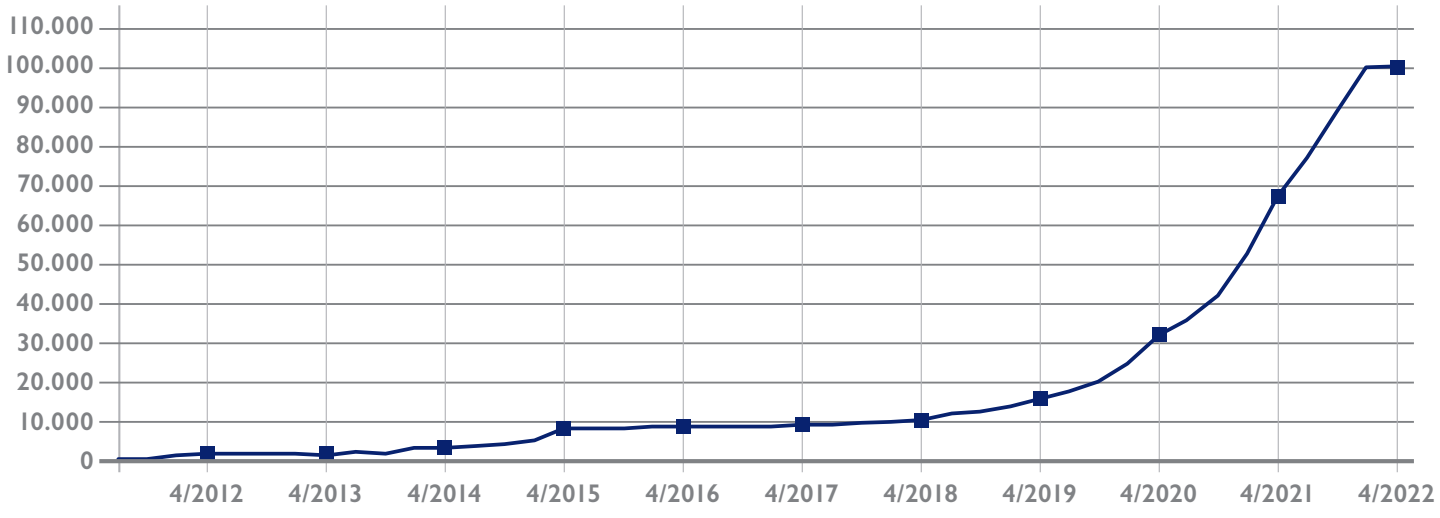
It is currently unclear whether Denmark with its current policy will be able to fulfill the EU obligations on the use of sustainable energy in the transport sector. The demands require the use of hydrogen and other advanced biofuels.

The government has introduced a new tax that will make it more expensive to drive petrol or diesel powered trucks on Danish roads from 2025. According to the climate council, the new agreement is expected to result in reductions of 0.3 million tonnes of CO^{2e} in 2025 and 0.4 in 2030.

To reach the remaining reductions, the Danish government wants to increase investments in fuels from renewable energy for sea transport as well as securing the green transition of the public transport sector. The government has also suggested introducing a passenger tax on flights of an average of 13.4 euros. The plan is that the tax revenue will support the green transition and make it possible to buy a green domestic flight ticket already by 2025 and make domestic aviation completely green by 2030.

Number of electric cars in Denmark

Source: FDM



AGRICULTURE

Agriculture, forestry and fishing are the industries that together emit the most in Denmark. Together the industries accounted for 35% of the total greenhouse gas emissions in 2021 and are expected to increase to 45% in 2030 according to projections.

In 2020, the agricultural sector alone accounted for 25% of the total greenhouse gas emissions in Denmark. The share has grown from 2012 due to reductions made in other sectors. About 90% of the greenhouse gas emissions stem from livestock, namely pigs and cattle. Furthermore, 50% of the total area of Denmark used for farming is used for production of foodstuff for cattle.

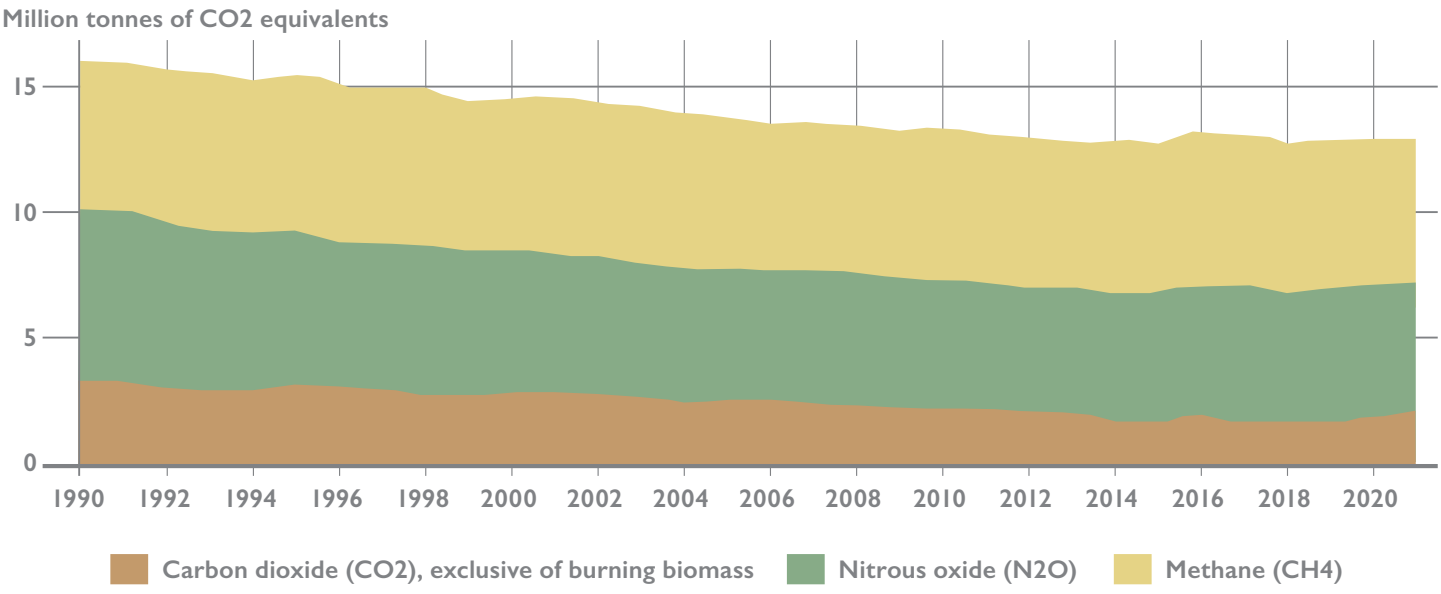
The agricultural sector in Denmark uses 60% of the country's territory, making Denmark the most cultivated country in the EU where the average amount of cultivated territory is 26%. GHG emissions in the agricultural sector were only reduced by 2% between 2005 and 2019.

According to critics, the stagnation is largely due to a powerful agricultural lobby in Denmark and a general hesitancy towards political intervention. The main argument against emission taxes is the fear of making Danish farmers uncompetitive as Denmark would be the only country in the world aside from New Zealand with such a tax. Agricultural production would then move to other countries where emissions might even increase. Therefore, interest groups often suggest such agricultural regulation to take place within an EU frame to make the conditions equal for all farmers.

The economic importance of agriculture is often used as another argument against regulation. According to experts, the output and employment numbers of the sector are almost negligible today compared to the heyday of the 1950's though. Currently 63,000 people, 2-3% of the workforce, are employed in the agricultural sector. While making up 20% of the Danish GDP in the 1950's, today the share is only 2-3%.

Emissions from agriculture

Source: DST



Political initiatives in agriculture

In 2021, Denmark ratified a new green transition law for the agricultural and forestry sector. This is another legally binding law that commits Denmark to cut 55-65% of greenhouse gas emissions by 2030 in the agricultural and forestry sector compared to 1990 levels. The law came after heavy criticism of the lack of concrete climate plans for the agricultural sector in spite of the large amount of emissions. The law comes with a budget of 456 million euros for enhancing the green transition in the agricultural and forestry sector through investing in better and greener technologies.

According to the plan, the agreement will contribute to a reduction of up to 7.4 million tonnes of greenhouse gas emissions towards 2030. Furthermore, the law will commit Denmark to reduce nitrogen emissions by 10,800 tonnes in 2027. Furthermore, 29.8 million euros is earmarked for research into methane reducing substances to livestock feed, better handling of slurry and manure as well as pyrolysis that can convert residual products from agriculture into fuel and biochar. Biochar can ensure that greenhouse gasses are stored in the ground and not released into the atmosphere.

33.4 million euros is set aside for the development of so-called business accounts which will make it possible to calculate and regulate greenhouse gas emissions on the individual farms. This can ensure more targeted and cost-effective regulation of agriculture and is linked to the work on a green tax reform.

An action plan for plant-based foods and a strategy for green proteins for animals and humans will also be developed according to the new green transition plan. The Fund for Plant-based Foods will contribute 10-11.5 million euros annually from 2022-2030. Furthermore, 77.8 million euros will be used to support the production of plant-based food. The strategy will also support development of green jobs in Danish agriculture and related industries taking advantage of the potential that lies in the green transformation of Danish agriculture.

Since then, the Danish government has also launched a plan to introduce an emission tax in the Danish agricultural sector. At first, an expert commission will be assigned in order to do research on how to create a tax that pushes the agricultural sector towards GHG reductions without losing jobs or jeopardizing the international competitiveness of the Danish agricultural sector. This expert commission is expected to publish their findings during 2023.

There are also examples of political initiatives for moving towards more climate friendly food consumption. For instance in Aarhus, the second largest city of Denmark, the municipality imposed a climate tax on some of the most climate-damaging goods which covered flights, telephones, petrol and beef. The tax was imposed in September 2022 and amongst others related to kitchens in public institutions. The tax means that the price of beef increased by 4.4 euros per kilo which quickly led to a consumption drop by 30-40 percent.

Credit: Lars Plougmann

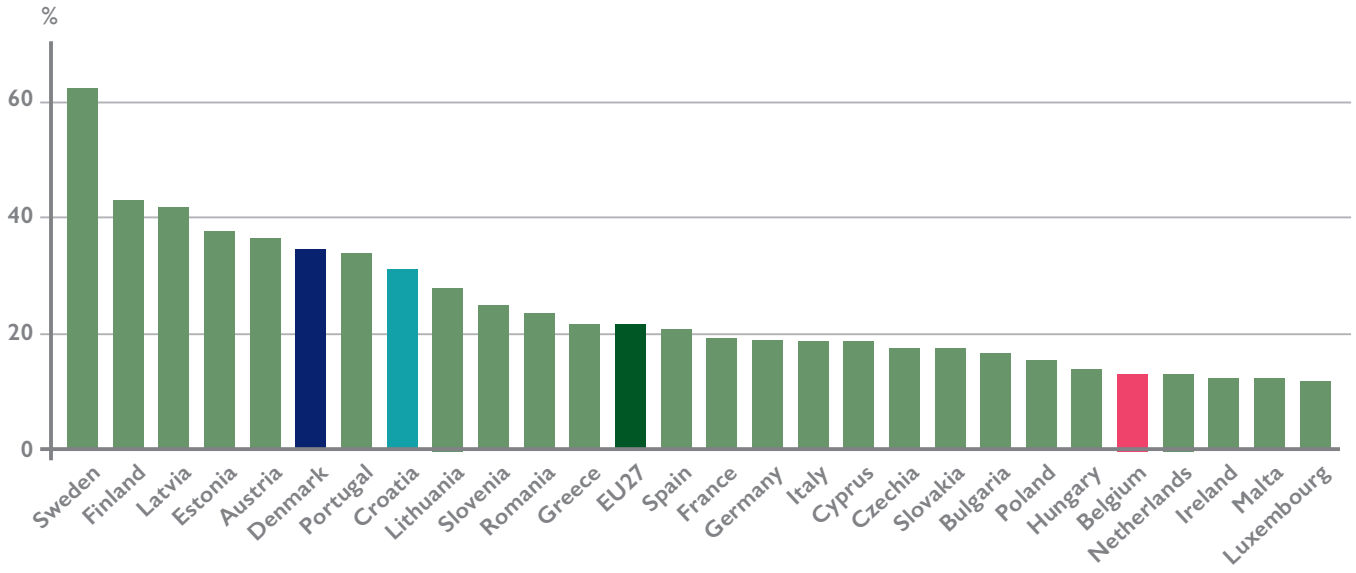
ENERGY

The largest sector of GHG emissions by looking at the individual sectors is the energy sector which contributed to 33% of Denmark's total emissions in 2020. Denmark has had success in reducing emissions in the energy sector and has more than doubled the reduction between 2005 and 2019. Today, primary energy is produced using a mix of fossil fuels (oil and gas) and renewable energy sources (wind, solar power and biomass) as well as waste-to-energy (electricity, heat or fossil fuel from treatment of waste).

In 2021, 34.7% of the Danish energy production came from renewable energy. While the share is noteworthy from an EU perspective, placing Denmark in the top four, the figure is lower in comparison to neighboring countries of Norway and Sweden. Here, respectively 74% and 62.5% of the energy mix comes from renewable sources - mainly hydropower.

The renewable energy in Denmark mainly comes from solid biomass and wind power. Solid biomass, which includes wood pellets, wood chips, straw, biodegradable waste, firewood and wood waste, was by far the largest renewable energy source with 23% of the total energy consumption in 2021. The second largest renewable energy source in Denmark is wind energy. Wind power accounted for approximately 9% of the total energy consumption in 2021. Denmark has more than 4000 onshore wind turbines and 500 offshore wind turbines spread across different wind farms at sea. According to the Danish Energy Agreement from 2018, three new offshore wind farms will be established before 2030. The goal is for the wind farms to gain a capacity of 2400 MW which will be enough to cover the energy use in all Danish private households. Among other renewable energy sources, biogas accounted for 4% of the total energy consumption in 2021, which is more than a doubling since 2018.

Share of energy from renewable sources, 2021



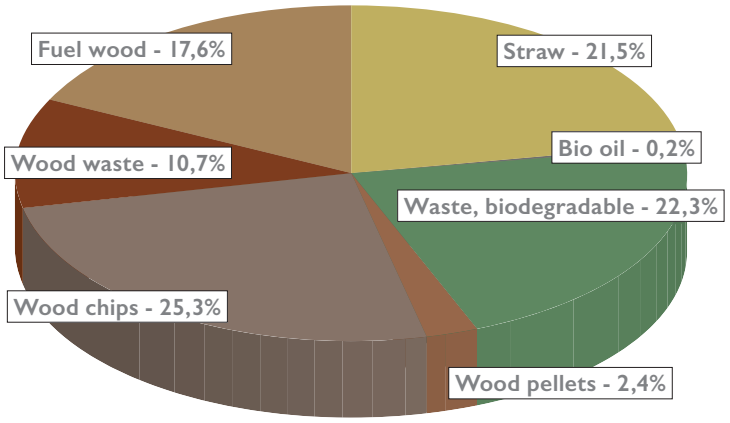
Source: Eurostat

Biomass

Solid biomass (wood pellets, wood chips, straw, biodegradable waste, firewood and wood waste) and biogas are designated as transitional fuels by the EU. According to critics, this is problematic as biomass partly consists of loggings from old forests and trees absorbing CO^2 from the atmosphere. When burned for energy consumption, the logged CO^2 is emitted into the atmosphere once again resetting the original effect of the carbon storage. The fact that biomass is designated as a transitional fuel goes against advice from leading environmental organs, and the discussion of using biomass and biogas instead of investing in solar and wind power has been a central point in the public debate in Denmark.

Denmark imports a large share of its biomass, especially wood pellets. In 2018, Denmark had to import 37% of the total amount of biomass used to produce energy and this number has since increased. In 2023, the EU Parliament suggested an amendment to the directive for sustainable energy which would limit Denmark's ability to use biomass in the fulfillment of its climate goals. This suggestion did however not go through.

Biomass for energy production in Denmark, 2019



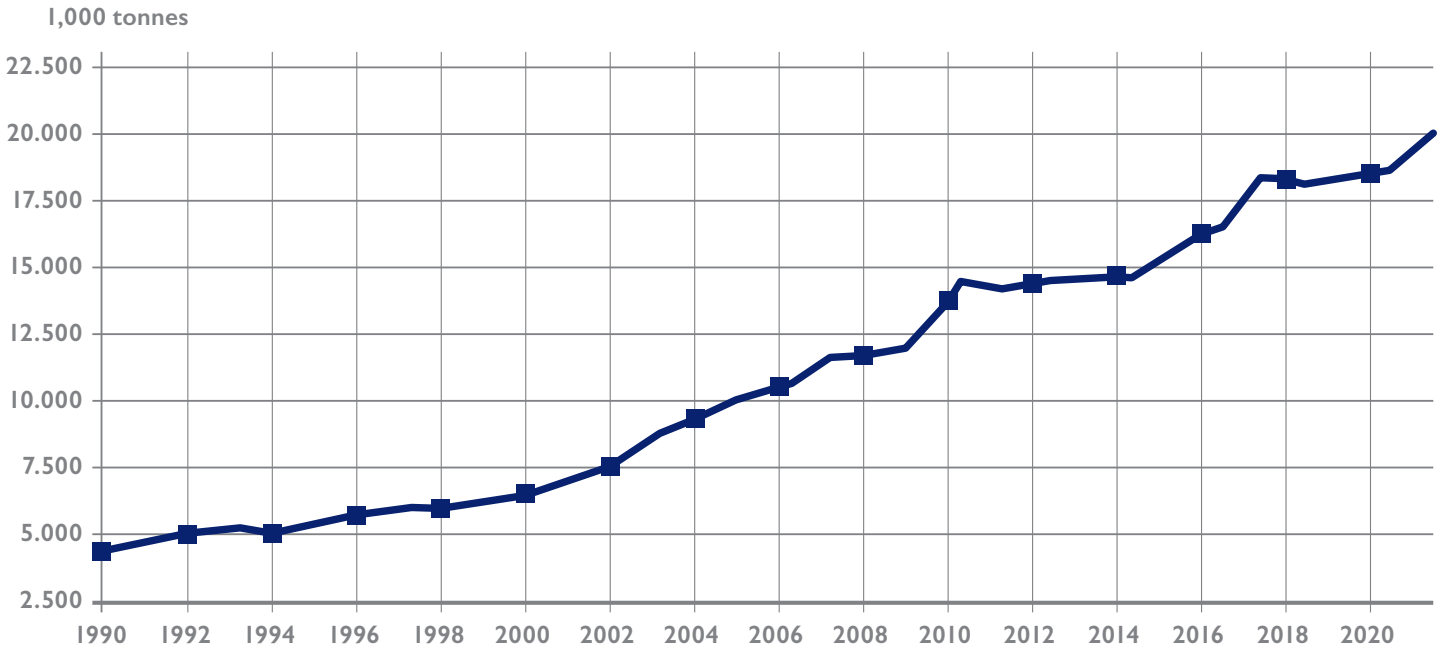
Source: Danish Energy Agency

Political energy initiatives

In 2018, Denmark introduced a new energy deal which commits Denmark to fully cover its electricity usage from renewable sources in 2030. Furthermore, Denmark will have to receive 55% of its total energy consumption from renewable sources in 2030.

As part of the energy deal, 564 million euros has been set aside for investments in technologies that focus on renewable energy such as wind turbines, solar panels,

CO2 emissions from burning biomass



Source: DST

and hydropower in the period 2020-2024. Furthermore, an annual fund of 31 million euros will be used to develop biogas and other green gas types to be used in the transport and industrial sectors.

In the energy sector, contributing factors to reaching the targets are a quadrupling of the amount of sun energy as well as a fivefold increase in the amount of offshore wind energy towards 2030. The Danish government furthermore has plans to reach Denmark's offshore wind potential towards 2050. One of the concrete initiatives is a plan to build energy islands for offshore wind farms with a potential of a total minimum capacity of 12 GW. The amount of green remote heating has also increased heavily.

International cooperation on green energy

In May 2022, political leaders from four member states (Denmark, Germany, the Netherlands and Belgium) as well as representatives of the EU Commission and the green energy industry gathered in the city Esbjerg on the Danish west coast. Here, the Danish prime minister hosted a major EU summit on offshore wind to enter into a new agreement to speed up the green energy from the North Sea.

In August 2022, Denmark also hosted an EU summit on energy cooperation in the Baltic Sea. The summit was held due to the Russian invasion of Ukraine and a growing desire for independence from Russian energy and access to more sustainable energy. Among the guests were the President of the EU Commission, Ursula von der Leyen, and the prime ministers from Poland, Lithuania, Latvia, Estonia and Finland.

Denmark and Germany have also entered into an agreement to increase offshore wind capacity and thereby establish a cable from the Energy Island Bornholm to Germany. This way the power can be sent directly to the German electricity grid and on to the rest of Europe. The agreement is a new type of collaboration where the costs and benefits associated with the energy island are shared equally between more nations. Furthermore, in March 2023, the Danish and the German climate ministers signed a declaration on a new hydrogen pipeline between the countries to be ready in 2028.

The Danish-German cooperation is a follow-up from the broad agreement on Power-to-X which the Danish government entered in March 2022. Power-to-X is the process where electricity and water are turned into hydrogen through electrolysis. The hydrogen can then be used directly in trucks, ferries or heavy industry. With this agreement, Denmark aims at building an electrolysis capacity of four to six gigawatts by 2030.

Credit: Martin Nikolaj Christensen

The newly appointed Danish government in December 2022.

Credit: Kefr4000

Criticism of the Danish government

To realize the ambitious climate goals, the Danish government works with the Danish Council on Climate Change (DCCC). The council publishes yearly status reports on whether the government is capable of realizing the 2025 and the 2030 goals. In March 2023, the latest report was released which criticizes the Danish government for not being able to live up to the ambitious national targets. Especially due to a lack of clarity on how the government intends to reach the 2030 target. According to the report, important reductions are still lacking and there is an overemphasis on immature technologies. The government has only made it clear how they intend to reach roughly 50% of the reductions needed for the 2030 target. The rest of the way to the remaining 50% is still unclear.

One doubtful element is the effect of a 2022 tax on GHG emissions from the private sector. Whether the reform will be successful in motivating Danish corporations to reduce their GHG emissions remains unclear. Furthermore some of the biggest and most polluting companies have received a discount in their tax rate in order to avoid carbon leakage effects where production and jobs just move abroad instead. One example of a company that receives such a discount is the cement producing company Aalborg Portland which is the most GHG polluting company in Denmark.

Some of the plans for further reductions using immature technologies are in the agricultural sector. Other reductions are in the usage of so-called power-to-X technology. According to the climate council, one of the problems in relying on such technologies is the strong risk of technical, practical and administrative complications which means that the technologies cannot be used efficiently to achieve reductions until after 2030.

The report also criticizes the lack of concrete strategies for achieving the closest target of 50-54% reduction in 2025 and is questioning whether it is even possible. The report further stated that the amount of new climate initiatives that need to be implemented is a challenge for the Danish authorities which they may not be ready to face. It is the third year in a row that the climate council is unsatisfied with the climate policies of the Danish government.

Conclusion

Over the last two decades, Denmark has adopted ambitious climate policies for bringing down greenhouse gas emissions while maintaining a strong economy. This was further established with the climate law from 2019 which is a legally binding target of a reduction of greenhouse gas emissions by 70%, and to make Denmark climate neutral in 2050. The law was passed with broad support in the Danish parliament from parties all over the political spectrum. There is also continuous public support from both the population and companies for the green transition in the Danish society.

Today, the Danish targets are still ambitious but as EU legislation is constantly developing this might change. There are areas of EU legislation where Denmark most likely will not hit the required targets. One of these bigger challenges is the agricultural sector which is culturally important to many Danes but not significant in regards to jobs and economic outcome. About 60% of Denmark's area is used for agriculture, making Denmark the most cultivated country in the EU. Denmark has a powerful agricultural lobby, and there is a general political hesitancy to intervene. Another challenge is the plan of future emission reductions to be found in the use of experimental technologies which climate experts have criticized.

Although Denmark is considered one of the frontrunners and a role model for other countries in making political targets for the green transition, Denmark is still far from climate neutrality. Fossil fuel combustion for electricity production, high living standards, heavy cultivation of land use, and livestock production cause Denmark to have one of the largest climate footprints per capita worldwide. In 2021, the average person in Denmark emitted 7.5 tonnes CO^{2e}.

Already on the 28th of March 2023, Denmark reached its so-called earth overshoot day which is a measurement for when energy consumption of citizens exceeds the resources the world can regenerate in a year. This is one of the highest-ranking countries in the EU, only outdone by Belgium, Estonia and Luxembourg. The average overshoot day on a global scale fell on July 28 in 2022. Therefore, there is still a long way to go for Denmark in regards to the green transition.

Credit: News Oresund

Perspectives from Danish citizens

For the Danish national chapter, we have conducted three interviews with Danish citizens to supplement our analysis and to investigate what normal Danish citizens can do to contribute to the green transition of the EU. The participants in our interviews have been selected so there is 1) one young participant: Zoé Elkær Nicot, 2) one participant living in the countryside: Jane Svendsen, and 3) one participant who has difficulty participating in physical EU debates due to a lack of such events in her city: Kirsten Bjørke.

Interview with Zoé Elkær Nicot, 24 years old, Copenhagen

In this interview we first asked Zoé if she knew what the green deal was.

»I definitely know what it is. It's the grand plan from the European Union to become climate neutral by 2050. And one aspect I've worked a bit with is this carbon wall that we may or may not have in the future, where there has to be a price on emissions from productions abroad. So that's one part of the Green Deal, but there's a lot of regulations being made.«

Zoé furthermore found the regulations important:

»For me, regulations are everything. I don't believe in individual changes alone. If we want to save the climate we have to do this regulatory approach. It's the big industries and the big emitting countries that are the sinners. There's so little we can do individually.«

Despite this, she has changed her habits slightly to contribute to the green transition.

»Yes to some extent. I do think about everyday habits. My food consumption for example.«

Zoé is however not personally stressed about it.

»There's a whole generation being personally stressed about it. I'm not. I do think about it, but I don't excessively implement these aspects in my life.«.

We were also curious to know if the energy crisis had influenced her habits.

»Yes, but it's not something I would think about every day.«

Furthermore, we were wondering what kind of climate measures Zoé wanted the government to implement.

»The obvious answer is more green energy, solar panels and windmills - and maybe taxing emitting products. But the important thing is that it's not socially unbalanced, so the ones who have the least cannot afford it. For example, if you tax meat and it thereby gets more expensive, the average family with kids might be negatively impacted from the regulation. But if we can divert the income from the taxation to low-income families, I'm all in for having taxes on heavily emitting products.«

For transport Zoé usually uses her bike and public transport for practical reasons. We asked her if she would be more likely to use public transport if Denmark had a better transport system.

»I probably would. I often take the metro to school if I'm feeling lazy, and if the network in Copenhagen was even better connected, I would more than likely do it more.«

She thinks it would be a good idea to improve distance trains when traveling in the country and thereby make long distance trains faster so it will be on the level with for example France's TGV. In 20 years, Zoé sees mobility being more focused on trains.

»I see a lot more use of trains and a more developed European train system. So we have a much more connected system, faster trains both internal and between countries. And obviously also lower prices.«

Finally we asked about food consumption. Zoé does not have a big focus on whether the food is locally sourced.

»*It's not something I notice much. It would be great if there was more information on the food, but it's obviously also a question of price. For the lower incomes and the students, local products might be expensive, but if it's the same price, I would definitely prefer it.*«

We also asked Zoé if she has considered changing her eating habits to contribute to the green transition, and what motivates her to do so.

»*I probably eat less meat than I used to. But I haven't cut it out completely. Sometimes it's easier or even cheaper to make something with greens. So it's a combination for me. There is a political statement about it, but it's mostly about prices. What motivates me is availability, price, quality and political environment. But it's not like I'm never going to eat meat again just because I heard a speech by Gretha Thunberg.*«

Zoé would however like to heavily modify Danish agriculture.

»*We should produce much less cattle and red meat by cutting the number of livestock production in Denmark in half. That would solve a lot as 60% of our land is used for agriculture. This would reduce the amount of land used to feed animals, stop the import of soybeans from South America, which in terms of nature and human rights is terrible, and give incentives to plant and use the land more regeneratively without exploiting it like we do know.*«

She thinks it is important that Denmark is a member state that pushes the other EU member states to have a more bold agricultural policy.

»*There is also the global aspect. With our innovation we can export things. For example, when Joe Biden announced a big energy plan in the US, all the stocks in Denmark went up. That was a great day for innovation and the market. So in practical, technological and political ways, we can become a factor in pushing things ahead.*«

Interview with Kirsten Bjørke, 72 years old, Barrit

Firstly, we asked Kirsten if she had heard about the European Green Deal.

»*No, not before you wrote about it. I hardly knew anything about it.*«

We followed up by asking if she thinks it is important to make such regulations.

»Yes, I think so.«

Furthermore, we were interested in knowing if there were any of her habits Kirsten would change to improve the climate.

»Yes, we try to do that on a *regular basis. But I live in the countryside. The infrastructure is terrible. The politicians plan to shut down the bus routes, and I don't understand the whole idea of green transition when you don't have any buses. Shutting down buses makes no sense. So we still have a car. Two actually, because my partner and I do many things separately. But they are not new cars. I know that if I lived in a big city, it would be easier, but I don't want to do that. We would like to use public transport but it is rare that it is possible. If you want to go to a city nearby, you can't take public transport home in the evening because the buses don't drive at that time. So we have to drive the car.*«

Regarding energy, Kirsten has changed some habits to save energy due to the higher prices and the energy crisis. For instance, she turns off the light when she leaves a room. Before the crisis, she did not really think much about how much energy she consumed and the light was sometimes turned on although they were not in the room. Kirsten would like Denmark to continue doing as we are currently doing and investing a lot in renewable energy such as wind turbines.

»*But we need to take care of nature as well and be careful where we place the wind turbines. If it threatens endangered birds in Denmark, we need to think more carefully.*«

Finally we talked about food habits and agriculture. We asked if Kirsten would make changes in her life to make the world more sustainable. She answered:

»We really try not to waste anything. It is very rare that I have to throw food away. We also use the waste sorting system.«

Kirsten answered that she would like more sustainable agriculture when we asked her about what Denmark should invest in, in terms of food and agriculture.

»It would be nice to have more ecological farmers. We have lots of farmers around here. I would like it if we could find a way to motivate those farmers to not only think about money but also on nature, the animals and their emissions. We have to decrease that as much as possible.«

Interview with Jane Svendsen, 70 years old, Dejret

Firstly, we asked Jane if she had heard about the European Green Deal.

»I think I have heard about it in the media but I'm not sure. No, I don't think so actually.«

She does however think it is important with such regulation but she is not sure if she would be willing to change all of her habits to help the climate.

»I want to change some things about transport and eating vegetables that are in season. But I have a dilemma, because I'm a former volunteer in developing countries and I'm very enthusiastic about Africa. I don't want to save on buying goods from Africa, I want to keep buying them. That's a dilemma.«

Furthermore, we asked Jane if she has changed her habits to save energy.

»I wear more clothes and I turn off my remote tv which I have never done before. And I have chosen not to turn on the light outside even though it is completely dark where I live. I have always cared about how much I use. When I talk to my friends and family about the energy prices since the war in Ukraine began they don't understand me when I say that I don't feel that the prices have increased.«

Regarding the green transition, Jane thinks that Denmark needs to do more than it already does, for example by investing more in wind turbines

»More and better and in the sea. And then subsidies should maybe be increased so that even more people want to invest in wind turbines.«

Jane is more pessimistic regarding transport as she believes that the amount of cars on the roads have increased in recent years. She thinks that cutting down bus routes has contributed to the increase in cars on the Danish roads. She hopes that Denmark will invest more in electric trains as well as better train connections.

»They have been cutting and cutting the budget here. Also where I live, they have been cutting down bus routes.«

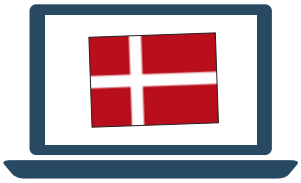
Finally, we talked about food and agriculture. Jane does most of her shopping in the local grocery store "Dagli' Brugsen". She prefers shopping organic and has stopped purchasing locally produced food if it is not organic. She is also very much against food waste.

»I don't throw away any food. I use it all!«

Regarding Denmark's agricultural policy, Jane thinks that the government should invest much more in organic food.

»I hope that more and more organic food will be developed.«

Questions and exercises



Questions about the chapter:

1. What has Denmark done so far to reduce greenhouse gas (GHG) emissions?
2. What is Denmark planning to do in the future to reduce GHG emissions?
3. In which areas will Denmark need to take further actions to reduce GHG emissions?
4. What are the major points of criticism of Denmark's path towards becoming climate neutral?

Exercises for the e-book:

Climate interviews

Use the interviews from the Danish chapter of the e-book for inspiration to create an interview guide and then find someone to interview about:

- How are they affected by climate change?
- Do they think Denmark is doing enough, too little or too much to achieve its climate goals?
- Are they satisfied with the climate actions of Danish politicians?
- Do they follow and participate in the public debate on climate change?
- Do they feel they can do something to fight climate change?

Climate debate roleplay

1. Assign people to groups where each group will represent different stakeholders. One group will represent climate researchers, another will represent Danish industries, a third Danish farmers, and a fourth the Danish government.
2. Each group should answer:
   What are the interests of your specific stakeholder regarding Danish climate policy?
   Why is your stakeholder's interests the most important (make three arguments)?
3. Meet with other groups with different stakeholders and use your arguments in a debate with each other.
4. Finish by talking altogether about how each stakeholder tries to influence Danish climate policy.

Climate meetings

Try visiting one of your local city council's open meetings on climate policy. Observe the differences in the local politicians' views on climate change depending on their party. Also try to observe if there are differences between the viewpoints of the politicians of the party on the local level and at the national level. Further try to focus on how they debate, and if people other than the politicians are attending the meeting (e.g. a local corporations, NGO's).

Further reading

Here you can find links for further reading on Danish and EU climate policy in English.

EU Commission: The European Green Deal (overview):
https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/european-green-deal_da

European Council on Foreign Relations (2021): Europe's green moment: How to meet the climate change
https://ecfr.eu/publication/europes-green-moment-how-to-meet-the-climate-challenge/

Country overshoot days overview (2023):
https://www.overshootday.org/newsroom/country-overshoot-days/

Green Transition Index, OliverWyman (2022):
https://www.oliverwyman.com/our-expertise/insights/2022/jun/green-transition-index/summary-of-results.html

EU Parliament briefing: Climate action in Denmark: state of latest play (briefing):
https://www.europarl.europa.eu/RegData/etudes/BRIE/2021/679106/EPRS_BRI(2021)679106_EN.pdf

Danish Energy Agency: Denmark's Climate Status and Outlook:
https://ens.dk/en/our-services/projections-and-models/denmarks-energy-and-climate-outlook

The Danish Council on Climate Change: Status Outlook reports:
https://klimaraadet.dk/en/publications?field_publication_type_target_id=33

CONCITO: Various reports on Danish climate policy:
https://concito.dk/en/analyser

Green Transition Denmark: NGO working to further a green and sustainable transition of society
https://rgo.dk/frontpage-english/climate

Climate perspectives from Belgium

On the 10th of January 2019, more than 3,000 students from all over Belgium skipped school and headed to Brussels to campaign for the climate. Inspired by Greta Thunberg's "*Skolstrejk för Klimatet*" in Sweden, they called for more attention and concrete climate action in Belgium.

"Fossil fuel - it's time to go!", "Change the system, not the climate" and "We are hotter than the climate" were some of the slogans shouted out. They met at the Europe crossroads near Brussels Central Station and marched through the streets of Brussels to the Jubel Park.

A week later 12,500 students came back for more protests activated by "Youth for Climate". The week after there were 35,000 protesters. Younger students met in their own cities as well calling attention to global warming and they kept repeating their action every Thursday until the end of the school year.

Climate change in Belgium

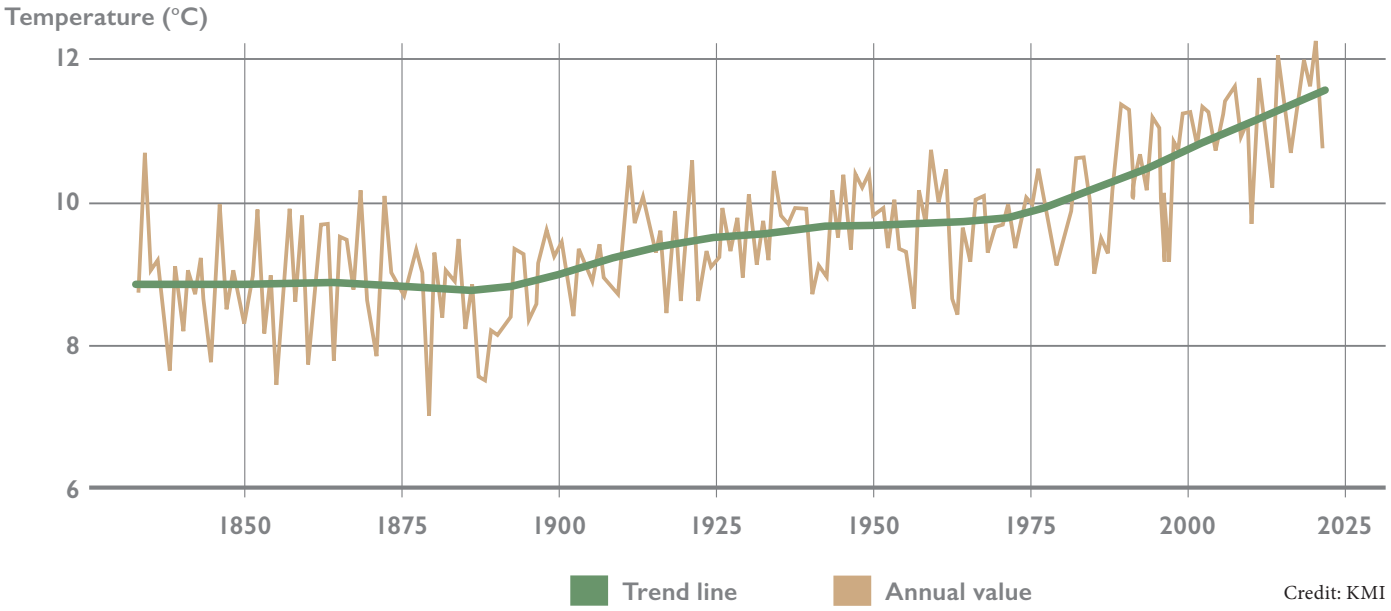
The concerns expressed by the schoolchildren were both alarming and justified. The earth is warming at an unprecedented rate and the consequences are becoming increasingly serious. Belgium is no exception and has already seen dramatic impact.

In general, the average annual temperature in Belgium has already increased by 1.9°C from 1890 to 2021, with a marked acceleration since 1954. With further warming, we must prepare for more and more heat waves in the coming decades - up to nearly 27 days per year

Young people protesting in Brussels.

Credit: © European Green

Evolution of average temperature at Uccle between 1833 and 2021



on average. We will also experience more frequent and intense droughts, more floods and increasing storm damage. Sea levels will rise by nearly 69 cm by the end of the century. In Belgium, the effects of climate change are especially visible in biodiversity, water management, agriculture/fisheries, and health which will be elaborated in the following sections.

Biodiversity

In Belgium, 25-75% of species are at risk of extinction or dramatic decline in population. Many causes are responsible for this, such as the degradation of their habitats, pollution of soil, water and air. Species of animals that cannot adapt are leaving or dying out. This is for instance the case for the native ladybug, native bees, and cod. At the same time many invasive species have appeared in recent years. This puts existing natural systems out of balance with a lot of negative consequences for animals, nature and ultimately humans.

Water management

Increased precipitation in the winter and heavy rainfall in the summer means that Belgium will increasingly face flooding in the coming years. In July 2021, 31 people died from flooding following heavy rainfall. At the same time, Belgium exploits its water resources intensively. Of the total amount of water extracted, two-thirds is used to cool nuclear power plants, a fifth is exploited by the processing industry, while public water distribution accounts for barely 10%. In the hot summers of 2020 and 2022, drought plans were created that determined the priority of water. There is now a spraying ban for individual citizens as well as guidelines for the use of ground and river water for industry and agriculture. There is even a shut-off plan for drinking water companies.

Agriculture

Rising temperatures also threaten our agriculture. While a moderate warmer climate is not bad for agriculture at first glance, extreme weather conditions and water shortages during a drought cause more damage than positive effects. Farmers can insure themselves for crop losses due to bad weather. In 2020, they received 17.83 million euros in insurance payout in Flanders due to the extremely dry summer.

Human health

Much more than floods or hurricanes, heat waves have a negative impact on health. Belgium is facing increasing and more frequent heat waves. The elderly and people with cardiovascular or respiratory problems and small children are particularly at risk. During the August 2022 heat wave, Sciensano (the Belgian Institute of Health) reported 343 deaths from heat-related causes. In the previous hot summer of 2020, the number was 1460.

Public debate on climate change

The protesting climate scholars were an important trigger to mobilise other groups in Belgian society as well. It did not take long for climate actions to spread to other cities across the whole country. Nor did it stop at a climate march of only young people. More and more people got inspired and joined the marches. Only two weeks after the first climate campaign in Brussels, the so-called "grandparents for the climate" joined the climate marches. This group describes itself as "*senior citizens, mostly grandparents, who are very concerned about the climate crisis and who would like to leave a liveable world to our grandchildren, the generation of climate youth*".

The "Climate Coalition"

Although the climate marches are now no longer held on a weekly basis, it remains alive among the Belgian population. The most recent climate march went ahead on 23 October 2022, just before COP27. It was organised by the "Climate Coalition", a national umbrella organisation of environmental organisations, trade unions, youth associations and citizens' movements. 25,000 participants attended.

The "Climate Coalition" states on their website that after more than a decade, their work finally pays off. Global warming and its disastrous consequences are now known to a broad public in Belgium. Moreover it is increasingly mobilising the Belgian population. In recent years they managed to launch various actions and make policy recommendations to the Belgian policymakers. For instance regarding the Belgian energy and climate plan and the Belgian positions at the COP 27 in Sharm el Sheik. In addition, the climate coalition created a memorandum for a Belgian green deal. All their views, documents and actions can be found on their website (in Dutch and French).

Public surveys

Besides the climate marches which surely contain a very clear position of the citizens themselves, other players are also contributing to the public climate debate in Belgium. Since 2005, the federal government has organised a public survey on climate issues. In 2021, the fifth survey was conducted. It showed that a clear majority of Belgian citizens believe that the climate focus is important. 80% see climate change as a problem requiring urgent action. Six out of ten are convinced that the EU and Belgium should reduce their greenhouse gas emissions by 55% by 2030 and become climate neutral by 2050. Better cooperation between governments, a coordinating role for the federal government, a "Council of Wise Men," and a climate law are some of the expectations from the citizens.

In 2022, De Standaard and VRT news (Flemish media) also conducted a public survey among Flemish citizens about the climate. This survey showed that Flemings are concerned about the climate but not massively and intensely alarmed. The average Fleming wants more legislation to combat global warming. Flemings are willing to make their own efforts, such as taking the plane or car less, but eating less meat is generally more difficult to give up. Also, according to the survey, most Flemish people are not willing to give up part of their own income - even if it would surely stop global warming.

Citizens' climate lawsuit

VZW Klimaatzaak is a citizens' initiative which in 2014 filed a lawsuit against the four Belgian governments for Belgium's failure to keep international climate promises. The initiative wants to use the court to force the governments to adopt an ambitious climate policy. On the 17th of June 2021, the Brussels Court of First Instance ruled in favour of the climate case. The Belgian governments were collectively condemned for their negligent climate policy. The judges ruled that Belgian climate policy is so substandard that it violates the legal duty of care and human rights. The verdict was not enough for the climate activists though. Klimaatzaak appealed asking the governments to impose binding emission reduction targets. This lawsuit is still pending.

Farmers protest

Not everyone in Belgium is happy about strengthened climate laws though. Like in other countries, such as the Netherlands and Germany, farmers are increasingly gathering to fight against what they believe are unfair and damaging regulations of the agricultural sector. In March 2023, angry farmers protested in Brussels against the Flemish government's inability to take a decision on the nitrogen matter (further explained later in the chapter). More than 2700 farmers drove their tractors to the streets of Brussels to show their opinion.

Credit: Leonhard Lenz

Farmers protest in Germany.

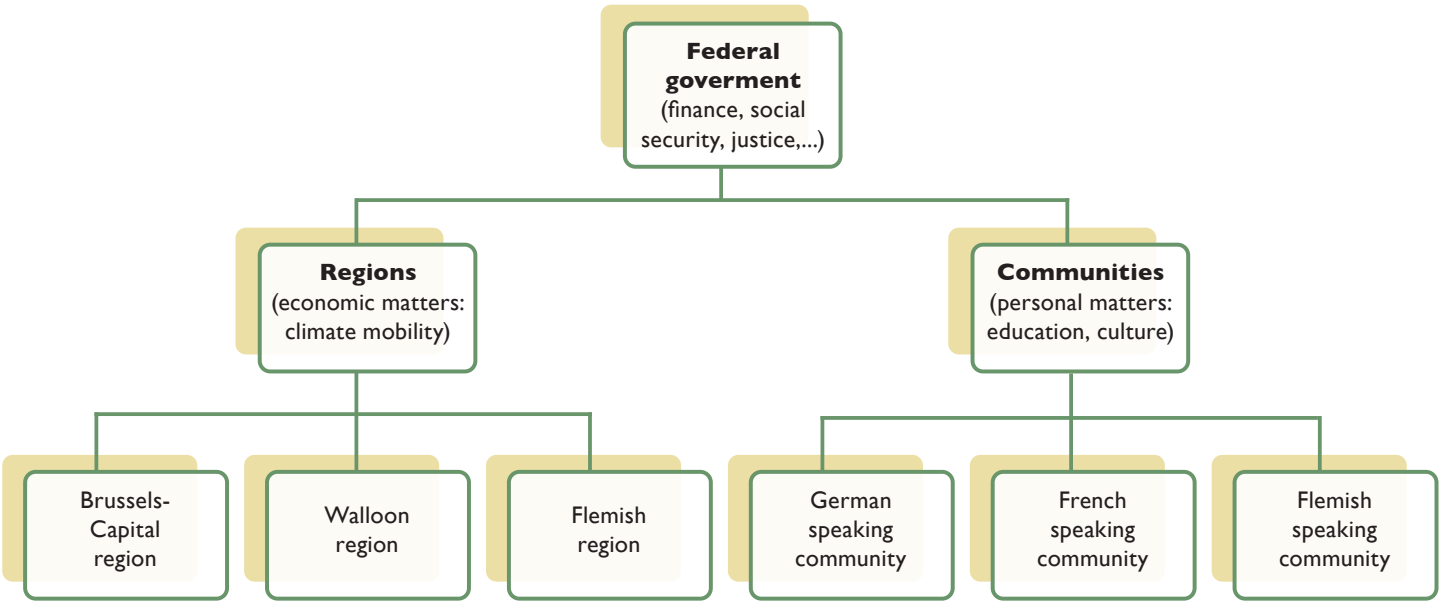
Who decides the climate policy?

Belgian climate policy cannot be explained without first taking a look at the complex federal organisation of the Belgian state. Belgium is a federal state composed of three communities, three regions and a federal level. The state is divided by language borders. Flanders is the Dutch speaking community, Wallonia the French speaking community, Brussels is bilingual, and there is also a small German speaking community. That is the base for the division of competences within Belgium. Each body has its own parliament and government. In general the division of policy making between the different levels can be divided as such:

Unfortunately, it's not always that straightforward. Climate policy is foremost a regional competence but some themes are handled on the federal level.

The regions are responsible for:

- Rational energy consumption
- Promotion of renewable energy
- Public transport
- Transport infrastructure
- Urban and rural planning
- Agriculture
- Waste management



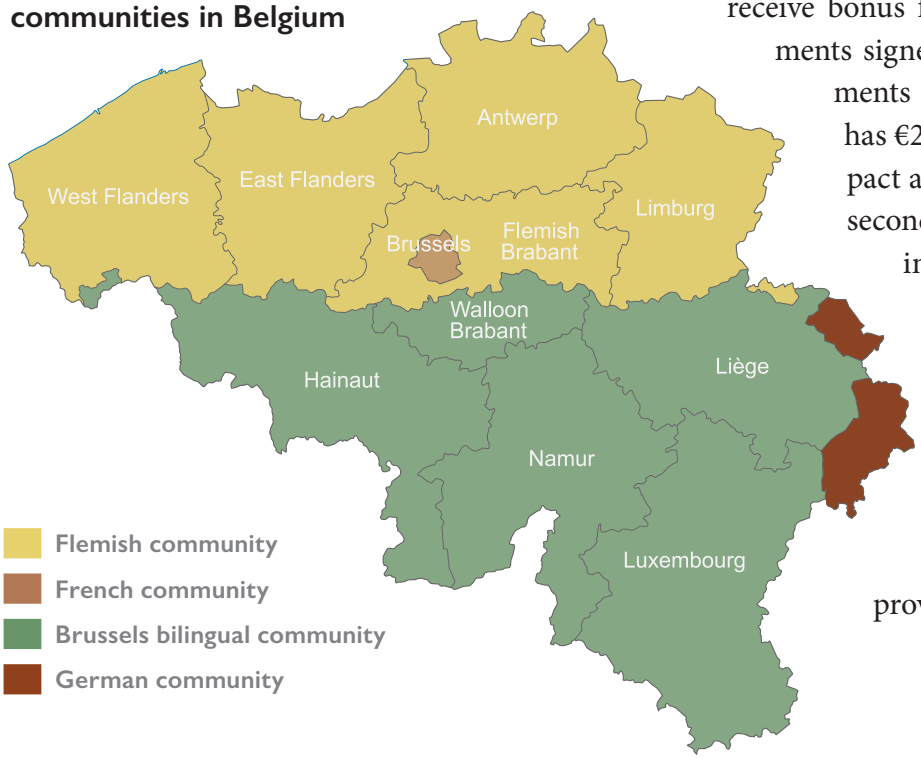
The federal level is responsible for:

- Tax policy
- Product policy
- Energy security
- Nuclear energy
- Offshore wind farms (through the territorial waters jurisdiction)
- Railroads

In other words: Belgium does not have one clear climate policy. The federal climate policy largely consists of supporting the policy of the regions. They can decide independently which policies they want to implement. However, since the European Union gives national targets and demands national climate plans, these four governments must work together to achieve Belgium's overall climate goals.

That cooperation does not always run smoothly can for instance be seen in the distribution of revenues from the ETS (emissions trading system). Belgium is entitled to 2.56% of the ETS share which is about €500 million per year. However, due to disagreements on the distribution, the money ends up in a blocked account and cannot be used. Flanders disputes the allocation key which applied from 2013 to 2020. According to this, 52.8% of the money goes to Flanders. The rest goes to Wallonia (30.7%), Brussels (7.5%) and the federal state (9%). Since Flanders accounts for 64% of Belgium's electricity consumption, it demands a similar percentage of ETS revenues. The other governments do not agree, and as long as there is no agreement the money is blocked. Meanwhile, more than one billion euros are already blocked in the account and the regions are forced to take loans to implement their policies. In September 2022, it was decided to keep the old distribution key for 2021-2022 while negotiations for the distribution from 2023 will continue later. A previous agreement on the distribution key was found two years after it should have come into effect.

Provinces, regions and communities in Belgium



Cities and municipalities

As Europahuis Ryckevelde is a Flemish organisation, we will mainly focus on Federal and Flemish measures in the chapter. Local governments in Flanders and the Flemish Region have had a Local Energy and Climate Pact since 2021 which they can sign up to on a voluntary basis. The first pact was updated when the Flemish government increased their climate goals. Local governments can choose for the updated version and receive bonus funding. 293 of the 300 local governments signed the first pact and 210 local governments signed the updated version. Flanders has €24,870,000 for the realisation of the first pact and €8,750,000 for the realisation of the second. The pacts include objectives concerning four themes: 1) more trees and public natural green spaces, 2) energy, 3) mobility, and 4) rainwater. Every theme has specific goals such as improving local buildings (more energy efficient, less CO^2 emissions, green renovation), LED lighting in public areas, organising public debates and providing (semi-)public charging stations.

Former President of the EU Commission Jean-Claude Juncker at COP21. Credit: European Commission

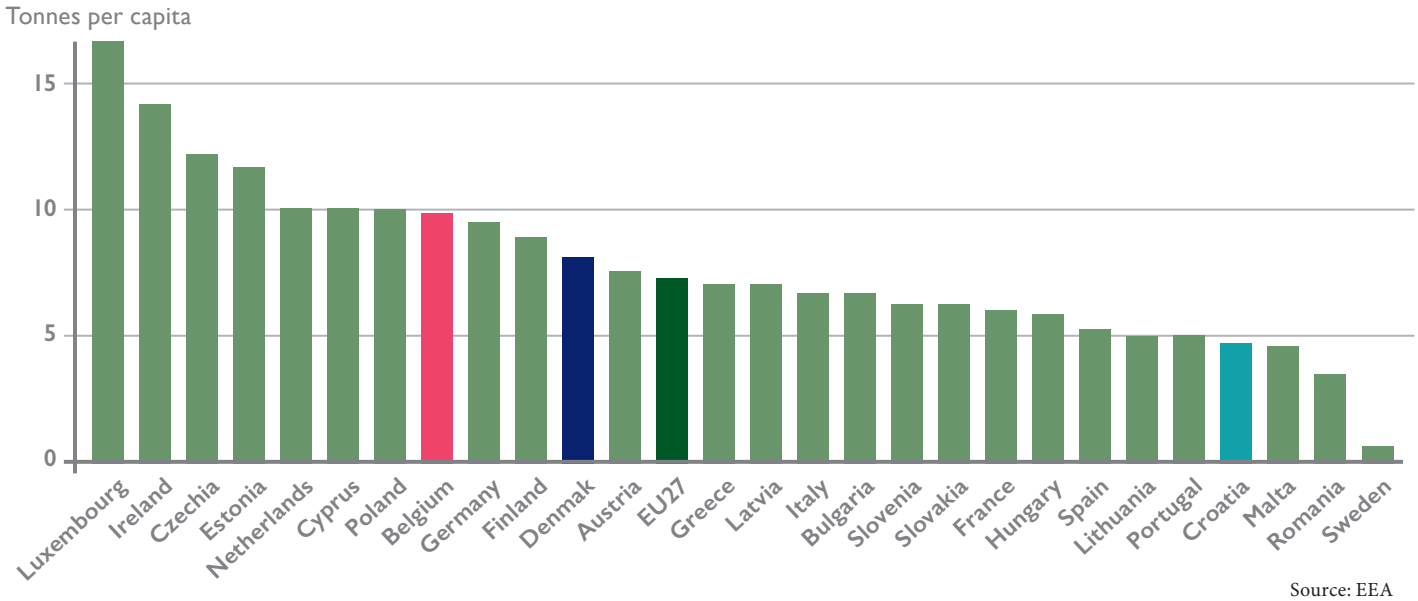
Expectations from the EU

During the climate summit in Paris (COP21), the European Union committed to a reduction of greenhouse gas emissions of 40%. Through a burden-sharing system, the EU Commission divides the target among member states. At the time, Belgium had to reduce greenhouse gas emissions from non-ETS sectors by 35%. Each member state had to submit a national energy and climate plan in 2019 showing how they would meet the target.

In December 2019, the EU Commission launched the European Green Deal which raised the targets. The EU commits to having 55% less greenhouse gas emissions by 2030 compared to 2005 and becoming climate neutral by 2050. All member states must therefore make a bigger effort. As a result, Belgium has to reduce emissions by 47% in 2030.

The Belgium national energy and climate plan is the sum of the various regional measures. It describes the climate policy of the Brussels capital region, the Walloon region, the Flemish region and the federal government. The regions make their own climate policy for their own territory completely autonomously. They decide their own priorities and how to reach their targets. As the federal government cannot decide on the climate policy, it can only distribute different targets among the regions, very similar to what happens at the EU level. This is also not an easy exercise. In the period 2013-2020 Belgium had to reduce emissions from non ETS by 15% in comparison to 2005. Flanders had to reduce emissions by 15.7%, Wallonia by 14.7%, and Brussels by 8.8%. For the period of 2021-2030 there is however not yet an agreement on the share. The various regions have already expressed their ambitions though. Brussels and Wallonia are aiming at 55% emission reductions, while Flanders only wants to make a maximum effort of 40%.

Net greenhouse gas emissions, 2021



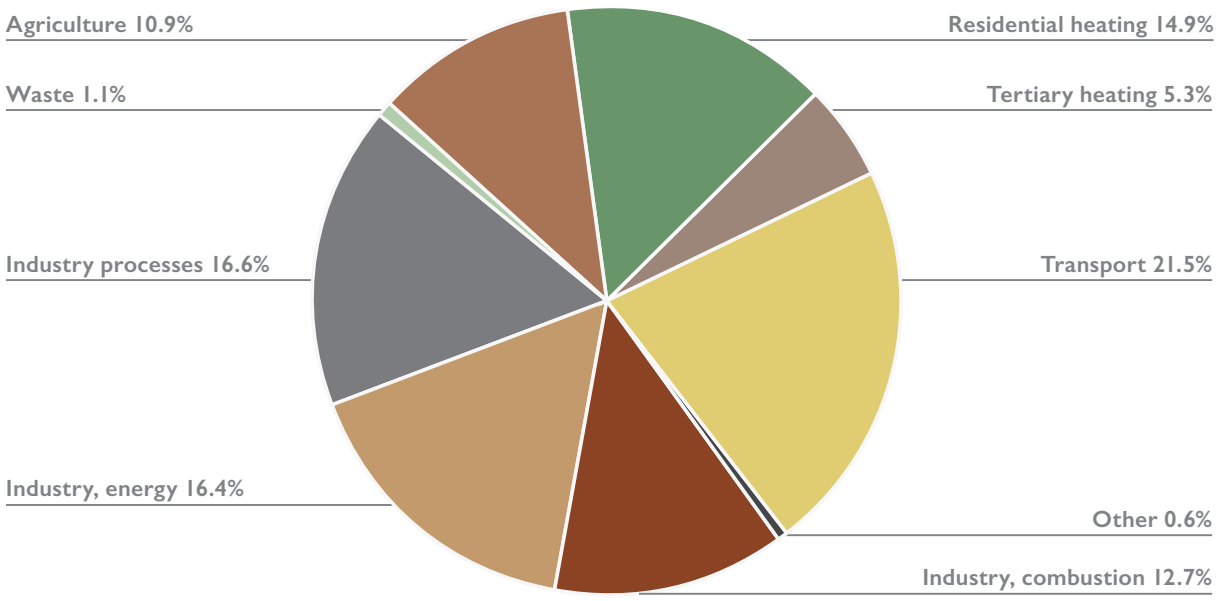
Source: EEA

Belgian greenhouse gas emissions

Belgium was responsible for 9.9 tonnes GHG emissions per capita in 2021. This puts Belgium in 8th place of the EU27 in terms of per capita emissions.

The emission reduction is slower in Belgium than the EU average. There has been a 17.2% reduction in greenhouse gas emissions since 2005 where the EU average stands at a 19% reduction over the same period.

The major polluters in Belgium are transport, residential heating and industry. Emissions from the energy sector fell nearly 30% between 2005 and 2019, with a 2.9 percentage point reduction in total emissions. Waste management was the sector with the largest percentage point reduction (55% or 1.7 Mt CO^{2e}) in emissions since 2005. Transport and agriculture were the sectors with the lowest reductions.



Source: Klimaat.be

A difference in level of ambitions

As stated above, the different regions make their own policy and priorities when it comes to climate efforts. The federal government mainly ensures that the regions' measures can be implemented and supported - for instance by adjusting tax policy. The federal government does have an important role in the energy component though. It is responsible for nuclear power plants, offshore wind farms and energy security which became quite important after the Russian invasion of Ukraine.

The Walloon region and Brussels show more genuine ambition to meet the climate goals than Flanders. In the following sections we will highlight some of the main points of Brussels and Wallonia as well as the federal state before we go deeper into the climate plans of Flanders.

Brussels-Capital Region

Brussels already showed a lot of ambitions in the national climate and energy plans from 2019. The goal was 35% emission reduction in 2030 for Belgium. Brussels promised a policy that would reduce emissions for the Brussels region by 40% in 2030. Since the launch of the European Green Deal the target is now 55%. The measurement that has the biggest impact on the whole country is the low-emission zone in the capital city. That includes a ban on diesel vehicles by 2030 at the latest and on petrol and LPG (liquefied petroleum gas) vehicles by 2035. Like other major cities, the Brussels capital region faces a particular transport situation due to the large number of commuters. Mobility needs are additionally still heavily met by individual solutions that emit very high levels of carbon and air pollutants. Reducing individual and polluting traffic in different ways is a major priority for the Brussels' government. Those measures are included in the so-called 'Good Move'-plan.

Wallonia

At the end of 2022, the Walloon government revised its climate plan 'PACE'. It raised ambitions to a 55% reduction compared to 2005 by 2030. The plan focuses on ten themes with three priorities. For instance committing to a large-scale renovation wave in which every change of ownership or tenant is followed by obligations to renovate to improve their energy efficiency. Wallonia aims at doubling renewable energy production by 2030 and reducing fossil fuel consumption.

Credit: Jean-Etienne Minh-Duy Poirrier

Credit: Bjoertvedt

By 2050, Wallonia aims at a complete withdrawal from fossil fuels by replacing coal and oil heating with alternatives, and by stopping all public subsidies to fossil fuels. There is also a plan for transformation of mobility. This includes incentives for making citizens move away from the most polluting modes of transport to walking, cycling and public transport instead. It also includes improvement of the performance of vehicles in order to increase and accelerate the greening of the vehicle fleet.

Wallonia shows much ambition but is still facing challenges. In February 2023, the EU Commission opened a case against Belgium, as the Walloon region is not doing enough to protect its ground and surface water from nitrate pollution. Therefore, there is a need for better agricultural policy and fertiliser action plans. The EU commission also gave Flanders a warning that their policy on nitrates in agriculture has insufficient results.

Flanders

The preparation for the Glasgow COP was very tense. Flanders only just managed to present a climate plan as the Flemish government for a long time was not able to agree. The Flemish climate plan promised an emission reduction of 35%. However, according to calculations by the EU Commission, Flanders would only achieve 32.6% in 2030 with current policies. The Flemish government therefore needs to step up, especially now that Belgium has a new target of 47% emission reduction by 2030.

The most important target in the Flemish Climate Plan 2021-2030 is the increased emission reduction target of 35% to 40% by 2030 compared to 2005. The Flemish government wants to achieve this mainly through the following measures:

- Every new car purchased must be a zero emission car from 2029.
- From 2023 there will be a renovation obligation for homes with an Energy Performance Certificate of E or lower. Small non-residential buildings need to go to at least C level and implement four different energy saving measures. Large non-residential buildings should at least take four different energy saving measures. These need to be taken within five years from purchase.
- New homes must no longer have a gas connection from 2026.
- Agriculture and industry must make 10% extra efforts to reduce emissions.

Since 2005, Flanders has reduced emissions by 4.5 megatonnes. In 2020, there was a larger decrease due to the covid lockdowns but that could not be sustained once economic life (and especially transport) got back on track.

Credit: LimoWreck

ENERGY

The complex Belgian state structure really shows when it comes to energy. For each different policy area within the energy sector, the competent government is determined. The table below broadly shows which policy areas are federal and which are regional competences.

Federal competence

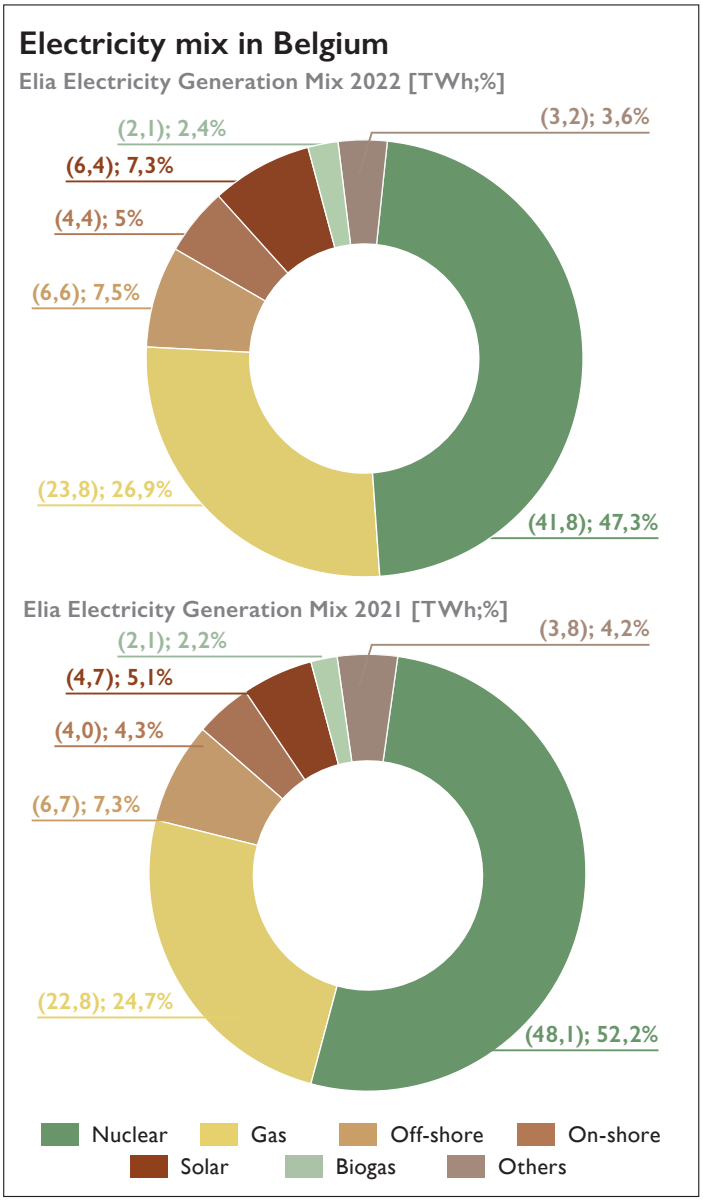
- Studies on the future of energy
- The nuclear fuel cycle
- The production of energy, including offshore energy
- Major energy supply and storage infrastructures
- The transport of energy
- Energy end-pricing policies for consumers, including social pricing policies
- The energy efficiency of federal buildings
- Aspects of taxation (VAT, excise duties)

Regional competence

- The distribution and local transmission of electricity (networks with a nominal voltage lower than or equal to 70,000 volts)
- Distribution tariffs (gas and electricity)
- The public distribution of gas
- The use of mining and blast furnace gas
- The networks for the distribution of heat
- New energy sources, excluding those related to nuclear energy
- Energy recovery by industry and other users
- Rational use of energy
- Environment and building permits for energy plant

Targets and expectations from the EU

According to the Fit for 55-strategy, 40% of the energy mix must be renewable energy by 2030, and accelerating energy efficiency needs to be a priority.



Source: Elia

Nuclear energy

Belgium's energy mix consists mainly of nuclear power and gas. There are seven nuclear power plants spread over two sites: four in Doel (Flanders) and three in Tihange (Wallonia). The nuclear power plants were built in the seventies and eighties and have a lifespan of 30-40 years. That means that the infrastructure is old. During the years there has been a lot of debate about the pro's and con's on nuclear energy. As a result, the federal government decided in 2003 on a nuclear exit in which the plants were to close between 2015 and 2025. However, due to the uncertain geopolitical situation since 2022, which caused energy prices to rise and supplies to become uncertain, the nuclear phase-out was again questioned. The oldest plant, Tihange 3, effectively closed in October 2022. The two youngest nuclear power plants (Doel 4 and Tihange 3) will still remain open for 10 years and will not close until 2035. The remaining four plants are still scheduled to close in 2025 but according to prime minister, Alexander De Croo, there is no longer any taboo related to keeping more nuclear plants open in order to guarantee security of energy supply.

Natural gas

Natural gas in Belgium mainly comes from the Netherlands and Norway, followed by Qatar. Only 4-6% came from Russia before the invasion of Ukraine. Gas supplies from the Netherlands are also being phased out though. Gas production is quite controversial as the area around the gas plant suffers from earthquakes due to the extraction process. Therefore, by 2030, deliveries from the Netherlands will stop completely. An LNG-terminal has been placed in Zeebrugge to manage the import/export of liquefied natural gas to avoid dependence on pipelines.

Renewable energy

Belgium is doing well in wind energy - mainly offshore wind energy. There are 399 turbines in eight offshore wind farms, grouped in an area of 238 km². These have a capacity of 2.26 gigawatts (GW) and an average production of 8 TWh. That provides green power for nearly two million households and puts Belgium in fifth place worldwide in the production of wind energy. Belgium also ranks fifth worldwide in the number of solar panels counted per capita. According to the ambitions of the national Energy and Climate Plan, the share of renewable energy for Belgium should be 17.5% by 2030.

Implementation in Flanders

Green subsidies

According to the Flemish government, citizens and companies ideally provide for their own energy. Flanders is very much committed to residential solar pan-

els and heat pumps through subsidies. However, due to the popularity resulting in high costs for the Flemish government, support had to be scaled back. The energy crisis and rising electricity prices caused another huge increase in the number of requests for solar panels and heat pumps though. The demand for solar panel installations doubled in 2022 in comparison to 2021. As mentioned, Belgium now ranks fifth in the world on the number of solar panels per capita.

Energy saving in industry and buildings

Flanders has a strong presence of an energy intensive industry with high energy consumption. The Flemish government is working on an industrial energy efficiency policy so the energy intensive companies are given the necessary incentives to further invest in energy-saving measures. By 2023, Small and Medium Enterprises (SMEs) and large companies will have to draw up an energy balance sheet describing the supply, transformation and consumption of the energy, or do an energy audit. In the future, they will then have to act on the working points that emerge from it. Flanders is showing more ambitions regarding energy efficiency in buildings. From 2023, there will be a renovation obligation for private buildings with the worst insulation.

Green energy infrastructure

A new major wind power plan is in preparation to double offshore capacity by 2030. An additional high-voltage line is needed to bring the green energy inland. This plan is called Ventilus, and the line would run through the western part of Flanders. Existing high-voltage lines are being used as much as possible, yet there is still a need for 20 kilometres of new overhead lines. This encounters a lot of protests from local citizens who do not like the idea of an overhead high-voltage line. There is a widespread fear that the high-voltage lines will have negative effects on health and the resistance has been halting the construction of the line since 2019. In March 2023, the Flemish government could finally make a principle decision on the Ventilus route. Soon there will be a public enquiry where opponents can submit objections. It will still take a while before a final decision is made though.

Credit: Freepik.com

TRANSPORT

The complex Belgian state structure also shows when it comes to transport. For each different policy area within the transport sector, the competent government is determined. The table below broadly shows which policy areas are federal and which are regional competence:

Federal competence

- The national airport and railways
- Fuel taxes
- Technical standards for vehicles

Regional competence

- Motorways, navigable waterways, ports, regional airports
- Public transport and school transport
- Vehicle taxes

Targets and expectations from the EU

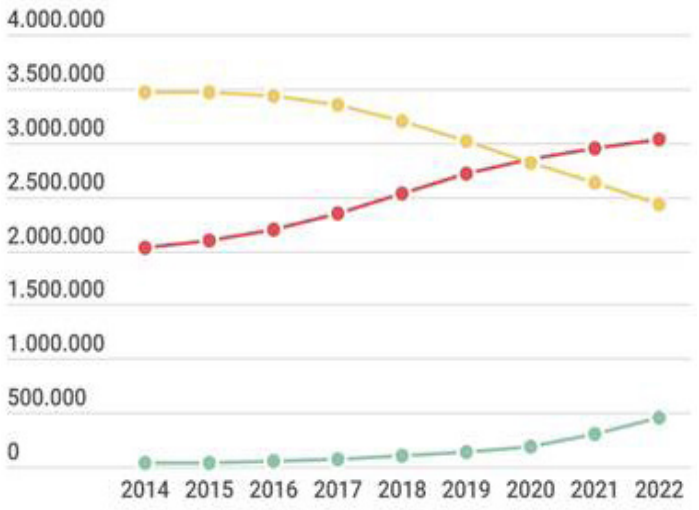
Reducing the use of fossil fuels in transport is necessary if the EU is to reach the Fit for 55 targets that demand a reduction of 55% in greenhouse gas emissions by 2030 and climate neutrality by 2050.

If the transport sector is to meet these targets, it must reduce its greenhouse gas emissions by 90% in 2050. Among the measurements, the EU Commission demands that cars and buses will be zero-emission by 2050. Fit for 55-packages also focus on alternative fuels for all vehicles, the aviation sector and maritime transport. It is a goal that zero-emission aircraft will become ready for market by 2035.

National objectives

The transport sector in Belgium is problematic on two levels: It is one of the most polluting sectors emitting the most greenhouse gases, and it is a sector where emissions have increased over the past 30 years. This increase is largely due to road transport, accounting for 98% of total land transport emissions in 2019.

The car is still the most important means of transport in Belgium. In 2022, Belgium had almost six million passenger cars - an increase of 0.3% by 2021. This means that for every two Belgians there is a passenger car. Petrol cars now account for 50.8% of the passenger car fleet, compared with 40.8% for diesel cars. Hybrid cars currently account for 6.3%. The below graph from Statbel, the Belgian statistics office, shows the evolution of the number of passenger cars by fuel from 2014 up to 2022. The yellow line are diesel cars, the red line are the petrol cars and the green line are the hybrid and electric cars.



Source: Statbel

The national climate objectives aim to increase the market share of zero-emission passenger cars to at least 20% by 2025. By 2030, half of newly sold passenger cars are expected to be fully zero-emission and 20% partially zero-emission. Today, a lot of newly purchased cars are already (partially) electric powered. For example, 31.6% of the cars registered in the first six months of 2022 would be (partially) electric powered. At the moment, only 7.5% is fully electric powered though.

Implementation on federal level

The national level is focused on a general legal framework on mobility, taxation policies and larger investments. These are their competences:

- Adaptation/optimization of legal framework and greening of the fleet of company cars
- Reform of taxation to promote sustainable mobility and intermodality
- Investment in strengthening and optimising rail traffic for passengers and freight transport

A concrete example of what the Belgian government can do within its powers is within the so-called 'modal shift'. The aim is for rail transport to become the most widely used mode of transport, gradually reducing the share of road traffic. At the same time, the Belgian government will take actions to make rail transport more sustainable, such as reducing energy consumption and limiting the negative impact on nature along the railway line.

Implementation in Flanders

The Flemish climate policy essentially focuses on reducing the use of fossil fuels, including within the transport sector.

The five main policies for transport within the Flemish policy level are:

1. Promoting low-carbon and zero-emission vehicles and providing charging infrastructure for electric cars
2. Strengthen public transport and create a mobipoint network
3. Focus spatial policies on modal shift and fewer trips
4. Expand investments in bicycle route network and bicycle highways
5. Make freight transport more sustainable by encouraging a shift to waterways and rail and stimulating innovation

Credit: Benoît Prieur

Zero-emission vehicles

Electrification of the vehicle fleet is one of the main pillars of the Flemish policy to reduce emissions from the transport sector. The first policy line focuses on stimulating low-carbon and zero-emission vehicles in both private and corporate fleets and buses.

Electric cars

The Flemish climate agreement on mobility states that anyone buying a new car or van from 2029 can only choose an electric model. Even hybrid models will then no longer be sold. However, Flanders needs the cooperation of the federal level to enforce this due the division of competences. Flanders can only do the preparation on Flemish territory and then encourage the federal government to implement the law.

Besides a federal law, the feasibility of this ambition depends on a number of other factors according to the Flemish government. For instance the affordability of electric car models, the number of charging points and the capacity of the energy network. When it comes to the first factor, the Flemish government made it clear that the date will be postponed if there are not enough affordable electric cars on the market by 2029. However, even if Flanders succeeds in putting enough affordable cars on the market, the question remains whether there will be enough charging stations by then. In 2022

there were about 8,500 charging poles in Belgium, accounting for about 17,000 charging points (two charging points per pole). According to calculations, Belgium will need as many as 150,000 charging stations by 2030.

Buses

In addition to the targets regarding private and corporate vehicles, the Flemish government will also only allow zero-emission buses in the new purchasing procedures of the Flemish Transport Company 'De Lijn'. By 2035, all buses in Flanders must be zero-emission. In addition, 50% of all other newly purchased buses (coaches, school buses, etc.) must be zero-emission or low-carbon by 2030.

Biofuels

When it comes to biofuels in transport, reference is made to the federal plan since the main part of the policy authority is placed at this level. The federal level wants to promote and regulate alternative fuels such as biofuels. Companies supplying diesel products or gasoline must add a certain percentage of sustainable biofuel to their fossil fuels. An actual blending rate of 10.45% must be achieved by 2030. In addition, the federal government also wants to make the biofuel blending requirement legally binding in the whole country.

Strengthen public transport

To address mobility challenges in the most local way, the more than 300 Flemish cities and municipalities were divided into 15 transport regions in 2019. Within these transport regions, local administrations are at the table. They are essential to help draw up and implement Flemish policy plans within the local context and environment.

The ambition of this policy line is to increase the share of sustainable modes of transport from 32 to 40% for the whole of Flanders. Sustainable transport modes in-

Credit: Francisco Welter-Schultes

clude (e-)scooters, (e-)bicycles or speed pedelecs, combined with collective transport or taxi cabs. Three transport regions, 'Vlaamse Rand', Antwerp and Ghent, are even aiming for a share of at least 50%.

To achieve this ambition, a network consisting of bicycle facilities, collective transport and MobiPoints is needed. A MobiPoint is a place where different forms of (partial) mobility are available. In practice: public transport is close by and there are shared bikes and shared cars available as well. The next step is for concrete, individual action plans to be drawn up for each transport region.

Spatial policy focused on 'modal shift'

From 2001, the Flemish government worked on a document to achieve the shift to less car traffic. However, several competent mobility ministers of different political parties did not succeed in delivering this. No concrete or quantified objectives were set for more than twenty years. In the meantime, the current Flemish government has produced the "Mobility Vision 2040", which describes both policy priorities for 2040 and perspectives for 2050. It indicates where Flanders wants to go in terms of mobility and serves as a foundation for the 15 transport regions.

The four perspectives put forward by the Flemish government in this mobility vision are:

- No more heavy traffic victims by 2050
- No more transport emissions by 2050
- Smooth and seamless mobility by 2050 (a good connectivity between different modes of transport to reduce time loss)
- A 60% reduction in the material footprint of mobility

To make people aware of current and new mobility options and guide them through the transition, the vision text also includes new patterns of choice and thinking. For instance more focus on shared mobility rather than the need of individual cars for everyone. There is also an emphasis on spatial development which should guarantee a healthy and attractive living and working environment for all citizens. In the future, spatial development must therefore improve the connection of transport hubs.

Expanding investments in bicycle networks

The Flemish government aims to increase bicycle trips by investing in a functional bicycle route network with bicycle highways. The investments are already following an increasing trend: from 150 million euros in 2019 to an expected 300 million euros by 2023. In addition, the investments are very specifically targeted, with a focus around the city centres. The bicycle highways should provide fast, safe and direct connections between urban centres, employment poles and important public transport hubs.

Making freight transport more sustainable

In freight transport, road traffic continues to occupy the largest share and even shows an increasing trend: From 74% in 2017 to 77.6% in 2019. More environmentally friendly and sustainable modes (rail and inland navigation) failed to reduce the share of road traffic in total freight transport. In order to reach the sustainable development goals by 2030, the percentage must fall to about 63.7% in Belgium, according to the Federal Planning Bureau.

To inform, encourage and guide companies in their quest for smart and sustainable transport, the independent platform *'Multimodaal.Vlaanderen'* was founded in 2022. The goal is to guide companies to efficiently use the right modes of transport and to provide the most sustainable flows of goods. It is still too early to know whether this can effectively impact the green transition, but the first positive signs are already there. Their website is full of success stories in both road, water and rail transport.

AGRICULTURE

Agriculture is exclusively a regional matter. Belgian agriculture specialises in horticulture, cereals, potatoes, sugar beets, livestock and milk production. Although agricultural land occupies most of the Flemish territory (45% - a share that has stayed the same in the last 20 years), the number of farms has continued to decline in recent years and we see a scale-up of remaining farms. Agriculture contributes 11% of total emissions, mainly of methane and nitrous oxide. Since 1990, emissions from this sector have decreased by 17%. This is partly thanks to a decrease in livestock and the switch from dairy cattle to breeding cattle. Furthermore a reduction of fertilisers resulting in less nitrogen being excreted on the grazing land.

The most recent sore point is the nitrogen dossier. A very difficult matter on which not only the Flemish but also the Dutch government struggles, resulting in major internal political discussions and a lot of protests among farmers. In early 2023, it seemed as if the Flemish government was completely paralysed by the deadlock on this dossier. At the end of March, an agreement was finally reached. This states that by 2030, the agricultural sector will have to reduce nitrogen emissions by 50%. The Flemish government will formulate a maximum amount of nitrogen pollution by 2025. The farms unable to adapt to this limit will not get a licence. It is already decided that about 40 farms will have to close.

Targets and expectations from the EU

The EU's goals regarding the agrifood-sector are: 1) ensure food security in the face of climate change and biodiversity loss, 2) reduce the environmental and climate footprint of the EU food system, 3) strengthen the EU food system's resilience, and 4) a comprehensive "Farm to Fork" strategy. This strategy includes food loss and waste prevention, sustainable food production, sustainable food processing & distribution and sustainable food consumption.

Implementation in Flanders

Flanders has committed to reducing greenhouse gas emissions from the agricultural sector (both energy and non-energy) by 31.3% in 2030 compared to 2005. However, it is clear that agriculture is a very difficult sector for reduction potential compared to other sectors. About 80% of greenhouse gas emissions from the agricultural sector consist of non-energy, non-CO2 emissions, which to a certain extent are unavoidable in the production of food and organic raw materials. To this end, Flanders is committed to three components:

1. ***Sustainable technology and innovation***
   The first innovation is about improving production processes through sustainable intensification. This has proven to be fruitful in the past. The output per hectare or per animal has increased while input such as fertilisers, pesticides, imported raw materials and primary fossil energy reduced more than proportionally. To this end, Flanders is betting on smart farming or precision agriculture. In addition, agriculture must also commit to using renewable energy, reduction of methane emissions in animal feeding, and increasing nitrogen efficiency in the food production chain to reduce nitrogen losses to water and the atmosphere.

2. ***Sustainable and/or renewed revenue models***
   The goal is to move away from volume production that focuses on a low cost price to a sustainable earnings model that highlights the uniqueness and quality of the products. Circular principles must be applied to further reduce greenhouse gases, and agriculture, in addition to providing food, must be used to serve society and, for example, produce biomass or stimulate biodiversity.

3. ***Transition and system innovation in the food system***
   The ecological footprint of the food system lies with many different actors including the consumer. To

Credit: Jean Housen

this end, Flanders wants to anchor agricultural, horticultural and fisheries policies in an integrated and circular food policy. This implies:

- *Fewer food losses from producer to consumer*
  In Flanders, total estimated food losses are at 1.2‡ 2.4 million tonnes per year. The Flemish consumer on average throws away between 18 and 26 kg of food per year. This corresponds to 4-6% of the total amount of food purchased and about 4% of the carbon footprint of food consumption. In order to reduce food waste, the Flemish government wants to focus on informing and raising awareness among consumers and making the distribution sector more accountable. For instance by offering tailored food or offering second choice products at a cheaper price. The by-products, such as potato peelings, vegetables and fruit as well as bones must be reprocessed into animal feed, compost or renewable energy. Every aspect is mapped out in a five year action plan that builds on the audit of the former five year plan. Suggestion can be found on the website www.voedselverlies.be.
- *Sustainable consumption patterns*
  Locally produced food, less but locally produced meat at a fair price, local vegetable proteins and more seasonal consumption are the building blocks of a sustainable consumption pattern. Fortunately, there is already a trend towards healthy, environmentally and climate conscious choices in our food choices. Flanders wants to further commit to a behavioural science approach in order to best connect with the decision making process of the Flemish citizens.

Conclusion

The complex state structure of Belgium poses the biggest challenge in achieving the country's climate goals. The different governments often fail in making joint decisions, resulting in difficult negotiations and a lack of concrete policy actions.

Flanders, in particular, is criticised for not providing sufficient climate plans and finding "creative" ways to meet the standards - or not meeting them at all. Flanders has also challenged the increased 47% target for Belgium within the EU system, asking for a narrowing of the spread between the richest and poorest EU member states and for international flexibility to purchase emission reserves from abroad.

Despite some good measures, the Flemish government's attitude towards climate policy is primarily focused on realistic and affordable measures rather than ambitious ones, which may not lead to sustainable solutions. As a result, Belgium may not be able to live up to the expectations for the green transition in the near future, regardless of the efforts of the other regions in the country.

Perspectives from Belgian citizens

We asked three Belgian citizens with different backgrounds how the three topics, energy, mobility and agriculture/food, affect their lives. Jade Hazenberg is 23 years old and works as a middle school teacher. She lives in the city. Jonathan Nowakowski is 34 years old and works in a management position. He has two small children and lives in the countryside. Werner Cornelis is 65 years old and a retired electrician. He is not used to using social media and the internet to look up information.

Knowledge of the green deal

Our interviewees all knew that the European Green Deal is the European Unions climate plan. What it effectively means, only Jonathan could tell us. They all find it important that the EU has a climate plan though. They also already made changes to their lifestyles to become more climate conscious.

Energy

Have you changed your habits to save energy?

All three have made chances in the energy use such as using LED-lights, turning off lights and lowering the temperature in their homes. Jonathan and Werner have solar panels and try to use electric appliances when the panels produce electricity.

They all say that the high price of electricity and gas are the most important reasons why they are more careful with their energy consumption. However, Jonathan made a very climate conscious choice while renovating his home and is making as many sustainable choices as he can:

»We bought a house with an EPC value F and are transforming it into a value A with isolation, a heat pump, solar panels, a smart energy steering system and circular building materials. But it isn't easy because the cost is high - and often the green choice is more expensive.«

Did you also think about how much energy you used before the energy crisis?

Werner: *»Yes, I have never wasted energy. The energy I used was because I needed it.«*

Also Jonathan was already aware of his energy consumption but Jade just recently started paying attention to it because it is so expensive.

What would you like the government to invest in, in terms of energy?

On this question they all are very clear: Our governments are not doing enough. What they should do differs for everyone. According to Jonathan, the government needs to provide more relevant information so that citizens and contractors can make a green choice. Also the subsidies are insufficient. Werner wants the government to look at the system for solar panels with more subsidies.

Jade concludes: *»The government should do more in general - and do it faster!«*

Mobility

If your country had a better transport system, would you be more likely to use public transport then?

Again, they are all very clear: Yes, definitely! For Werner and Jonathan the prices of public transport are too high though.

Werner: *»I love using the train! But I cannot understand why it is so expensive. If I want to go from Ghent to Bruges, the cost of the train for my wife and I is more than when we go by car. But still I try to use the train as much as possible.«*

Jonathan has the same idea, but he never uses the train for family trips: *»Too expensive, inefficient train timetables and bad service. We only have one train per hour starting from 7 am until 8 pm. You are almost crazy to choose the train.«*

How do you see mobility in 20 years?

Jade: *»I went to Warsaw on Erasmus exchange where public transport is much better organised and very pleas-*

ant. I hope one day we will also have more metros. I believe in the future there will be self-driving cars, trams, subways and taxis.«

Werner believes in more and better public transport and electrical vehicles. Jonathan hopes that the modal shift will be more common:

»It could be that the car is the best choice for the trip, but it should be an obvious choice not to take the car. The car is still the first choice for many of my friends, even for short rides. It is also possible for rural areas to leave the car, but the infrastructure should be better adapted. More cycle roads, cycle highways and charging points for electric cars or bikes are needed.«

What would you like the government to invest in, in terms of transport?

More, better and cheaper public transport and better infrastructure for public transport, bicycles and electric cars, they all say.

Agriculture/food

All of our interviewees mostly buy food in the supermarket. Jade and Jonathan would prefer to buy more locally but the supermarket is cheaper, easier and less time-consuming. Especially that last argument is important for Jonathan:

»We have a young family so we don't have the time to go looking for sustainable products. Should there be a good local shop nearby or a self-picking farm, I would switch quickly for certain products. It's weird that we have a lot of farms around us, but few you can go to as a consumer. There are only large-scale farms.«

Would you consider changing your consumer habits to help reduce climate change?

Werner would definitely change some habits to have a more sustainable world. Also Jonathan tries to adapt his eating habits:

»We try to make the shift to eat less meat, to become flexitarians, but we don't always succeed. Having little time and small children, it is still easiest to cook traditional meat with vegetables and potatoes.«

Jade has made the biggest change:

»I have become a vegetarian and eat no meat because it's good for the environment. I would like to eat more locally sourced food as well so I check the labels in the supermarket. For example, I only buy Belgian apples.«

What motivates you to change your habits?

Werner and Jonathan have the same first answer: They want a better planet for their (grand)children. Second most important reason is the prices. Jade needs most of all accessibility of locally sourced food:

»For instance a farmers market a walking distance from where I live and information about environmental consequences of buying this or that product.«

What would you like the government to invest in, in terms of agriculture and food?

Jonathan: *»Better guidance for farmers to make the shift to smaller and organic farming.«*

Werner: *»The government should invest in biological and smart agriculture and maybe greenhouse agriculture. I love eating bananas and oranges, but I know it is not 'green'. So perhaps we can make them ourselves in an ecological way in green houses heated by solar panels or other green energy.«*

Jade: *»The government should promote a vegetarian lifestyle. More vegetables and fruit should be the standard and meat only as an exception. The space for farming in Belgium should be used to grow vegetables and fruit.«*

Conclusion

Jade, Jonathan and Werner are all aware of global warming and convinced that action is needed to counter it. They are willing to make adjustments to their habits and have already done so in recent years. Each in their own way with what they consider important and/or possible. They are held back in their ambitions to make sustainable choices by expensive prices of sustainable choices, poor facilities such as public transport in Belgium or too little information. All three have high expectations for the government to make sustainable choices easier.

Questions and exercises

Questions about the chapter:

1. How is climate policy implemented in Belgium and how different are the different regions' approaches to green transition?
2. What has Belgium done so far to reduce their greenhouse gas emissions?
3. What is Belgium/Flanders planning to do in the future to reduce GHG emissions?
4. In which areas will Belgium need to take further actions to reduce GHG emissions?
5. What are the major points of criticism of Belgium's path towards becoming climate neutral?

Exercises for the e-book:

Climate interviews

Use the interviews from the Belgian chapter of the e-book for inspiration to create an interview guide and then find someone to interview about:

- How are they affected by climate change?
- Do they think Belgium/Flanders is doing enough, too little or too much to achieve its climate goals?
- Are they satisfied with the climate actions of Belgian politicians?
- Do they follow and participate in the public debate on climate change?
- Do they feel they can do something to fight climate change?

Climate debate roleplay

1. Assign people to groups where each group will represent different stakeholders. One group will represent climate researchers, another will represent Belgian industries, a third Belgian farmers, and a fourth a Belgian regional government.
2. Each group should answer:
   What are the interests of your specific stakeholder regarding Belgian climate policy?
   Why is your stakeholder's interests the most important (make three arguments)?
3. Meet with other groups with different stakeholders and use your arguments in a debate with each other.
4. Finish by talking altogether about how each stakeholder tries to influence Belgian climate policy.

Climate meetings

Try visiting one of your local city councils open meetings on climate policy. Observe the differences in the local politicians' views on climate change depending on their party. Also try to observe if there are differences between the viewpoints of the politicians of the party on the local level, and at the national level. Further try to focus on how they debate, and if people other than the politicians are attending the meeting (e.g. local corporations and NGOs).

Further reading

Here you can find links for further reading on Belgian climate policy.

National climate and energy plan:

Dutch: https://www.nationaalenergieklimaatplan.be/admin/storage/nekp/nekp-finaal-plan.pdf

English: https://commission.europa.eu/energy-climate-change-environment/implementation-eu-countries/energy-and-climate-governance-and-reporting/national-energy-and-climate-plans_en

Evaluation by the EU Commission:
https://energy.ec.europa.eu/topics/energy-strategy/national-energy-and-climate-plans-necps_en

Flemish climate and energy plan/ Flemish climate strategy:

Only in dutch: https://www.vlaanderen.be/veka/beleid/vlaams-energie-en-klimaatplan-vekp-2021-2030

Flemish climate plan for the local communities:

Only in dutch: https://lokaalbestuur.vlaanderen.be/lekp

Climate perspectives from Croatia

Croatia is generally known as a country with a mild, moderate climate where extreme weather occurrences are fairly rare. This is why most people from abroad see it as a pleasant summer vacation destination. However, in recent years, Croatia, like most of the world, is beginning to see the consequences of human activity leading to climate change.

An increasing number of extreme weather events are occurring in the country. The eastern part has experienced several droughts caused by lack of rain with damaging impact on agricultural production, heavily reducing farmer's crops. Other places have been hit by severe storms, in some cases causing destructive floods in urban areas.

Summer months have been characterised by increasingly high temperatures all over the country. The coastal region of Istria was hit by prolonged water shortages which forced local authorities to bring in water-saving policies lasting up to several months during the summer.

These events are in line with the "Climate Risk Assessment Report: Croatia" from 2019 which finds three main characteristics of changing climate in Croatia: Increase of average temperatures, decrease in rain, and increase in frequency and intensity of extreme weather such as storms and droughts. There are growing concerns that these effects will continue to increase.

According to a report by the United Nations Environment Programme, the Mediterranean region is hit by climate change more than the global average. Both in terms of temperature rises (1.54°C temperature increase compared to pre-industrial levels - in comparison with 1.1°C globally) and extreme weather occurrences such as droughts and heavy rain. Addressing these rising and variable events will require a strong and coherent policy response by Croatia's government and political institutions. In the following chapters we will analyse the current state of play within the policy framework and the effort invested into mitigating and transitioning to a more climate friendly society.

Aerial view of Gunja village under water in 2014.

Credit: EC - Audiovisual Service

Public opinion on climate change

Even though the effects of climate change are already present in Croatia, only 7% of Croatian citizens considered climate change and the environment as the most important issue they are personally currently facing, according to the EU barometer from Spring 2021. The overall EU average was 14%. Likewise, only 6% of Croatians considered it to be the most important issue in their country, as opposed to 18% of total EU citizens. In Spring 2021, climate change was the second most important issue overall for EU citizens, while in Croatia there were seven topics considered to be more important. Despite the low level of concern, 89% of Croatian citizens think that their national government is not doing enough to tackle climate change.

Another research by the NGO, Society For Sustainable Development Design, has analysed the attitudes of the citizens of Croatia on environmental protection, climate change and energy transition. It has furthermore compared their views in 2011 and 2021. This indicated that only 2.4% of the population consider climate change and environmental issues to be the most important policy topic in Croatia. This is fairly consistent with their views from 2011 where 2% answered the same.

However, when asked directly whether they were concerned about the environment, there was a significant upturn from 41.2% to 57.2%. Among the main environmental problems in Croatia they listed waste management, climate change, exhaustion of natural resources, water and air pollution, chemicals and pesticides and genetically modified food.

Low willingness to change habits

The study also showed that almost half of the respondents believe that changes in the climate across the world are equally caused by natural processes and human action. Furthermore, 8.3% of respondents believe that climate change is either only occurring due to natural processes or not changing at all.

Another part of the research focuses on the willingness to take part in environmentally friendly behaviour, including changing one's personal habits. This shows a notable increase in the number of people who are willing to recycle their waste compared to ten years earlier. However, in most other aspects there was either no significant change or even a decrease. For instance when it comes to reducing energy consumption at home and willingness to stop using fossil fuel cars. There is also a strong unwillingness to reduce meat consumption with negative attitudes and/or prejudice towards vegetarianism and veganism.

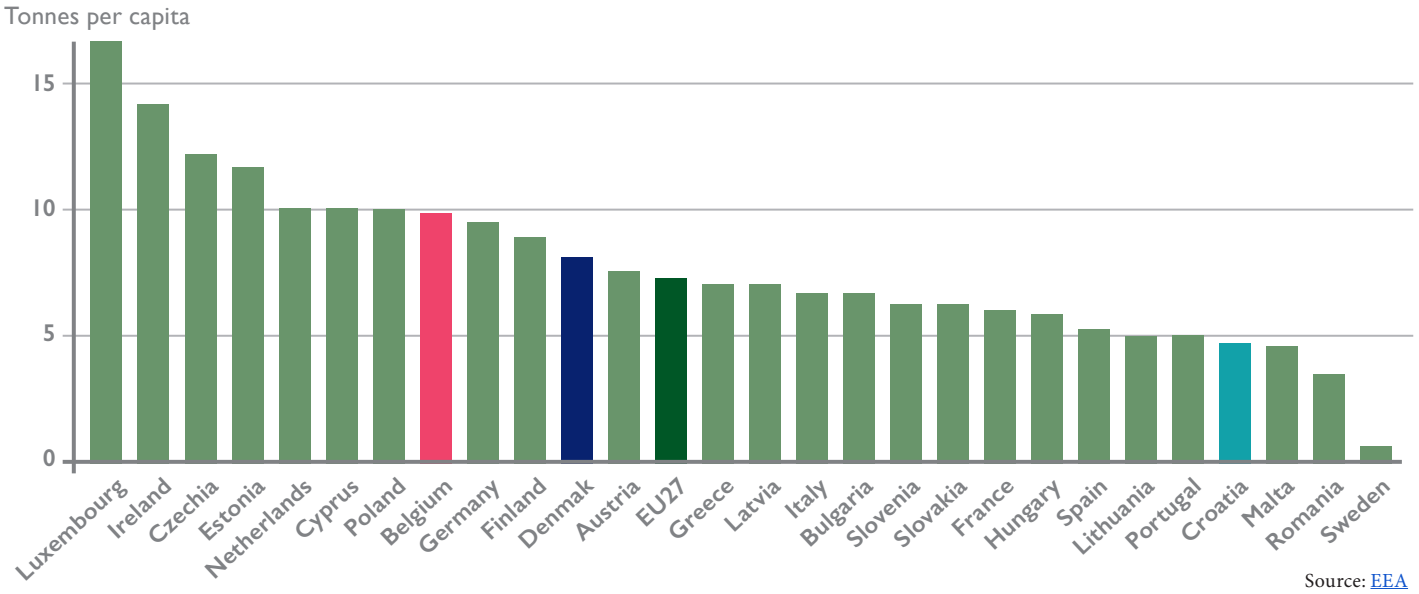
Lack of civil society inclusion

Although there is a low level of personal participation in climate-related activism, civil society organisations are generally perceived positively regarding the combat against climate change. 62.5% of participants think that CSOs are doing (somewhat) enough in this regard, while only around 17-18% for the government and private sector, and 31-33% for citizens and local authorities.

Despite the positive perception of civil society organisations, it is difficult to measure their impact on concrete climate politics. Although there are many relevant environmental organisations in the country, both in larger urban centres and smaller communities, they are typically not substantially included in the policy making processes - other than the legally mandatory public consultation procedures. Their activities could be categorised more as the critical/analytical contributions, protests and awareness-raising campaigns.

All in all, there were only a few climate-related protests in Croatia in recent years. All relatively low-scale and not significantly supported by the general population. The largest one was the Fridays for Future student protests which was a part of an international initiative of the same name. Around a thousand people attended this protest in Zagreb and smaller groups in other cities. Other protest activities and performances were organised by environmental NGOs such as Friends of the Earth Croatia, Greenpeace and Extinction Rebellion.

Net greenhouse gas emissions, 2021



Source: EEA

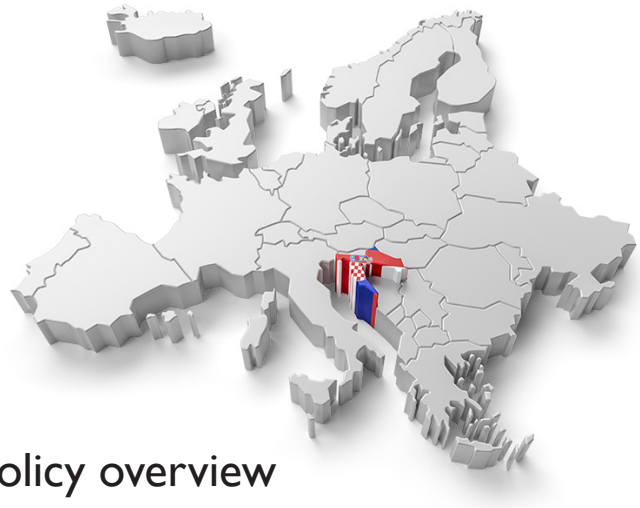
Green transition progress in Croatia

The EU climate objectives are divided into two. In connection to the ETS sector which includes the largest sources of greenhouse gas emissions. Secondly to the non-ETS sectors, including relatively smaller emission sources such as road and off-road transport, small energy and industrial facilities, households, services, agriculture, waste management, changes in land use and forestry.

Croatia has set the following targets for reducing greenhouse gas emissions by 2030:

- In the ETS sectors: At least 43% compared to the 2005 level.
- For non-ETS sectors: At least 16.7% compared to the 2005 level. The target stated in the Croatian Integrated National Energy and Climate Plan is 7%, but this was increased in 2021 at the EU level for all member states with the adoption of the Fit for 55 program.

Croatia's net greenhouse gas emissions are in a consistent downtrend according to Eurostat data. In absolute terms, Croatia emitted 4.8 tonnes per capita in 2021, significantly below the EU average of 7.4 tonnes per capita, and also substantially lower than both Denmark (8.1) and Belgium (9.9).



Policy overview

Within the Croatian climate policy framework, the term 'green transition' is defined in the National Development Strategy 2030 adopted in 2021 as one of the key strategic goals and directions for the country's future development. According to the strategy, "Croatia aims to be among the European leaders in turning climate and environmental challenges into opportunities, by ensuring a fair and inclusive transition towards climate neutrality. The green and digital transition should be achieved by switching to clean and more accessible energy, encouraging green and blue investments, decarbonizing buildings, developing a circular economy, strengthening self-sufficiency in food production, developing the bioeconomy, and preserving and restoring ecosystems and biodiversity."

According to the strategy, there are three main indicators which Croatia aims to fulfil by 2030:

1. A decrease of greenhouse gas emissions to 65% of the 1990 level. As mentioned above, it was 76.6% in 2019.
2. An increased recycling rate of communal waste to 55%. In 2018, the rate was only 25%, significantly below the then EU average of 45%. There is substantial variance in success when it comes to this indicator in various cities, regions and counties, as this policy is delegated to the local authorities.
3. Increasing the proportion of renewable energy sources in gross energy expenditure to 36.40%. Croatia currently outperforms the EU average in this measure with 31.3% versus 21.8% EU average in 2021. However, it should be noted that an unknown percentage of this energy comes from sources of questionable environmental standards.

Source: https://ec.europa.eu/eurostat/cache/egd-statistics/

National Energy and Climate Plan

Another important policy document is the Integrated National Energy and Climate Plan for 2021-2030, adopted in 2019. It aims to integrate international policy frameworks in a national context, such as sustainable development goals as well as EU policy frameworks related to the energy union. The plan encompasses five key dimensions of the energy union: ***1) Decarbonization, 2) energy efficiency, 3) energy security, 4) an internal energy market***, and ***5) research, innovation and competitiveness***. These will be elaborated in the following sections.

1. Decarbonization

Decarbonization is a crucial element of the green transition as greenhouse gas emissions are causing climate change. To achieve this, renewable energy sources are important as they, unlike fossil fuels, do not emit greenhouse gases. The decarbonization dimension has two key elements: 1) elimination of emissions and 2) establishment of renewable energy sources (RES).

There are four key strategic documents within the decarbonization dimension:

- *Low Carbon Development Strategy of the Republic of Croatia until 2030 with a view to 2050*

  The purpose of this Low-Carbon Strategy is to initiate changes in Croatian society that will contribute to the reduction of greenhouse gas emissions and which will allow for the separation of economic growth from greenhouse gas emissions.

- *Long-Term Strategy for Mobilising Investment in the Renovation of the National Building Stock*

  This strategy aims to fulfil EU obligations of increasing energy savings by at least 27% in 2030. To achieve this goal, Croatia has committed to reviewing its national building stock, as well as construction and energy characteristics of buildings. This

Credit: Nenad Kajić / Veneko.hr

should amongst others identify an effective way of renovating the buildings in an energy-efficient manner.

- *Strategy for the energy development of Croatia in the period until 2030 with an outlook for the period until 2050*

  In this strategy, one of the main goals is to reduce the reliance on fossil fuels and increase the production of energy from renewable sources, primarily from sun, wind and water. The Strategy develops three different potential scenarios with projections on their impact towards achieving climate neutrality and eliminating greenhouse gas emissions.

- *Strategy for Adaptation to Climate Change in the Republic of Croatia for the period to 2040 with a view to 2070*

  This strategy acknowledges that climate changes have and will continue to have an increased impact in Croatia. It states that Croatia is among the top three EU member states which have suffered the most damage from extreme weather events relative to its GDP. It further elaborates that as a country which relies heavily on tourism and agriculture in its economy, Croatia is very vulnerable to further climate change and extreme weather events, which could especially impact the least prepared parts of society.

It also stresses the importance of adaptation-mitigation co-benefits. Measures which increase the resilience towards extreme weather events, while at the same time decrease greenhouse gas emissions. The Strategy is compatible with the European Green Deal and aims to increase the public awareness of and support towards the green transition.

It has three main objectives: (1) decreasing the vulnerability of natural systems and society against negative impacts of climate change, (2) increasing the capacities for recovery after experiencing the negative effects of climate change, and (3) using potential positive effects of climate change in a productive manner.

2. Energy efficiency

Energy efficiency is important for the green transition as it deals with wasted energy that causes unnecessary GHG emissions. It represents the difference between total energy expenditure and consumption (primary energy consumption), and the level of energy expenditure and consumption that was actually used by the consuments (final energy consumption). The difference in these levels is inefficiency, or wasted energy, which should be minimised or ideally eliminated.

According to data, it is estimated that by 2030, a maximum of 16.7% of energy consumption in Croatia should be inefficient or wasted. It is clear, however, that the primary energy consumption is projected to increase at a higher rate than the final energy consumption, which would actually represent an increase in inefficiency of energy consumption. This is a cause for concern, especially because it seems unclear whether Croatian authorities are planning on implementing measures for mitigating this negative spillover.

3. Energy security

The main objective of energy security policy is to provide a lasting, secure and quality supply of energy to citizens and companies in the country. The chapter on energy security in the Integrated National Energy and Climate Plan states that national security objectives include, among other things, increasing gas storage capacity. This implies that Croatia intends to continue relying on fossil fuels for the foreseeable future. It is unclear how the objectives from the Integrated National Energy and Climate Plan for 2021-2030 will align with the objectives from EU's Fit for 55 and REPowerEU initiatives, as the Integrated plan was written in 2019, before the adoption of the two EU programs.

While the EU has decided that natural gas can be used as a transitional fuel before enough renewable energy sources are ensured, many experts and activists, such as Friends of the Earth Croatia, find it counterproductive to invest in non-renewable energy sources. It also contradicts the Fit for 55 program which aims to decrease the greenhouse gas emissions by 55% until 2030 on an EU level.

Credit: Wikimedia Commons

The situation of energy security is further complicated by the Russian invasion of Ukraine which caused shocks across the EU energy market due to increased prices and decreased availability of Russian gas and oil.

4. Internal energy market

The relevant strategic framework for energy security and internal energy market dimensions is the strategy for the energy development of Croatia. It generally aims to improve the renewable energy infrastructure in the country and become 100% self-sufficient by 2050. However, the strategy still implies the usage of fossil fuels such as gas and oil for the upcoming period of time, as well as further investment in fossil fuel production and storage which is also in opposition to the goals of green transition.

According to the plan, the existing transmission grid and interconnection capacity to neighbouring countries enable the integration of significant installed power of renewable energy sources. Given the climate characteristics, the region of Dalmatia is particularly suitable for the development of wind and solar power plants, and there is a strong investor interest in the construction of new facilities in the region.

However, when the installed capacity of wind power plants exceeds around 1,000 MW (currently around 600 MW), it will be necessary to upgrade the internal grid in the country so that the energy generated from RES could be transmitted to remote consumption areas. The preparations for the construction of this line have begun.

5. Research, innovation and competitiveness

There are three key policy documents defining the fifth dimension of the energy union in Croatia: Strategy for Education, Science and Technology, Croatian Smart Specialization Strategy 2016 – 2020 (currently under revision and in the process of public consultations for the new edition of 2021-2029 - draft available here), and The Strategy for innovation encouragement of Croatia 2014-2020. It is worth noting that all three strategic documents relevant for this dimension are expired or outdated and in need of revision.

These may not have a direct connection to green transition policies, but research, development and innovation are crucial elements in providing new technological solutions which could potentially aid the implementation of climate change mitigation policies as well.

There are several priorities within this area that are anticipated to have an impact on the green transition:

- Development of new and improvement of existing technologies, as well as primary and secondary equipment for power systems related to renewable energy sources
- New research related to increasing the efficiency and production capacity of industrial, agricultural and forestry plants and machinery
- Advanced energy storage systems
- Diagnostics and better management of energy equipment
- Energy management systems for planning, investment, real-time management and monitoring energy efficiency and reducing CO^2 emissions
- Advanced conventional energy solutions
- Application of advanced grids and complex energy systems
- Energy efficient lighting
- Sustainable conversion of biomass into energy
- Biogas technologies for electricity and heat generation
- Systems for CO^2 capture, transport, use and storage.

The government is planning several measures and initiatives to achieve these objectives by 2030, such as:

- Research, innovation and competitiveness status analysis
- Co-financing industrial research and experimental development projects aligned with the National Development Strategy
- Supporting knowledge and technology transfer from science to economy with focus on low carbon technologies
- Capacity building for stimulating research and innovation and increasing competitiveness in the low carbon economy

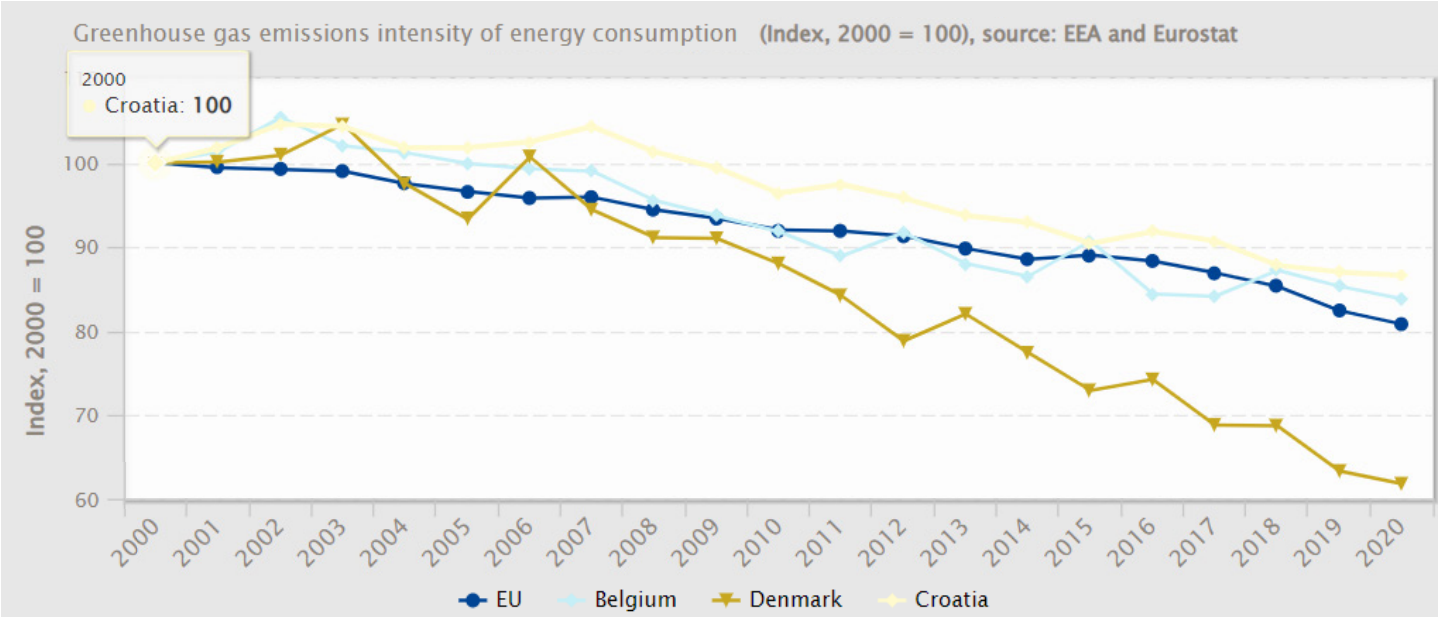
Finally, although it is not a primarily green transition related strategic framework, there is also a significant green transition component in the National Recovery and Resilience Plan, which all EU member states had to create in order to obtain funding in the aftermath of covid-19:

KEY MEASURES TO SECURE CROATIA'S GREEN TRANSITION

40% of the plan's total allocation for reforms and investments supports climate objectives

- **Energy efficiency and post-earthquake reconstruction of buildings:** renovating at least 225,000 square metres of residential buildings and 593,000 square metres of public buildings. **€789 million**
- **Sustainable mobility:** upgrading railway lines, autonomous electric taxis with supporting infrastructure adapted for people with disabilities, installing 1,300 charging stations for electric vehicles, introducing zero-emission vehicles and vessels. **€728 million**
- **Low-carbon energy transition:** modernising energy infrastructure to connect 1,500 MW of renewable energy, supporting investments for the production of advanced biofuels and renewable hydrogen, financing innovative carbon capture and storage projects. **€658 million**
- **Support to businesses for green transition and energy efficiency:** supporting businesses with projects aimed at boosting green economy, sustainable tourism, investing in green technologies. **€542 million**

Source: EU Commission



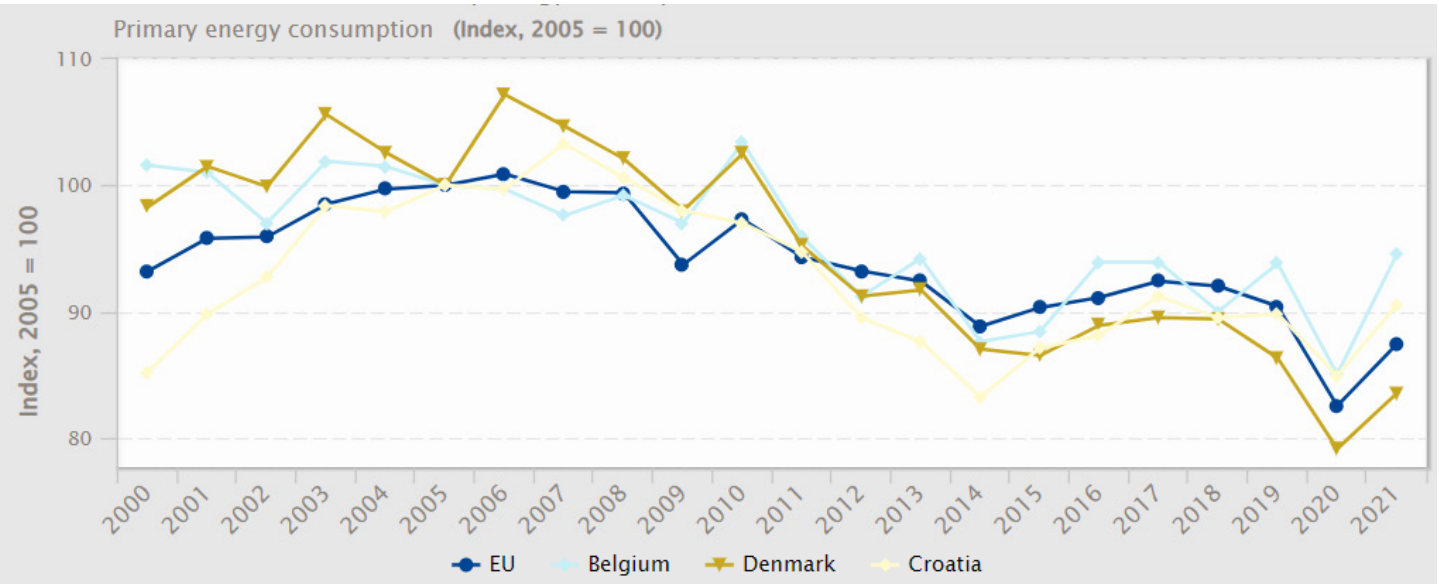
Source: Eurostat

ENERGY

In 2021, the greenhouse gas emissions intensity from the energy consumption index for Croatia was 86.8. This is higher than the EU average of 81.2, and also higher than both Denmark (60.9) and Belgium (80.9). The indicator is calculated as the ratio between energy-related GHG emissions and gross inland consumption of energy. It expresses how many tonnes CO^2 equivalents of energy-related GHGs are being emitted in a certain economy per unit of energy that is being consumed.

Primary energy consumption covers the energy consumption by end users such as industry, transport, households, services and agriculture. It also covers energy consumption of the energy sector itself for production and transformation of energies, losses occurring during the transformation of energies.

When it comes to primary energy consumption, Croatia (90.5) finds itself slightly above the EU average of 87.4, and in between Belgium and Denmark. In con-



Source: Eurostat

trast to the long term downtrend in this measurement, there was a sharp increase in energy consumption in the 2020/2021 period, likely as a consequence of the covid-19 pandemic.

Croatia's primary energy consumption is, as of 2021, very close to its stated goal of 8.23 Million tonnes of oil equivalent, with the latest value standing at 8.3 Mtoe (metric tonnes or equivalent).

However, when measuring final energy consumption which only covers the energy consumed by end users excluding the energy sector, Croatia expended 7 million tonnes of oil equivalent in 2021 which is very near the proclaimed target of 6.85.

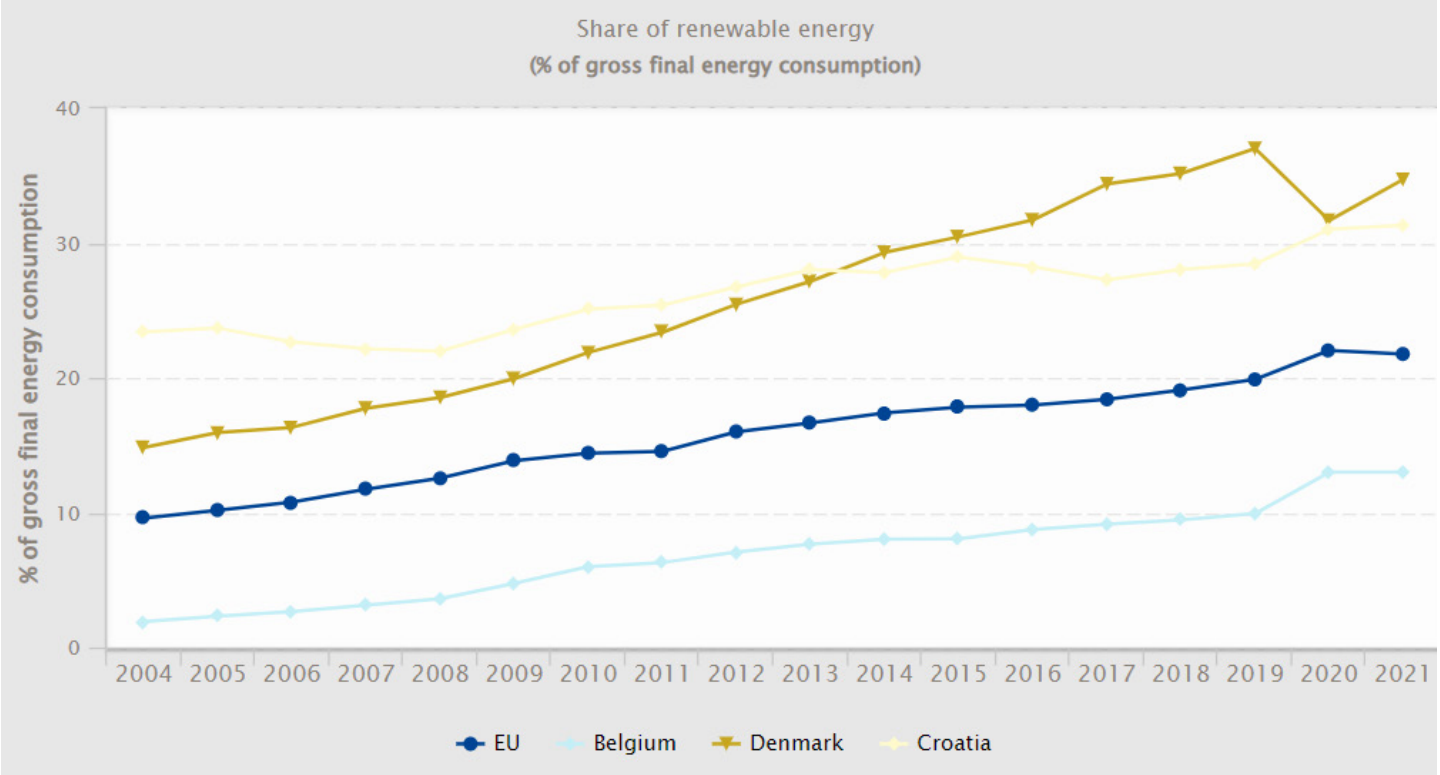
Renewable energy targets

Croatia's estimates of 2020 and targets of 2030 regarding renewable energy can be found in the table below.

RES share, %	Estimates 2020	Targets 2030
In the gross direct consumption of energy	28.6	36.4
In the gross direct consumption of electricity	47.0	63.8
In the gross direct consumption of energy for heating and cooling	33.3	36.6
In the gross direct consumption of energy in transport	5.2	13.2

Source: Integrated National Energy and Climate Plan for 2021-2030

Croatia's share of renewable energy (solar, wind, hydro) as percentage of gross final energy consumption was 31.3% in 2021 which puts it 8th place EU-wide outperforming the EU average of 21.8%.



Source: Eurostat

Credit: Sharon Hahn Darlin

TRANSPORT

Transport infrastructure in Croatia consists of road, rail, air, maritime, postal and inland waterway transport, and to a lesser extent (mostly concentrated in larger urban centres) cycling infrastructure. Each branch is regulated by a special set of laws - all of which are under the jurisdiction of the Ministry of the Sea, Transport and Infrastructure. Policies in the field of transport infrastructure are defined by the Transport Development Strategy of the Republic of Croatia (2017-2030). Its general objectives are to:

1. Change the distribution of passenger traffic in favour of public transport (PT) and forms of transport with zero GHG gas emissions. This includes increasing PT in local and regional contexts (trams, local bus lines, etc.), rail transport, public maritime transport (ships), bus transport on regional and long-distance lines, as well as for pedestrians and cyclists.
2. Change the distribution of freight traffic in favour of rail, maritime and inland waterway traffic.
3. Develop a transport system (management, organisation and development of infrastructure and maintenance) according to the principle of economic sustainability.
4. Reduce the impact of the transport system on climate change.
5. Reduce the impact of the transport system on the environment (environmental sustainability).
6. Increase the safety of the transport system.
7. Increase the interoperability of the transport system (PT, rail, road, sea and air transport and inland waterway transport).
8. Improve the integration of different modes of transport in Croatia
9. Further develop the Croatian part of the trans-European transport network (TEN-T)

Targets vs. reality

Despite these ambitious sounding objectives, the reality in Croatia is somewhat different. As of 2023, the public transport infrastructure has not improved in any meaningful way. Not on the national level, nor in individual cities, towns, regions, counties and other populated areas. There are very few examples of zero GHG emission public transport services. Trams in the cities of Zagreb and Osijek are possibly the only ones. Local bus lines are fairly sparse and unreliable in most

areas outside the few larger urban centres. Railway infrastructure is severely outdated and in need of significant investment. There are plans for using EU funding for improving this, but these projects are still in the very early stages and it is unclear if and when they will be implemented. Cycling infrastructure in Croatia is likewise underdeveloped and does not seem to be a priority for either national or local authorities in most cases.

Road traffic

Latest average CO^2 emissions per km from new passenger cars in Croatia (2021) came in at 129. This is higher than the EU average (116.3) as well as both Belgium (117) and Denmark (92.6). The indicator is defined as the average CO^2 emissions per km by new passenger cars in a given year. The reported emissions are based on type-approval and can deviate from the actual CO^2 emissions of new cars. There could be several potential causes of the Croatian numbers. Among them are the lower quality and availability of public transport services, greater proportion of older high-emissions cars, and lower proportion of electric and hybrid cars.

Percentage of newly registered zero emission passenger cars in Croatia stands at only 1.5% as of 2020, placing it near the bottom among EU member states.

Railways

According to a review of the Spatial Planning Strategy of the Republic of Croatia from 1997, the national railway infrastructure covers 2699 km of tracks of which double-track lines make up only 248 km or 9.1%. The data on the length of double-track lines and their share have remained the same until 2019. The report also states that the level of electrification of railways is low, amounting to about a third of the railway network which is less than the European average. The remaining two thirds are powered by fossil fuels.

The main feature of the existing infrastructure is the decay of the railways which causes reductions in train speed at certain sections. Secondly, the reduction in the number of lines which in turn contributes to the reduction of railway use. There are significant shortcomings in the maintenance of the railway infrastructure. As much as 60% of the total length of the railway network has exceeded its average service life meaning that it is no longer possible to run trains on that part of the network at projected speeds.

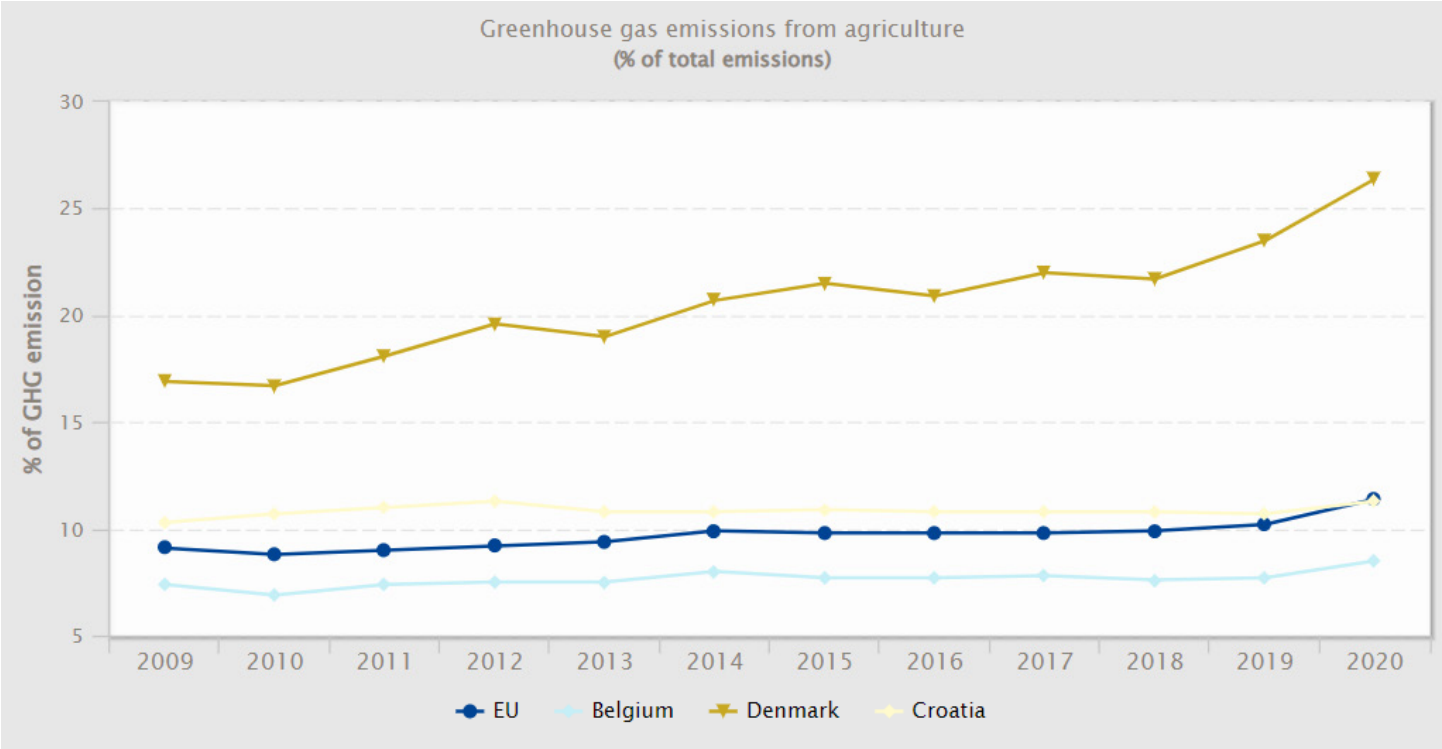
All of these factors contribute significantly to the low level of usage of railways in Croatia. Significant investment in the infrastructure, especially in railroads, is necessary in order to encourage larger numbers of citizens to switch from personal vehicles to trains and thus contributing to reducing Croatia's carbon footprint. There are some signs of using EU funds to invest in the infrastructure but progress so far is very slow.

Other forms of transport

Croatia generally has an underdeveloped network of public transport, both when it comes to transport within cities and towns, and between different residential areas. Only two Croatian cities have trams (Zagreb and Osijek) while the rest rely primarily on buses. City bus lines are generally operated by public companies which are largely inefficient with insufficient numbers of lines and frequency of available connections. Bus transport between different regions, cities, towns, counties and villages is in an even worse state. It is mostly operated by private companies which function on a profit basis. As a consequence, many lines between smaller residential areas have slowly been extinguished or decreased in frequency.

When it comes to cycling infrastructure, it is also relatively poor in Croatia. Some cities and towns have cycling tracks but they are sporadic and disconnected. Cyclists are mostly forced to drive on the roads intended for motor vehicles.

Generally, the majority of the population relies on personal automobiles for transport, especially outside of the few larger cities which have somewhat better (but still insufficient) public transport infrastructure.



AGRICULTURE AND FOOD

Croatia's GHG emissions from agriculture came in at 11.3% in 2020, which is almost exactly at the EU average of 11.4%. Denmark's emissions from agriculture are more than double that percentage while Belgium's are lower.

The Law on Agriculture adopted in 2019 defines the following goals of the agricultural policy of Croatia:

- Raising the level of competitiveness of the agri-food sector
- Improving market mechanisms for selling agri-food products
- Sustainable management of natural resources
- Environmentally friendly agriculture
- Balanced spatial development of rural areas and improving life in the local community
- Including job creation and retention
- Ensuring a stable income for farmers

In 2020, a proposal for amendments to the Law on Agriculture was adopted by the Croatian parliament. Along with harmonising the law with EU regulations, particularly in the fields of organic agricultural production and prevention of food waste, the new law includes clearer definitions of certain terms. It also enables more equal and transparent processes of the competent authorities. These legislative changes should contribute to dimension 1 and 5 of the green transition policies: decarbonization and research, innovation and competitiveness.

Credit: Silverije

Conclusion

From the policy objectives listed above and in the various strategic documents, it can be concluded that by 2030 Croatia will focus most of its resources on the implementation of the Integrated national energy and climate plan. However, in March 2021, the Croatian Parliament passed the final proposal of the Hydrocarbon Exploration and Exploitation Act calling into question the readiness of the Republic of Croatia to achieve its climate goals and make the switch to renewable energy sources.

Croatia still has large and underutilised potential for the production of electricity from renewable sources such as solar, wind, biomass, and thermal energy from geothermal sources. Large hydropower plants for electricity production account for ¾ of the energy produced from renewable energy sources (RES). The share of electricity from solar power plants is only 0.4% in Croatia, while the average for the European Union is 5% of total electricity produced.

There is still significant work ahead for both the Croatian government and institutions, as well as civil society organisations and the general population. In some areas, the institutions should provide a clearer and more concrete roadmap with better defined measures and projects to address concrete problems. Croatian policy makers should move away from insisting on continuing to use fossil fuels, even as a transitional measure, as these kinds of policies are in contradiction with the strategies of the green transition. Significant improvements are necessary in areas such as public transport and agriculture as well.

Perhaps most importantly, there needs to be a much stronger effort towards educating and informing the Croatian public. This is a crucial element of the green transition as there cannot be a comprehensive change if the citizens are not informed about it and do not support it.

Perspectives from Croatian citizens

We have interviewed three people from different geographical areas and educational backgrounds in Croatia. We asked them how much they know about the green transition and in which ways they are willing to adapt their behaviour and personal consumption habits in order to have a more sustainable future. We have selected some of their answers to illustrate their opinions on the green transition and how they can contribute to it personally.

Interview with Dora, 25 years old

What are your thoughts on energy consumption and government policies?

»I didn't think much about energy consumption before the energy crisis caused by the Russian invasion of Ukraine. However, this brought the issue to my attention due to inflation and rising prices. I was worried by the news articles about possible energy shortages in the EU. In terms of energy, I would like the government to invest in renewable energy sources such as solar and wind power. I think the government could do more to promote and invest in sustainable energy options.«

Interview with Dubravko, 35 years old

Have you heard about the European Green Deal - and do you find it important to have regulations like these?

»I have heard of the Green Deal but I don't know much about it. Among the people I know, there are not many interested in these kinds of topics. I agree that our government and the EU should focus more on climate issues and I would like to learn more and find out how to contribute to having a more sustainable environment. Currently I separate and recycle my waste and try to follow the instructions I hear in the media. I have a car and drive it for trips out of town but I try to ride my bicycle as much as possible to reduce pollution. I am also a vegetarian so I hope that my lifestyle choices minimise my impact on the environment.«

Interview with Duje, 33 years old

What kind of transport do you use the most - and would you change some of your habits to help the climate?

»I live on an island in a small village and the public transport is not very good. I have to commute daily to my workplace and as my home is on the opposite side of the island to my workplace, which is more than 50 kilometres in each direction, I don't have a choice other than using my car. If in the future there would be decent public transport options, I would consider decreasing my car usage, but I don't think it is realistic. On my island the population is decreasing and ageing and the residential areas are relatively few. It seems unlikely that we will get a significant improvement in public transport.«

Questions and exercises

Questions about the chapter:

1. Which sectors emit the most greenhouse gas in Croatia?
2. What has Croatia done so far to reduce GHG emissions?
3. What is Croatia planning to do in the future to reduce GHG emissions?
4. In which areas will Croatia need to take further actions to reduce GHG emissions?
5. What are the major points of criticism of Croatias' path towards becoming climate neutral?

Exercises for the e-book:

Climate interviews

Use the interviews from the Croatian chapter of the e-book for inspiration to create an interview guide, and then find someone to interview about:

- How are they affected by climate change?
- Do they think Croatia is doing enough, too little or too much to achieve its climate goals?
- Are they satisfied with the climate actions of Croatian politicians?
- Do they follow and participate in the public debate on climate change?
- Do they feel they can do something to fight climate change?

Climate debate roleplay

1. Assign people to groups where each group will represent different stakeholders. One group will represent climate researchers, another will represent Croatian industries, a third Croatian farmers, and a fourth the Croatian government.
2. Each group should answer:
   What are the interests of your specific stakeholder regarding Croatia's climate policy?
   Why is your stakeholders' interests the most important (make three arguments)?
3. Meet with other groups with different stakeholders and use your arguments in a debate with each other.
4. Finish by talking altogether about how each stakeholder tries to influence Croatian climate policy.

Climate meetings

Try visiting one of your local city councils open meetings on climate policy. Observe the differences in the local politicians' views on climate change depending on their party. Also try to observe if there are differences between the viewpoints of the politicians of the party on the local level, and at the national level. Further try to focus on how they debate, and if people other than the politicians are attending the meeting (e.g. local corporations and NGOs).

Further reading

Here you can find links for further reading on Croatian climate policy.

Climate Risk Assessment Report: Croatia

State of the Environment and Development in the Mediterranean

National Development Strategy 2030

Integrated National Energy and Climate Plan

Low Carbon Development Strategy of the Republic of Croatia until 2030 with a view to 2050

Long-Term Strategy for Mobilising Investment in the Renovation of the National Building Stock

Strategy for the energy development of Croatia in the period until 2030 with an outlook for the period until 2050

Strategy for Adaptation to Climate Change in the Republic of Croatia for the period to 2040 with a view to 2070

Study of De-gasification of the Republic of Croatia

Strategy for Education, Science and Technology

Croatian Smart Specialization Strategy 2016 – 2020

The Strategy for innovation encouragement of Croatia 2014-2020

EUrobarometer from Spring 2021

The Lost Decade: Attitudes and Opinions on Environmental Protection, Climate Change and Energy Transition in Republic of Croatia

https://commission.europa.eu/system/files/2021-07/com-2021-401-croatia_factsheet_en.pdf

Hydrocarbon Exploration and Exploitation Act

https://ec.europa.eu/eurostat/web/climate-change/visualisations

Energy Development Strategy

Transport Development Strategy of the Republic of Croatia (2017-2030)

Railway Act

Railway Services Market Regulation and Protection of Passengers' Rights in Railway Transport Act 2017

Railway System Safety and Interoperability Act

Our Railroads

Law on Agriculture

Conclusion

The European Green Deal implies that all EU member states and institutions have committed to shared climate goals and legally binding climate legislation. The EU has set the minimum targets for reducing greenhouse gas emissions and reaching certain levels of renewable energy. Each country is however responsible for actively developing strategies to achieve them. The previous chapters have covered climate perspectives from Denmark, Belgium and Croatia regarding the fulfilment of their climate obligations towards the European Green Deal. While these chapters offer a glimpse of the overall green momentum in the EU, each country faces its own challenges and strengths. The pace of the green transition varies across the EU, with some countries more reliant on fossil fuels and facing more significant political, economic, and environmental hurdles to achieving its climate goals.

CROATIA

By adopting the European Green Deal, the EU sets an ambitious goal of Europe as the first climate-neutral continent by 2050. The concept of green transition thus entered the strategic planning process of all EU members, including Croatia. Although some member states have front run this process by defining national policies before the EU-wide adoption, Croatia has been more of a follower than a leader in this regard. It seems to be near the average when it comes to most metrics. Likewise, although the EU Commission presented the legislative package 'Fit for 55' in 2021, it is still relatively unknown among the Croatian public, and it is very rarely mentioned in the public space, including by politicians and officials.

There is still significant work ahead for both the Croatian government and institutions, but for civil society organisations and the general population as well. In some areas, the institutions should provide a clearer and more concrete roadmap with better defined measures and projects to address concrete problems. Furthermore, Croatian policy makers will have to reduce the use of fossil fuels, even as a transitional measure, as this contradicts the strategies aimed at enacting the green transition. Significant improvements are necessary in areas such as public transport and agriculture as well.

Perhaps most importantly, there needs to be a much stronger concerted effort towards educating and informing the Croatian public both about the national climate policies and the EU-wide initiatives. This is a crucial element of the green transition as there cannot be a comprehensive change if the citizens are not informed about it and do not support it.

BELGIUM

The biggest challenge for Belgium in reaching its climate goals is without a doubt the complex state structure. It simply does not have one clear climate policy as the regions can decide independently which policies they want to implement on their own territory. With six different governments and six parliaments in an area of only 30,500 km2 it is easy to imagine that cooperation is not very smooth. Very often the different governments fail to make joint decisions. This creates absurd situations such as the block of money from the ETS system. Belgium is in a permanent state of difficult negotiations and a lack of concrete policy actions when it comes to climate policy.

When zooming in on Flemish policy, we can conclude that the Flemish government has a lot of catching up to do. Between 2005 and 2019 Flemish greenhouse gas emissions decreased by barely 5%, which means that there is still 35% to go before 2030. The Flemish government gets a lot of criticism for having great difficulty in arriving at climate plans. Moreover, they often seek creative solutions that are unsustainable or do not meet the imposed standards. Within the EU system Flanders has challenged the increased 47% target

for Belgium and would like to see a narrowing of the spread between the richest and poorest EU member states (where poorer member states make more efforts).

As Belgium's energy mix consists mainly of nuclear power and gas, there is an ongoing debate on the pro's and con's on nuclear energy. Until this debate is settled, it is difficult to predict which direction Belgium's energy policy will take. The Flemish government's policy mainly focuses on financial incentives for renewable energy for private homes and businesses. To fulfil its ambitions for wind energy, the Flemish government urgently needs to decide on the Ventilus case that is crucial to bring wind energy on land. But there too, the Flemish government leaders are in conflict and the Flemish government cannot make a decision for the time being.

Regarding the emission reduction in the transport sector, several critics are already arguing that with the current targets set by the Flemish mobility minister (30,000 additional charging stations by 2025), Flanders will never achieve its ambitions. In principle, according to the grid operator in Flanders, anything is possible, but only on the condition that the Flemish government makes decisions quickly. In addition, many measures are agreed with reservations, making the elaboration of concrete policies even more difficult. For instance, the target number of electric cars by 2029 is subject to affordable models at the time. The Flemish minister in charge of climate, Zuhal Demir, is mainly pushing for 'realistic measures' and 'affordable policy'.

When it comes to the agricultural sector, the Flemish government was very quick to notice that a 31.3% emissions reduction would be very difficult. At the same time, concrete measures failed to materialise and Flemish farmers were left in the dark. The unclear and ever-changing agricultural policy in Flanders left tempers running high in recent years. More specifically, lingering debates and the lack of a solid agreement on nitrogen policy made Flemish farmers furious. In early March 2023, they drove their tractors to the capital in protest. A few weeks later, the Flemish government finally found a nitrogen agreement. The promise is to systematically reduce nitrogen emissions while allowing economic development. Central to this is a workable balance between a source-oriented permit policy and an effective recovery policy (nitrogen sanitation).

Overall, despite some good measures, Flanders cannot really be called ambitious when it comes to climate efforts. The government is looking for creative detours to keep on emitting more, which in the end do not lead to sustainable solutions as they only eliminate excessive emissions on paper. The measures are also often given a "subject to reservation".

With such an attitude from the Flemish government, Belgium as an EU member state will not be able to live up to the expectations for the green transition in the nearest future - regardless of the climate efforts of the remaining regions of the country.

DENMARK

In 2020, the Danish parliament passed the climate law. A legally binding target, that Denmark in 2030 should reduce GHG emissions by 70%, compared to the levels in 1990, as well as becoming climate neutral in 2050. The law was at the time more ambitious than the targets of the European Green Deal, which aims for 55% reduction in 2030, compared with emissions in 1990.

However, when it comes to reduction of specific sectors, Denmark will most likely not live up to the EU's tightened reduction demands. This goes for the non-ETS sector for area use and forests as well as EU obligations on use of renewable energy in the transport sector. Finally, the 2023 EU directive on energy effectivization creates further challenges for Denmark, as it will make more investment in energy efficiency in public buildings needed.

In September 2022, the Danish government announced that Denmark was almost 3/4 of the way with the implementation of policies that would guarantee the fulfilment of the 70% reduction by 2030. According to the

official statistics, Denmark is performing quite well regarding the green transition in comparison with other EU countries, largely because of a highly developed energy sector. A large portion of the renewable energy is however based on primary biomass which experts refuse as a sustainable solution. If the European Union eventually tightens its definitions of sustainability in accordance with science, Denmark - as well as many other member states - will face challenges in living up to the targets of renewable energy.

Denmark is already challenged by its own independent climate council which was founded to advise the Danish government on climate policy. For three years the climate council has published reports concluding that Denmark is not on the way to achieving its climate goals in time. The criticism of the government stems mainly from two related points. First of all, the government has a heavy reliance on future technological solutions such as CO2 absorption and hydrogen technology. This compromises the 2025 goals by focusing on the fulfilment of the 2030-goals instead. Secondly, this strategy also causes postponement of important environmental policies in agriculture and transport, which are major contributors to the total amount of greenhouse gas emissions in Denmark.

The Danish government is working on the actual implementation of climate initiatives. The overall plan is further investment in fuel from renewables in the sea transport sector, a more ambitious agricultural taxation reform, green transition in the public transport sector, an emission neutral garbage sector, and circular economy, as well as research in future technologies.

The green future of the EU

To accelerate the green transition, the EU has launched widespread initiatives of which some are still subject to negotiation. Like in many previous negotiations within the EU system, there is still a risk of diluting their impact to accommodate the interests of business and heavy industry-dependent countries. This was for instance the case when it came to the so-called taxonomy of sustainable activities which ended up including natural gas as well as other doubtful sources of energy in regards to a fast and steady green transition.

Although much of the effectiveness of the EU's climate policies remains to be seen, member states have established climate goals and concrete plans to achieve them, and financial support for climate initiatives which should accelerate the green transition has been introduced. Numerous measures have already been implemented, renewable energy sources are being adopted, and most sectors of society are preparing for a low-carbon future.

Initiatives to prevent climate change are not limited to political spheres. Across the EU, citizens and green NGOs are leading climate mobilisation campaigns, advocating for political action as well as individual changes of consumption and habits towards a sustainable lifestyle. The participation of thousands of citizens in events such as the Friday for Future reflects their shared concern for the planet's future.

According to the European Environment Agency, there is still a long way to go. In 2022, it stated that the existing policies and actions of member countries were inadequate in fulfilling the climate objectives. To obtain these, all sectors of society must notably enhance their efforts in mitigating these emissions.

The coming years will be crucial for the EU's green transition.

About the partners

Building European Democracy is an Erasmus+-project in which the Danish organisation Democracy in Europe Organisation, the Croatian organisation Crosol and the Belgian organisation Europahuis Ryckevelde work together to strengthen the EU debate between 2022 and 2024.

We are focusing on two topics that are highly important in EU cooperation. The first topic is climate politics where we will take a closer look at areas such as energy, transport and agriculture and how the countries can contribute to the green transition of the EU. The other topic we are focusing on is rule of law.

Democracy in Europe Organisation
The Democracy in Europe Organisation (DEO) is a Danish liberal adult education organisation working to promote a participatory European democracy. DEO strives to engage the general public in a nuanced debate on European politics and on the European Union by making public meetings, books, education material and study trips to European countries.

We are independent of political parties and EU bodies. We have no specific political agenda but aim to raise political questions, address problems and discuss European issues in our debates. We strive to engage the public in EU-matters and aim to create the framework for a rich democratic debate. Read more on our Website or have a look at our Facebook.

Europahuis Ryckevelde
Europe House Ryckevelde wants all generations to take part in shaping their Europe, based on an informed and balanced opinion. Therefore the organisation tailor-makes information about the EU and European current issues for students, youngsters and adults and trains their democratic skills, so that they all become active European citizens who participate at EU-level.

The non-profit organisation Ryckevelde was founded in 1956 and is active in Flanders, Belgium. The organisation also offers lectures, activities and workshops. Do you want to know more? Have a look at our Website, Facebook or Instagram.

Crosol
Croatian Platform for International Citizen Solidarity (CROSOL) is a network of 30 civil society organisations active in the fields of international development cooperation, sustainable future and global citizen education. Our values include freedom of assembly and expression, equality, global solidarity and interculturality. We aim to engage citizens, decision makers and activists all over Europe through education, advocacy and debate in order to create a just, inclusive, equitable and sustainable society for all.

More information about our activities and projects is available on our Website, Facebook, Instagram and Twitter.