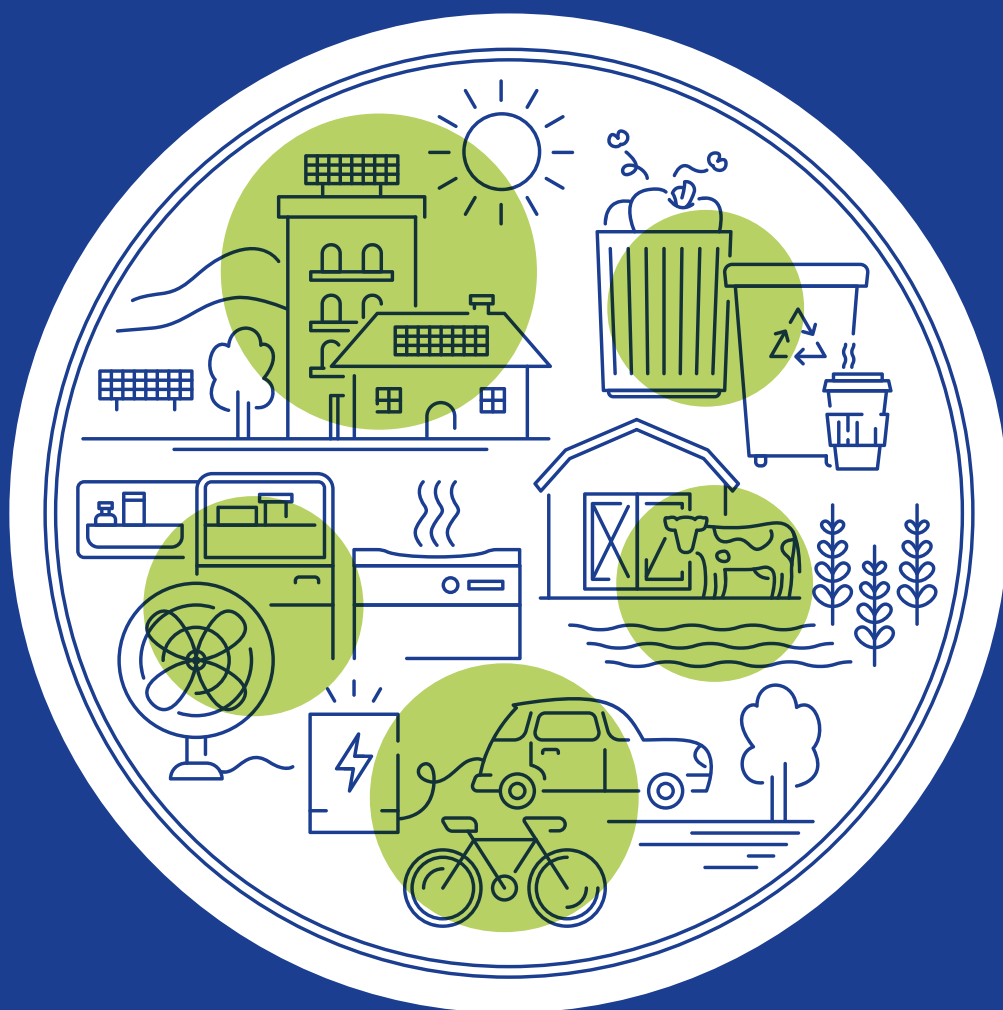


IMPLEMENTING THE EFFORT SHARING REGULATION AT THE NATIONAL LEVEL

LESSONS LEARNED AND RECOMMENDATIONS
FROM THE LIFE UNIFY PROJECT



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INTRODUCTION

In December 2020, EU leaders endorsed a binding EU target of **at least 55%** in net greenhouse gas emissions **by 2030**, a step up from the EU's previous target (-40%). In order to implement the EU's higher climate target (now also enshrined in the new European Climate Law), the European Commission proposed a number of legislative revisions under the "Fit for 55" package in July 2021. These cover wide-ranging climate-related policy areas, including the **revision of the Effort Sharing Regulation (ESR)**.

The ESR sets legally binding emission reduction targets for each EU Member State for the sectors not covered by the EU's Emissions Trading Scheme (ETS). These non-ETS sectors are responsible for nearly 60% of the EU's total greenhouse gas emissions and include road transport, small industry, agriculture, waste and buildings. The ESR legislation currently in place aims to reduce emissions in these sectors by 30% across the EU (compared to 2005 levels) by 2030, while setting concrete national targets for Member States to reach that EU-wide goal.

The Commission's current proposal for the revision of the ESR covers the same sectors of the regulation in force, and still includes nationally binding emission targets, but it **raises the EU's overall emissions reduction target from 30% to 40% by 2030** (compared to 2005 levels). Despite being an improvement, it is important to note that this target is still [far from being aligned with the Paris Agreement goal](#) - for which at least 50% overall emission cuts (compared to 2005 levels) would be needed by 2030 in ESR sectors.

This report takes stock of the ESR sectors' contribution to global EU climate objectives until now (February 2022), and provides recommendations on how to strengthen and improve the revised regulation based on the experiences collected at the national level by the UNIFY project consortium partners.

In fact, the report conducts a detailed assessment of policies and measures adopted in ESR sectors in eight EU countries – Croatia, Czechia, Estonia, Germany, France, Poland, Slovenia and Spain – focusing specifically on **effective measures** and **best practices**.

It finds, amongst others, that **maintaining and strengthening nationally binding emission reduction targets under the ESR (also post-2030) is of the utmost importance** to ensure that Member States are held accountable, introduce ambitious measures and build the expertise required to ensure that these sectors' emission reduction trajectories are in line with the Paris Agreement goal.

In this context, the report also makes the case for **improving national governance** and support structures to implement these targets, as well as for **strengthening EU sectoral regulations** – such as CO₂ standards for vehicles and energy standards for buildings – to support Member States in achieving their national targets.



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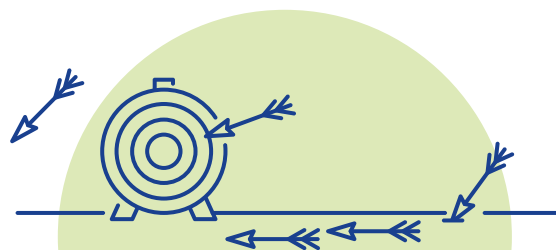
THE STATE OF PLAY OF EFFORT SHARING REGULATION TARGETS IN THE EUROPEAN UNION

A. GENERAL OVERVIEW

National ESR targets are based on an emission budget approach: the EU end target for 2030 is divided into annual reduction targets for each member state, on which each country has to report every year.

ESR targets should be drastically increased if the EU is to comply with its international obligations under the Paris Agreement. To be in line with overall 65% emission reductions by 2030 - as civil society organisations demand -, the emissions from sectors under the ESR should be reduced by at least 50% (compared to 2005). In order to avoid larger costs to society, it is key that they implement bold measures towards decarbonisation in ESR sectors immediately.

The 2020 EU target of a 10% reduction for ESR is expected to be well over-achieved. This [shows](#) that the 2020 target was set quite low, giving few incentives to Member States to accelerate climate action in ESR sectors. Low targets and too many surplus allowances may compromise the overall attainment of the new higher 2030 EU emissions reduction target.



ONLY 21 MEMBER STATES ARE EXPECTED TO MEET EVEN THEIR UNAMBITIOUS ESR TARGETS IN 2020, AND SIX OF THEM WOULD HAVE MISSED THEM IF IT WEREN'T FOR THE EFFECTS OF THE COVID PANDEMIC.

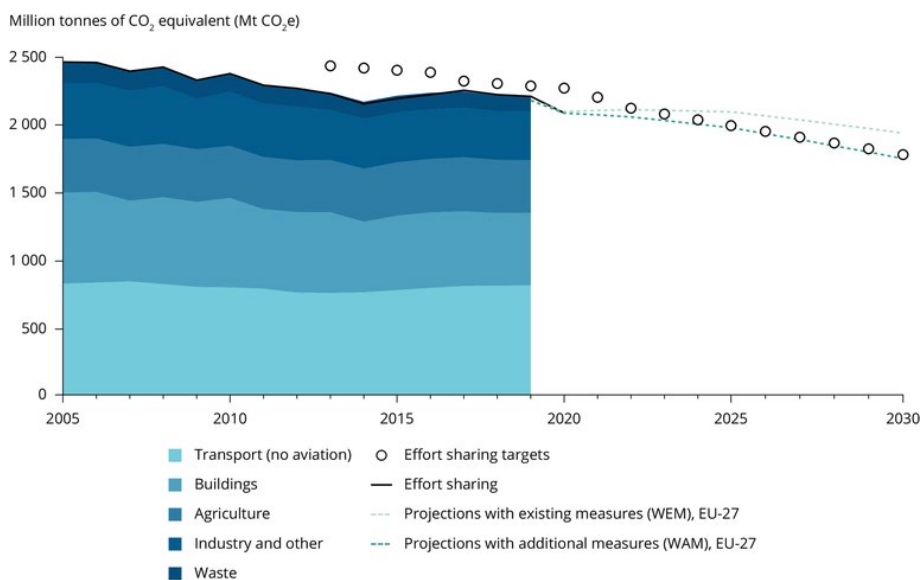


TO BE IN LINE WITH OVERALL 65% EMISSION REDUCTIONS BY 2030 - AS CIVIL SOCIETY ORGANISATIONS DEMAND -, THE EMISSIONS FROM SECTORS UNDER THE ESR SHOULD BE REDUCED BY AT LEAST 50%

[Recent data](#) from the European Environment Agency shows that the EU is not on track to meet its Paris commitment. As a matter of **fact, only 21 Member States are expected to meet even their unambitious ESR targets in 2020**, and six of them would have missed them if it weren't for the effects of the Covid pandemic. The remaining countries (Bulgaria, Cyprus, Finland, Germany, Ireland and Malta) need to make use of flexibilities (eventually buying emission allowances from other countries) to comply with their legal objectives.

Altogether, **ESR emissions have fallen by only 15% since 2005 in Europe**, much less than the reductions seen in ETS emissions, reflecting higher abatement costs. There was a strong decrease of 6% between 2019 and 2020, which can be largely ascribed to the Covid-19 pandemic.

From the National Energy and Climate Plans (NECPs) of all Member States it is obvious that further efforts are needed: if current national policies (previous to the approval of NECPs) are aggregated, the EU is estimated to reduce emissions in ESR sectors only by 19% by 2030 (compared to 2005 levels). This is much less than the current (insufficient) 30% emissions reduction target for the ESR. With the implementation of additional national policies (WAM) however (as outlined in the final NECPs) a reduction of 32% can be [achieved](#) in ESR sectors. This still falls short of the new 40% reduction target, which points towards the need for even more accelerated national action.

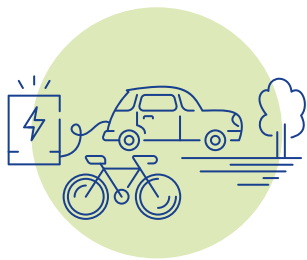


Note: this graph shows EU progress towards the old (-30%) ESR 2030 target with existing measures (WEM) and with additional measures (WAM)

Source: <https://www.eea.europa.eu/data-and-maps/figures/eu-27-ghg-emission-trends>

B. OVERVIEW BY SECTOR

TRANSPORT



The **transport** sector, despite being responsible for 36% of ESR emissions in 2019, has so far only reduced emissions by 13 Mt CO₂e, merely 5% of the total ESR reduction between 2005 and 2019. The sector also experienced a 6% increase in final energy consumption in the same period. Transport is also the sector with the highest *intended* reduction in the future: 50% of the additional reduction by 2030 is planned to take place in this sector. However, amongst other factors, there is a serious risk related to the rising prices of new internal combustion engine (ICE) cars and the high price of electric vehicles, which could translate into an increase in the purchase of old used and second hand vehicles with higher emission factors. This is especially true for poorer EU countries, such as the Central and Eastern Europe (CEE) region.

BUILDINGS



The **buildings** sector has contributed to more than half of the greenhouse gas emission reductions between 2005 and 2019 within ESR sectors, which is by far the highest share. However, it still accounts for around one third of energy related EU emissions. To reach the overall EU objective of a net 55% reduction by 2030, the building sector would need to reduce its own emissions by 60% (compared to 2015 levels), as [stated](#) in the EU Renovation Wave Strategy. Besides emissions reduction, accelerating building renovation and ensuring the replacement of fossil fuels in heating systems with renewable heating solutions is a key challenge to eradicate energy poverty, which concerns over 50 million Europeans. It is also crucial to introduce measures to significantly reduce emissions from newly constructed buildings, notably by ensuring that they are highly energy efficient, completely fossil-fuel free and constructed with low-carbon materials to reduce the embodied emissions.

AGRICULTURE



The **agriculture** sector, which is responsible for 18% of the ESR emissions, only [plays a minor role](#) in both the achieved and planned reductions until 2030. However, agriculture is one of the key sectors to tackle – it is both a greenhouse gases emitter and carbon sink at the same time. On 2 December, 2021, the new reform of the common agricultural policy (CAP) post-2020 (2023-2027) was formally adopted. While the current CAP has failed in terms of climate performance, new CAP Strategic Plans should shift this tendency by including specific climate targets.

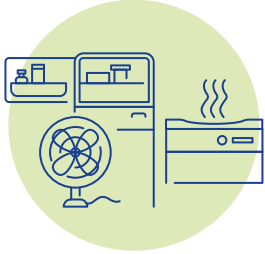


WASTE

The **waste** sector has achieved the highest relative reduction by 2019, 27% below 2005, followed by the buildings sector with a reduction of 20%.

SMALL INDUSTRY

The “**small industry**” sector includes emissions from smaller energy and industrial activities, which are not covered under the EU ETS. There are no specific policies and measures reported which are specifically targeting emissions of small energy industries, manufacturing and construction or process emissions, but there are many policies and measures reported to reduce **F-Gases** (with high global warming potential), which are relevant for projected emission reductions in many Member States.



3

FINDINGS FROM THE NATIONAL ASSESSMENTS

With the help of national experts, we have analysed the state of play and decarbonisation actions taken in 8 European countries (Croatia, Czechia, Estonia, France, Germany, Poland, Slovenia and Spain). We have assessed actions undertaken to reduce emission and potential for more bold and rapid measures, and gathered some cases to gain the better insight of decarbonisation action in the ESR sectors. In particular, we have highlighted some good examples as well as found the weak points that need more attention. This section brings together the main findings from these country assessments.

A. OVERALL AMBITION – TARGETS

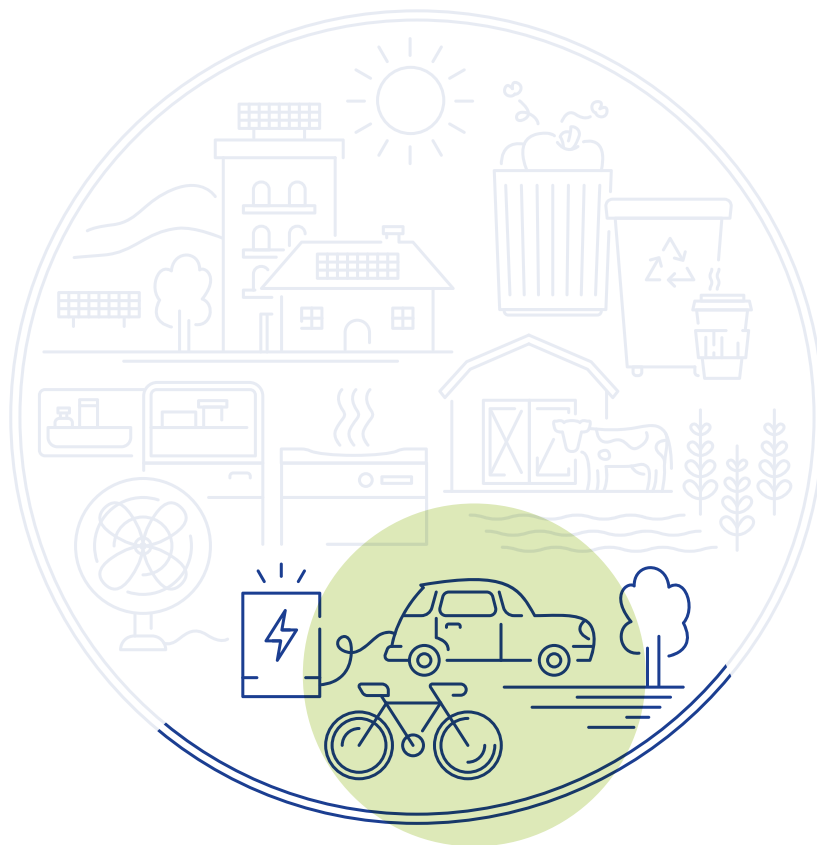
Our analysis found that in some Member States, and especially in some Central and Eastern European countries, climate mitigation under the current ESR has not been effective because of a **low target setting**, and loopholes in the current ESR system allowing for the **accumulation of surplus emission allowances**. Among the countries assessed in this report, this was the case for Estonia and Czechia; the latter, for example, had a very lenient target for its ESR emissions for 2020 and was allowed to increase its emissions in the concerned sectors by 9% compared to 2005 levels.

The ESR regulation provides a strong incentive for Member States to act in ESR sectors: despite stemming from an EU regulation, in fact, many measures and policies in these sectors are implemented at the national level. This is certainly a positive element; according to the Impact Assessment (IA) of the European Commission to the ESR review (2021) **in several cases, cost-efficient solutions can only be taken at national or subnational level.**

Developing infrastructures, creating support schemes for the most vulnerable, removing market barriers and failures, as well as providing updated data and reports, awareness raising, all work best if governed at the national level. These measures are [triggered](#) by the individual accountability of Member States to comply with their national target.

The report finds some good examples of such national measures, including in the buildings sector (in Czechia, Slovenia, France and Poland), and in the transport sector (in Germany and Spain). These examples, highlighted in boxes below, need to be scaled up and accelerated.





B. SECTORAL ASSESSMENTS

TRANSPORT

One of the greatest challenges to achieving national emissions targets has been the abatement of emissions from the transport sector. This is also due to an [increase](#) in final energy consumption in transport by 6% between 2005 and 2019. On the other hand, the transport sector is where the highest reduction rate - 50% - has been planned in the ESR.

The pandemic has had a significant impact on the transport sector, especially in 2020. Transport emissions had previously increased steadily from 2013-2019, despite several measures designed to reduce these emissions in several of the countries analysed in this report, including in Spain, France and Germany.

Spain experienced a steady upward trend between 2013 and 2019, despite several measures designed to reduce transport emissions – including incentives for electric vehicle purchases, investments in public transport and sustainable mobility plans. It is notable that vehicle ownership, and diesel vehicle ownership in particular, increased substantially in Spain during this period.

Our research also found that in **Germany** the transport sector is the hardest to abate (together with the buildings sector), and no substantial emission reduction has been achieved during the past 20 years.

However, in **France**, transport emissions (half of which come from individual cars) have remained stable for a decade. This is due to the limited success of current policies promoting a modal shift to public transport, but also because the efficiency gains in the automotive sector and the increase of electric vehicles are counterbalanced by fossil fuel vehicles becoming increasingly heavier, hence consuming more energy and increasing emissions.

In order to rapidly reduce emissions in the transport sector, Member States should develop a wide range of ambitious measures and policies. Our analysis found a few of them, implemented fully or in part, across the countries analysed in the scope of this report. These include short-term solutions, such as CO₂ standards (at the EU level) or the end of internal combustion engine (ICE) vehicles sales by 2030 (in the car fleet or for public transport, as currently planned in Poland), but also national electromobility plans (like in Germany or Poland), Sustainable Urban Mobility Plans (such as in Spain), and some measures for electric and active mobility (railways, bike lanes, pedestrian pathways), as planned in Estonia, France and Spain. In greater detail:

- The EU's **CO₂ emissions standards**, for new cars and vans and heavy duty vehicles, were successful in forcing car manufacturers to develop electric vehicles and thereby reducing emissions of inroad transport. For example in France, as a result, the market share of electric vehicles went up to 10% in recent years.
- **Local initiatives** to decarbonise transportation in cities by promoting urban planning, clean public transport and low-emission transport modes (low emission zones, preferential lanes for urban buses, a well-connected network of bike lanes, the pedestrianisation of city centres). In **Spain**, for example, the NECP foresees the general delimitation of low emission zones in cities with more than 50,000 inhabitants from 2023. In **France**, cities with more than 150,000 inhabitants will have to implement a low emission zone by 2025.
- Support for better and cleaner **public transport** and its electrification, such as in **Poland** or **Germany**
- **Support for low-emission mobility**: as 'Transport to Work Plans' in **Spain**, which promotes shared mobility services in companies, bicycles, public transport and telecommuting.
- **Modal shift** is also a key component of the emission reduction in the transport sector. The French energy and climate plan foresees an increase in rail modal share by 27% by 2030. **France** also has a bike modal share target of 9% in 2024 and 12% in 2030. With only a 3% modal share, however, France is for now off track in its commitment. To reach these targets it would be necessary to increase investments into bike infrastructures by investing €500 million per year.

A wide range of **Spanish cities** are leading by example on local actions **reducing road traffic and promoting more sustainable, active and clean urban mobility**. Some best practices around the Spanish territory can be found in the following examples:



- [Ciudades Que Caminan](#) (Walking Cities)
 - [Barcelona sustainable and active mobility](#) initiatives
 - [Málaga sustainable mobility](#) initiative
 - [Murcia Sustainable urban mobility plan](#)
 - [Pamplona mobility](#)
 - [Pontevedra alternative mobility](#)
 - [Sevilla Breathe](#)
 - [Valencia municipal bicycle agency](#)
 - [Valladolid, close city](#)
 - [Vitoria-Gasteiz Sustainable Mobility and Public Spaces Plan](#)
- (More details are available in the Spanish country sheet)*

Germany has introduced some short-term measures to bring down transport emissions. These include



- Tax exemptions for EV;
- A purchase bonus to incentivise-mobility ;
- CO₂-related reform of vehicle tax;
- Investment programmes for EVs charging stations
- Increased investments for public transport, cycle paths and rail transport;
- Cheaper train tickets and (slightly) more expensive plane tickets

Poland introduced plans to curb emissions in the transport sector, including the National Electromobility Plan, which gives stimulus to purchase of new electric cars and buses. The plan aims to substitute the whole public bus fleet with electric ones by 2030.



There is also a plan to deliver a massive shift of the private car fleet into an electric one. Unfortunately, the plan is undermined by continuous efforts to keep fuel prices at the lowest level possible.

Another transport sector action is the modernisation of large lorry fleets for international transport. This has been achieved through progressive environmental taxation in road tolling, which is not that effective on the national scale, but is effective in the EU.

Measures taken so far in the transport sector by the **Estonian** government include the allocation of money for rail transport electrification, the support in the transition to public transport using biogas in bigger cities and the support scheme for electric cars (albeit on a small scale).

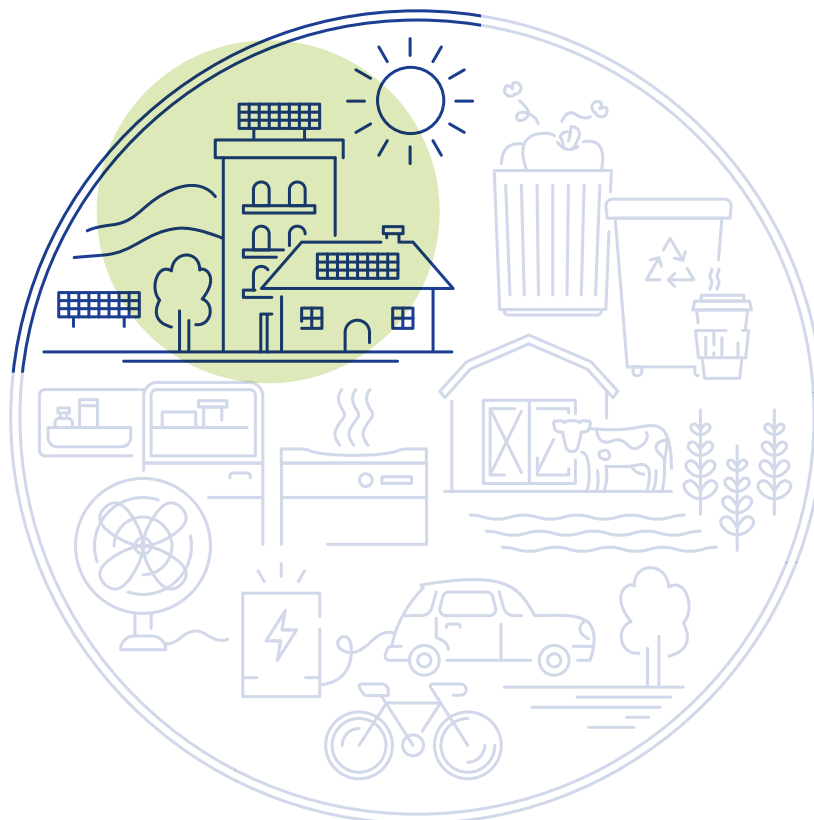


However, the [new Transport Sector Development Plan 2021-2035](#) - written before the publication of the Fit for 55 package with even higher targets - concedes that the aforementioned measures will not be enough. Fiscal measures are becoming increasingly necessary to green the car fleet and reduce emissions of road transport, which is currently responsible for the lion's share of transport sector emissions. However, Estonia has so far avoided fiscal measures to drive a green transition in the transport sector; implementing fiscal measures to fight motorisation and force people to use more economical cars is a very difficult question politically.

The **French** Citizen Assembly suggested two interesting proposals for the transport sector, including:



1. the introduction of a tax on heavy cars (more than 1400kg) in order to stop the dramatic increase of SUVs sales, which leads to more emissions and energy consumption. This measure could be a good practice to be included in the European CO₂ standards for cars.
2. reducing the VAT on train tickets and adding a new tax on aviation, to support railway solutions.



BUILDINGS

As also outlined by [“A Renovation Wave for Europe”](#), curbing emissions in the buildings sector is key to achieve climate neutrality by 2050, and even more so by 2040, which is what would be [needed](#) for the EU to align to its Paris Agreement commitments¹. More measures and funds will be [needed](#) to accelerate deep renovations and energy efficiency investments, including the replacement of fossil fuel heating systems with renewable heating solutions. Efficiency in buildings is also **a massive social challenge**.

Despite some improvements over the last decade, the transformation of European buildings is far from attaining the pace needed. This structural deficiency stems primarily from the **lack of a regulatory framework** fostering deep renovations, as well as inadequate incentives and measures to overcome the persistent non-regulatory barriers. In this context, the ongoing revision of the EU Energy Performance of Buildings Directive (EPBD) can be a game changer.

¹ Buildings are indeed the single largest energy consumer in the EU, responsible for around 40% of all the energy consumed. Three quarters of this energy come from the direct use of fossil fuels, causing 36% of the bloc's energy-related greenhouse gas emissions.

The EPBD supports Member States to achieve their ESR targets by addressing barriers to renovation and incentivising energy efficiency investments in the building sector. Injecting more ambition into the policy framework is necessary to tap into the vast energy savings potential of the EU building stock and thereby accelerate its decarbonisation. This implies setting **ambitious mandatory energy performance standards** for all existing buildings with a view to minimising their energy needs through **deep renovation** and facilitating the **penetration of renewable energy** in the sector. A clear timeline for the introduction of such standards to cover all segments of the national building stocks would help steer investments and funding towards building renovation, allowing to harness the multiple benefits associated with better performing buildings. While addressing the existing stock, it is also crucial to future-proof new buildings, notably by ensuring that they are highly energy efficient, completely fossil fuel-free and constructed with low-carbon materials to reduce the embodied emissions.

According to the Renovation Wave Strategy, to achieve the 55% emission reduction target, by 2030 the EU should reduce buildings' greenhouse gas emissions by 60%. As the vast majority (i.e. more than 75%) of existing buildings are highly energy wasteful, a steep increase of deep renovations from the current 0.2% to at least 3% annually is needed in order to tap into the large energy savings potential of the sector. At the current 0.2% rate, it would take up to 500 years to reach a decarbonised and high-quality building stock in the EU. Building renovation (including heating decarbonisation) is key, not only for climate but also to eradicate energy poverty, which [affects](#) more than 50 million Europeans.

This report found that the untapped potential of the buildings sector is especially evident in **Poland**. Most Polish buildings have low energy efficiency levels: one third of single-family houses are not insulated, while both single-family buildings and multi-family housing (which is connected to collective heating systems) are still largely based on fossil fuels. In 2020, the share of boilers in heating was: 51% coal-fired, 24% gas-fired and 19% biomass-fired. This huge untapped potential for positive changes in both energy and fuel efficiency has so far been hindered by low technical awareness and financial capacity of building owners. In community heating systems, the lack of capital to invest in fuel change has also been a significant barrier. The financial support proposed by the government is not only insufficient but also too complicated and focused on supporting high and middle-income families, not low-income ones. Companies that mine coal or sell it for heating purposes, which play an important role in the sector, are also preventing change with misinformation.

In other circumstances, Member States have started working on the emissions reduction potential of the buildings sector. In **Spain**, for instance, and despite some fluctuations, emissions from the building sector have fallen markedly in recent years. This is explained by some demographic factors (population, number and type of households) as well as by the influence of weather. However, the recent downward trend is due to the **cumulative effect of the various mitigation measures** undertaken over the last decade, including cleaner heating and cooling facilities, more efficient appliances and buildings refurbishment. Other measures going in the right direction (despite being insufficient) have been found in **Czechia, Slovenia and Estonia**.

Setting sectoral national targets under the ESR has been an important factor for the buildings sector emissions taking a downward, albeit slow, trend since 2005. This is especially thanks to the better energy performance of new construction, as well as to some good building renovation projects tackling energy efficiency and renewable heat supply. To ensure that the buildings sector substantially contributes to the EU's climate objectives, Member states should:

- Improve regulatory measures and increase funding to **accelerate deep building renovation**. Deep building renovation has a huge emissions reduction potential, including in CEE countries such as Poland, Czechia and Slovenia. In Poland, for instance, 70% of individual houses are badly or not insulated at all. Deep building renovation also has an important role to play when it comes to the ageing of existing buildings, which is becoming an important issue in many countries. In Spain, for example, the average housing age is 45 years, so a large number of buildings are still highly energy inefficient. This report has found some scattered examples of positive measures to address the issue, including the launch of direct aid schemes dedicated to energy efficiency. These subsidies, together with increased social awareness about the benefits of building renovations, and especially of energy savings, are causing a change in trend.
- **Address non-market barriers:** split incentives, lack of information, expertise, hassle factor and need for upfront investments, pre-financing and the digital divide all hinder citizens in renovating their homes.

Below we list a few good initiatives that combine funding with information and grant management, as well as support for those in need:

After successfully starting to curb buildings emissions in the past years, **Spain** plans to continue investing in buildings renovation: The Spanish NECP foresees an improvement in energy efficiency between 2021 and 2030 thanks to the installation of a thermal envelope in 1,200,000 homes, as well as the renovation of thermal heating and DHW installations of around 300,000 homes/year.



Despite lagging behind on deep buildings renovation, **Poland** has developed two relevant positive initiatives in the buildings sector:

- A thermo-modernisation surplus programme, which offers cheap loans for the renovation of multifamily buildings, including for the installation of RES energy appliances.
- “Clean Air” programme and its extension “Stop smog”, dedicated to the poorer population and single family houses.



Some examples of **Germany's** measures to address building emissions include:



- Tax incentives for energy-related refurbishment
- Funding programmes for heating replacement
- The phase out of new oil heating systems from 2026
- Improvement of the energy standards through regulatory law

Czechia's New Green Savings programme is one of the most successful in supporting building renovations. People can apply for funding to either fully or partially insulate their houses, build or buy houses with low energy intensity, install more environmentally friendly systems of heating or install renewable sources of energy in their homes. It also creates local job opportunities, brings money back into the state coffers through taxes and allows citizens to save on electricity and heating over time. The New Green Savings, which has been financed from the EU ETS revenues up until 2021, is now financed by the Recovery and Resilience Facility (RRP). Under this new framework, higher bonuses are planned for people who apply to more than one measure (e.g. both insulating the house *and* installing PVs).



Slovenia has made good progress in decreasing emissions in the buildings sector (though much untapped potential is still available, especially in public sector buildings). In the period from 2005-2019 emissions were decreased by 45% with the help of:



- sectoral measures, such as change of regulations on energy efficiency of buildings, especially the improvement of thermal performance of buildings
- subsidies and loan schemes for households and the public sector,
- support scheme for heat production from RES,
- replacement of fossil heating with low-carbon energy sources
- continued operation of a network of energy consultants ENSVET network - which provides free energy consulting for households
- The ZERO and ZERO500 programmes, two Eco-funds tackling energy poverty: The **ZERO programme** provides free home visits by energy consultants to energy poor households, advice on the rational use of energy and water as well as free packages of materials and devices for reducing energy and water consumption.

ZERO500, on the other hand, provides 100% subsidies for investments in energy efficiency such as building insulation, installation of energy efficient windows, change of water heating system with solar heat system or heat pump, installation of recuperation system. The programme is co-financed by the Cohesion fund and the National Climate Fund.

Similarly to the above examples, several successful programmes have been implemented in **Estonia** with the help of EU funding, particularly to incentivise uptake of renewable energy usage in buildings as well as improve energy efficiency. Subsidies supporting building renovation in both apartment buildings and small residencies have been successful over the decade. In addition, subsidies have been given for replacing boilers using fossil sources with alternatives based on renewable energy in the building sector.



In France, the Citizens' Assembly identified the **compulsory minimum energy performance standards for buildings** as a key measure to incentivise deep renovation of buildings. Similar measures should be taken at the EU level to support Member States in the renovation of buildings.



As a consequence, the Government introduced a gradual ban on renting the least-efficient accommodation in the climate law, in order to eradicate them over time: G energy performance by 2025, F by 2028 and E by 2034. Unfortunately, however, the law does not require any depth of the renovations nor has further planning after 2034. With such design, the Government's standards will not trigger deep renovations, but rather uncoordinated staged renovations and are too low to be fully efficient in incentivising owners to deep-reno-vate their apartment or house.



EMISSION TRADING IN TRANSPORT AND BUILDING SECTORS AS AN ADDITIONAL MEASURE - THE EXAMPLE OF THE GERMAN NATIONAL EMISSION TRADING SCHEME

The **climate protection programme 2030** as of 2019 and subject to revision in 2022 provides measures for all sectors as well as cross-sectoral instruments. One of the programme's main overarching measures is the introduction of a **national Emissions trading system (nETS)** for the transport and buildings sectors which became effective in January 2021. With the introduction of a gradually increasing price on emissions from the combustion of heating oil, natural gas, gasoline and diesel, this instrument aims at making climate-friendly alternatives and investment decisions more attractive in the areas of heat and transport. The current revenues are used for the so-called *Energy and Climate Fund* via which mainly four measures are supported: the stabilisation of the electricity price; the increase of the commuter allowance; the increase of housing support; and other support measures such as for electric vehicles. Prices in the German nETS are fixed until 2026 in Euro per tonne CO₂ and should later be determined by the market. The current set prices per tonne CO₂ are not high enough to have the necessary steering effect in a timely manner. Moreover, they represent a risk for social acceptability, because if there is no price regulation from 2027 onwards, a rapid price increase within a shorter period of time (between 2027 and 2030) will be necessary in order to stay on track. The risk for a real price explosion with strong negative social implications is real. Therefore, a careful adjustment of this measure will be necessary.

A strengthened policy mix with effective complementary instruments (not only a carbon pricing) is essential.



AGRICULTURE

Emissions in the agriculture sector were almost steady between 2005 and 2019. National projections only foresee a modest decline of 2% by 2030, and a 5% reduction with planned measures. CH₄ emissions from enteric fermentation and N₂O emissions from soils are responsible for more than 80% of total agricultural emissions. CH₄ from manure management is the third most important source of emissions, accounting for about 10%. The remaining sources make relatively small contributions.

High emissions in the agriculture sector are particularly **hard to bring down, due to the high density of livestock and the continued use of synthetic and inorganic fertilisers**. This trend has been emphasised in many of the country assessments conducted in this report, including Croatia, France, Spain and Poland.

In **Spain**, for instance, agricultural emissions represented 14% of overall emissions in 2020, at 38.3 MtCO₂e, slightly lower than the figure for 2005. Nonetheless, the 2020 figure is more than 10% higher than the prediction for the agriculture sector in Spain's NECP (34.6 Mt), and emissions rose overall from 2013-2020, reflecting increased cow and (especially) pig numbers and growth in fertiliser use over this period. In 2020, emissions from the livestock sector accounted for nearly two thirds of the total for agriculture.

Similarly, in **Poland** direct agriculture emissions in 2019 amounted to 10% and, since 2005, they have increased by 2.5%. Emissions from the fermentation of ruminants account for over 40% of total agriculture emissions, while another 12,5% comes from the management of animal excrement. The NO_x (nitrous oxide) emissions account for most of agricultural emissions in Poland (connected to nitrogen fertilisation). Another important source is methane, mainly coming from animal production.



**ACCORDING TO THE EU'S "FARM TO FORK"
STRATEGY, REDUCING EU PRODUCTION,
ESPECIALLY OF LIVESTOCK, WOULD DIRECTLY
REDUCE AGRICULTURAL EMISSIONS**

According to the EU's "Farm to Fork" Strategy, reducing EU production, especially of livestock, would directly reduce agricultural emissions. This would need to be matched by a decrease in demand, through less food waste and a shift in diet away from meat and dairy towards plant-based protein sources. **This report has not found examples of governments promoting these changes.**

Some countries experience difficulties curbing their agriculture sector's emissions. The ESR covers only the non-CO₂ emissions from agriculture (methane and nitrous oxide). CO₂ emissions (and removals) are tackled under the EU Regulation for the Land Use, Land Use Change and Forestry (LULUCF). The EU's LULUCF sector is an important carbon sink (it sequesters more carbon than it emits). In order to meet the long-term goals of the Paris Agreement, the LULUCF sectors need to urgently increase the amount of CO₂ that is removed from the atmosphere and stored in landscapes. Therefore, these natural sinks should never be used to offset agriculture emissions. This is also critical because emission reductions and removals in the land sectors cannot be considered fungible.

To tackle its difficulties in curbing agricultural emissions, **Spain** has introduced some forward-looking measures aimed at reducing emissions, avoid losses of organic carbon and improve energy efficiency in farms, which include: correct management and treatment of manure and slurry from intensive livestock units, diet modification to reduce methane emissions during enteric fermentation, support for organic agriculture, extensive livestock farming, optimisation and reduction of fertilisation on agricultural soils, crop rotation including fallow and use of legumes, use of renewable energies (e.g. small biomass boilers or solar irrigation) and the incorporation of agricultural residues into the ground.



Germany implements and enforces the Fertiliser Ordinance, expands organic farming subsidies; provides support for soils, forests and moors to ensure their climate protection function.



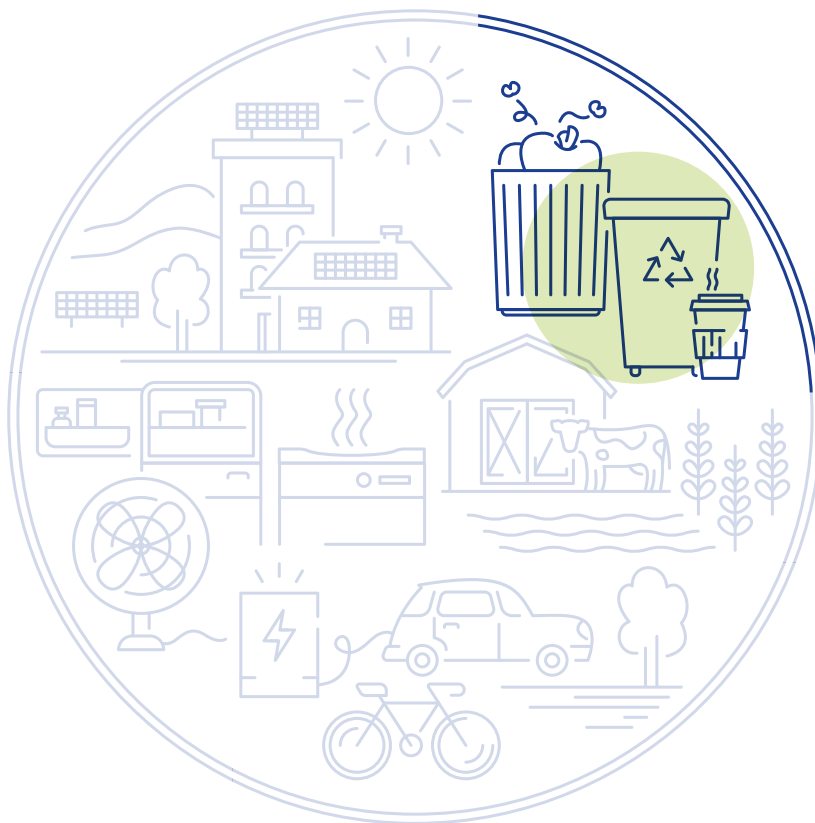
In **France**, agriculture is the second most emitting sector, accounting for 19% of total emissions. Livestock accounts for 80% of agriculture emissions. Some small steps have been made to reduce agriculture emissions:



- the obligation to propose a vegetarian menu at least once a week in collective restoration, as well as having daily vegetarian options from 2023 in administration's restaurants is a positive measure to reduce meat consumption and thus livestock emissions.
- support to the development of legume production, including financial support included in the recovery plan.

However, much more is needed to accelerate the transition of agriculture in France. The Citizens Assembly suggested creating a tax on nitrogen fertilisers in order to discourage their use. The same goes for organic farming, where financial support is decreasing in the national strategic plan despite the urgent need to speed-up its development. So far, no practical measures have been adopted to stop the industrialisation of livestock (like the cessation of public funding or control of livestock's extensions).





WASTE

The **waste sector** only contributes to approximately 3% of Europe's emissions, and waste-related emissions were reduced by 25% from 2005 to 2020 - in some countries (e.g. Croatia, Slovenia) more than others, especially where the use of landfill sites is a dominant practice (Spain, Poland or Czechia).

The waste sector in **Spain** is especially resistant to emissions reductions as it is dominated by decaying wastes in landfill, which account for over 80% of the total emissions in the sector. Methane emissions from buried waste are usually only collected when landfill sites are eventually sealed and closed.

In **Poland**, many old landfill sites have not been cultivated so far, to reduce the CH₄ emissions as well as many sewage plants. Illegal waste storage continues to be a serious problem.

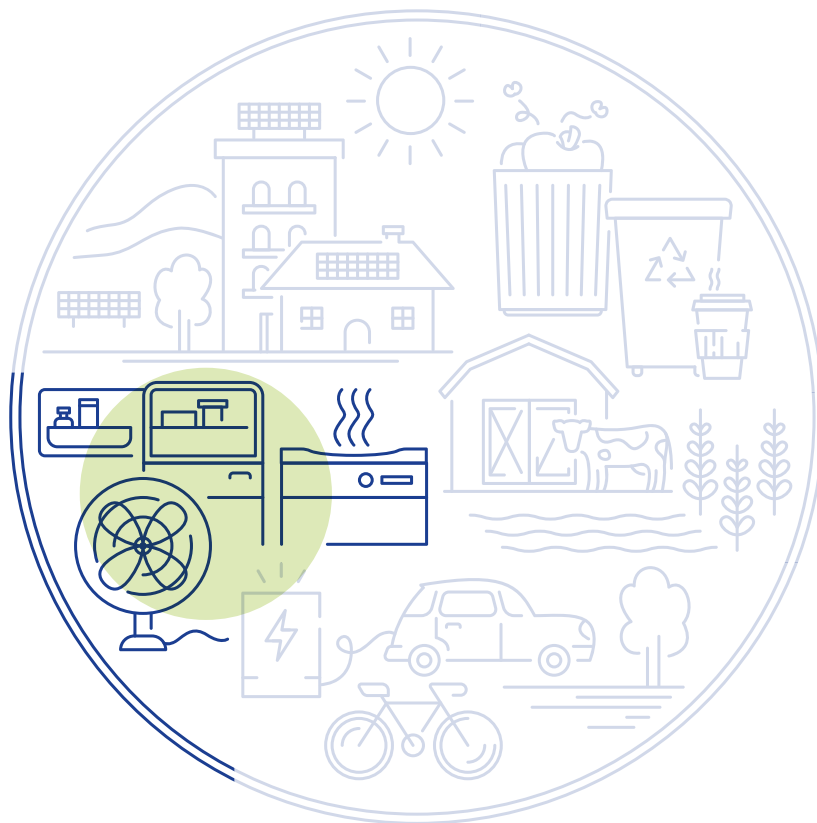
One of the stark examples of unfavourable waste management (from the climate point of view) is **Czechia**, where emissions increased by 41%, mainly due to waste disposal. The production of waste is increasing and the government has failed to make sure that biodegradable waste is not overwhelmingly ending up in landfill together with general municipal waste, where it releases dangerous methane. In 2018, the Czech Republic 46% of biodegradable municipal waste was landfilled.

The fees for municipalities to use landfills are also set very low, therefore not motivating the municipalities to change their waste models.

These negative examples show that there is much to do and great potential in reducing waste generation throughout product life cycles through longer product lifetimes, encouraging ecodesign for repairability, upgradability and modularity, as well as **reducing the use of landfill**. Indeed, **methane emissions from landfills** remain the sector's major problem. Therefore, reduction of waste (reuse and recycling), the elimination of landfills and the improvement of landfill ventilation are the most important actions to take in order to reduce emissions. **Slovenia** provides a virtuous example in this regard. Waste prevention and recycling is also beneficial to avoid large quantities of plastic burnt in [incinerators](#) with very high carbon emissions.

Slovenia is among the best examples for improved waste management: emissions decreased in line with sectoral targets by 2020 (except 2015). In the period 2005-2018, the emissions of this sector decreased by 299kt CO₂eq or by 40.4%. This was mostly due to measures such as separate collection of waste and, in particular, the construction of systems for the mechanical biological treatment of mixed municipal waste before disposal. Moreover, there are still the potentials of increasing the share of recycling and reducing the amount of waste in Slovenia.





SMALL INDUSTRY

The small industry sector has a relatively minor role in terms of overall emissions. However, with increasing temperatures, the demand for cooling appliances, especially air conditioners, is forecast to drastically increase and drive up emissions including in Europe where air conditioning penetration rates are currently quite low. Emissions from the [cooling sector](#) in Europe are 451Mt CO₂e (37% of which are direct emissions from the refrigerant.)

Key emission reduction aspects relate mainly to the ecodesign of products and processes by shifting to less damaging materials, refrigerants and resources, efficiency efforts, and switching to renewable energy sources.

For the heating and cooling sector (refrigeration, air conditioning and heat pumps) the emissions reduction potential is two-fold, reducing the energy consumption and energy source for equipment (indirect emissions) and reducing the use of climate damaging fluorinated refrigerant gases that leak during use and at end of life of equipment (direct emissions). Here we consider specifically phasing out fluorinated gases including hydrofluorocarbons (HFCs) (a basket of gases with global warming potentials (GWPs) up to 23,400 times that of CO₂, even higher if a shortened 20-year period is applied instead of the 100 year standard) and energy efficiency.

HFCs are potent short lived climate pollutants exacerbating atmospheric warming but they also offer a quick climate win if their use is reduced swiftly.

Almost entirely eliminating direct emissions from cooling products is possible when using low GWP natural refrigerants. Fluorinated gas emissions represent almost 5% of all greenhouse gas emissions covered in the ESR.

Progress has been made in the reduction of fluorinated gases under the EU F-Gas Regulation however, much more can be done especially as the F-Gas Regulation is revised this year (2022). Under the F-Gas Regulation, Member States reduce use of HFCs through stepwise market supply reductions to a GWP-weighted 79% reduction in 2030 alongside various sectoral prohibitions.

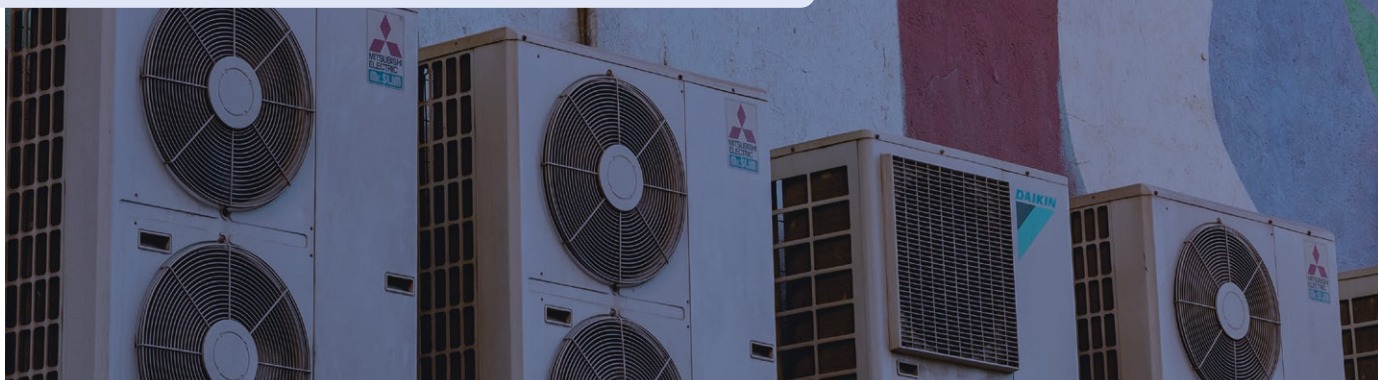
Energy efficient equipment using natural refrigerants (with GWPs of 1 or less) is affordable and available on the market. Member States can and should seek to accelerate the roll out of HFC-free equipment to avoid locking in emissions for the lifetime of cooling and heating equipment.

Spain, for example, has performed better than the EU's overall average, with the national share of EU F-gases emissions falling from a peak of around 20% in 1999 to just 8% in 2019. Spain introduced a **national tax on fluorinated gases**: This tax came into force on January 1, 2014 and was phased in from 2014-2016, reaching 15 Euros/tonneCO₂e from 2016 onwards. Seven years after the introduction of the tax, emissions have been reduced by more than 50% particularly, in the refrigeration and air conditioning sector which represent more than 90% of the use of these gases. The fall in emissions has also been influenced by the implementation in 2015 of the HFCs quota system included in Regulation (EU) 517-2014, on fluorinated greenhouse gases.



In January 2022, [Germany introduced](#) new Public Procurement rules incentivising the uptake of natural refrigerant alternatives to HFCs. This follows a similar Nordic initiative introduced in 2020 that promotes the use of natural refrigerants as the default option for cooling appliances.

The German government [included certain types of cooling systems](#) on a 'negative list' due to their use of high GWP refrigerants and high energy use. Germany's Blue Angel ecolabel also stipulates the use of natural refrigerants to qualify.





C. THE GOVERNANCE DIMENSION

COMPLIANCE

Under article 9 of the ESR, the monitoring of Member States' compliance with their national annual targets is carried out every 5 years. According to the current system, the Commission shall carry out two compliance checks of Member States' emissions inventories: in 2027 (to check annual compliance for the years 2021-2025) and in 2032 (for the years 2026-2030) in line with the global [stocktake](#) of the Paris Agreement.

However, to ensure prompt action and correction of the emission pathway, **more stringent reviews are needed**: we recommend more frequent compliance checks to allow for transparent progress and strict compliance rules, followed by prompt corrective actions.

The example of Germany underpins the importance of national responsibility/accountability and compliance - when it became apparent and public that Germany would miss its 2020 climate target, a serious discussion started about the need for actions in the ESR sectors (see details below).

In recognition of the importance of a more coherent policy framework, some of the EU's Member States are adopting national climate laws and targeted national programmes and measures to tackle emissions in ESR sectors.

Countries should also **accelerate**, and reward early action. As the examples of France, and Germany show, delaying action is not a good tactic. These countries still fell short on the targets and risked paying a high price for emission allowances at the last moment when demand is higher and time is short until the compliance deadline.

It is important to remember that Europe's obligation towards the Paris Agreement does not end in 2030. At the moment, the ESR is the only EU measure that sets **direct and binding mitigation targets for individual Member States**, therefore it should remain in place and must be updated with new ambitious targets after 2030.

REPORTING AND COMPLIANCE PROVISIONS UNDER ESR PROPOSAL:

The 2021 ESR proposal leaves the current reporting and compliance system unchanged. In a nutshell, the current framework reviews Member States' emissions as follows:

1. First, Member States are requested to produce the data for the annual inventory checks, with the support of the European Environment Agency. This includes the UNFCCC inventory data as well as the inventory data of the existing ETS and the proposed new ETS for road transport and buildings.
2. Second, the Commission produces the evaluative annual progress reports. Should the progress report show that a Member State is not on track for a specific year during the compliance period, it will have to submit a corrective action plan to the Commission, including the actions to be taken, in order to ensure compliance with its obligations together with the timetable for implementation.
3. Thirdly, the five-yearly comprehensive review is carried out before compliance checks, which, de facto, are formalised as ESR progress checks as described above.

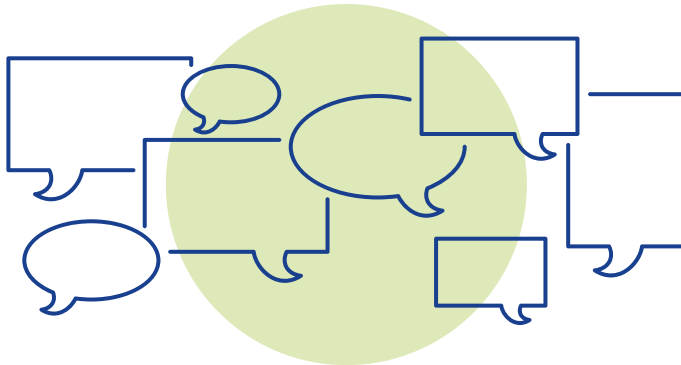
The Implementing Decision adopted by the Commission in December 2020 sets out the annual emission allocations (AEAs) for each Member State for the years from 2021 to 2030 in terms of tonnes of CO₂ equivalent as laid down in the ESR.

The example of Germany underpins the importance of national responsibility and compliance: only when, based on the projection reports in 2013 and 2017, the federal government realised that the national 2020 targets could be missed and that the country was not on track for achieving the now almost outdated 2030 target of -38% emission reductions for the ESR-sectors, the amounting pressure created a political momentum in which a federal Climate Law and effective measures for the ESR sectors could be seriously discussed. In autumn 2019, the government presented a federal **Climate Law** flanked by the **climate protection programme 2030**. This programme included a new instrument for the road transport and building sectors: a national emission trading system (nETS).



INFORMATION AND PUBLIC PARTICIPATION

Measures to reduce emissions in ESR sectors must be well-designed, but also applied promptly, effectively and transparently, with **continuous dialogue between the responsible authorities and affected sectors, communities and individuals** over their design and the results achieved through their application. It will also be important to identify and remove barriers that prevent this dialogue.



When it comes to **public participation**, our assessment identified a profound geographical division between Western and Eastern Europe. In **Croatia, Poland** and **Czechia** there has been minimal to no involvement - in certain circumstances, some degree of consultation occurred, but too late in the process and with scarce reporting on the results). In the same countries, there is also no independent body to monitor and evaluate the progress of national climate commitments.

On the other hand, we found good public participation practices in **Germany** (the Climate Council) and in **France** (the Citizens' Assembly). In **Spain**, stakeholder's involvement has had a mixed track record. The Decarbonisation Roadmap, for instance, was presented to a wide range of stakeholders, with representation from environmental NGOs, consumer organisations, trade unions, business and farming interests, as well as regional governments. However, a clear, coordinated and transparent monitoring system to track the application of its measures and evaluate their effectiveness was not implemented.

Access to justice at the national level is also an essential tool to strengthen compliance with Member States' obligations and the right to a high level of environmental protection in accordance with the EU Charter of Fundamental Rights and (c) Member State respect for the rule of law.

Overall, we also found that there is a need for **better quality and standardised data** on the measures undertaken to reduce emissions (design, funding/costs, progress, impacts). Such data would identify whether measures are adopted, how successful they are and why. At present, this information is very widely dispersed and it can therefore be difficult to compile and evaluate. Standardising high-quality data, together with more coordinated and focused awareness-raising campaigns, will ensure more public support and, as a positive spillover, a more rapid and long-lasting emission reduction trajectory in ESR sectors.

THE FRENCH CITIZENS' ASSEMBLY

After the Yellow Vest movement in 2018, the French government decided to introduce the Citizens' Assembly on climate change, an unprecedented initiative, aiming at proposing ambitious climate measures at the national level. The idea was to strengthen social acceptance and public participation in climate policies' design. 150 randomly selected citizens developed 149 very ambitious measures, supposed to be implemented by the Government "without filter". Most of them had massive public support according to opinion polls. Nevertheless, the Government rejected and watered down most of them, not respecting its own words on the implementation of the measures.

As a consequence of not being able to reach its climate targets, **France** has been condemned by the administrative court to reduce emissions by 15 million tonnes of CO₂ in 2022 in addition to the 21 million tonnes already foreseen. This example shows how important access to justice is to ensure accountability.



THE ROLE OF LOCAL GOVERNMENTS, REGIONS, AND DIFFERENT STAKEHOLDERS IN SPAIN

Various Ministries at national level, as well as the regional and municipal authorities need to work together to identify the appropriate measures that must be well-funded and applied promptly, effectively and transparently. A continuous dialogue between the responsible authorities and affected sectors, communities and individuals is needed over the necessity for the measures and the results achieved. It will also be important to identify and remove barriers to success and implementation of the associated measures. Thereby high-quality data must be collected and analysed.



4

CONCLUSION - MAIN FINDINGS AND RECOMMENDATIONS

In light of our assessment and on top of the sector-specific recommendations outlined in the respective sections we have gathered some recommendations for policymakers to take into account during the review of the regulation. The many observations and data from the case studies we received offer a pool of best practices and learnings. The ongoing revision of the ESR provides the policy hook to make the necessary improvements.



In some Member States, especially in some Central and Eastern European countries, the ESR has not been effective in terms of significant emission reductions, due to low target-setting and loopholes in the current system (see the examples of Estonia and Czechia). Strong targets drive early action, while absent or unambitious policies and measures lead to failures and throwbacks. **Stronger national targets under the ESR are therefore needed to pave the way for more ambitious national policies and measures** leading to higher emission cuts.



Keeping the current sectors – agriculture, road transport, buildings, waste and small industry – under the scope of the ESR gives the strongest incentive to Member States to adopt and implement national policies to achieve their target. These sectors are difficult to decarbonise and therefore need early actions, central investments and long-term planning. Binding national targets and trajectories for these sectors are extremely important and should not be watered down via future changes in the EU climate architecture. Therefore we suggest **keeping the current scope of the ESR and also developing national binding targets after 2030.**



Member states should not delay action, but immediately adjust their respective national targets and pathways to deliver the EU target (at least 40% emission cuts by 2030) in ESR sectors to avoid the costs of inaction, higher investment costs, and stranded assets.



Carbon pricing in the road transport and building sectors - as proposed in the 2021 'Fit for 55' EU climate package - **can only be an additional measure**, to be introduced gradually and in combination with national and EU support measures.



The combination of measures at different competency levels is important because **some non-market barriers are best tackled at the national level.**



Enhanced governance mechanisms are needed to achieve the European target in ESR. The main elements are: a fixed national target, ambitious trajectory and strong compliance mechanisms. We recommend yearly compliance checks by the European Commission in order to make progress transparent and compliance more stringent with prompt corrective action. Transparency should be ensured: plans and progress reports should be made public and stakeholders consulted in a timely manner.



A clear emission reduction obligation set in national law would ensure more compliance. National sectoral targets, carbon budget, yearly revisions and monitoring especially via an independent scientific body at the national level, public participation, sanctions and broad information campaigns should also be implemented. There is a need **for more coordinated and focused stakeholders involvement and social awareness-raising campaigns** in order to implement widely supported measures which will ensure rapid and lasting emission reductions. Access to justice in case of non-compliance should be granted.



Both the EU's Recovery and Resilience Facility (RRF) and other EU Structural and Investment Funds can be harnessed for decarbonising effort sharing sectors. The RRF has committed EUR 133 billion of grants and EUR 115 billion of loans (a total of EUR 248 billion in 2018 prices) earmarked for climate-related investments up to 2026. Similarly, the European Regional Development Fund and the Cohesion Fund have earmarked a total of approximately EUR 77 billion (grants + same amount of national co-financing would make the sum double) for climate related investments for the period 2021-27. With ambitious target setting and well designed measures in Recovery and Resilience Plans and Operational Plans respectively, these **funds could speed up the transition process toward carbon neutral economies in the respective sectors.** Other EU funding instruments, such as the European Investment Bank, can also provide concessional finance for projects that can accelerate the transition of effort sharing sectors.



During the preparation of this briefing, difficulties have been encountered in gathering solid and quantified data on the progress in emissions reduction in the ESR sectors, as this information is very widely dispersed and can be hard to compile and evaluate. Therefore, we highlight a clear **need for better and standardised data about the emission reduction measures adopted in ESR sectors** (on their design, source of funding, costs, progress and impacts).



APPENDIX

COUNTRY FACT SHEETS



CROATIA

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GENERAL ASSESSMENT

The Republic of Croatia aims to reduce greenhouse gas emissions from non-ETS sectors by at least 7% by 2030, compared to the 2005 level. In 2005 greenhouse gas emissions from the non-ETS sectors amounted to 17,404 kt CO₂e. According to Croatian NECP (MESD, 2020), in 2017 the country's emission reduction amounted to 4.2% of the 2005 emissions level. Waste sector and residential and tertiary buildings sector are performing the best in comparison to trajectories elaborated by NECP and other policy documents to achieve defined targets, while the agriculture sector is performing the worst.

On the other hand, emissions from the transport and buildings sector are expected to increase until 2030. In 2018, the highest emissions from non-ETS sectors were from transport and agriculture sectors, with 6,4 Mt CO₂e and 3,4 Mt CO₂e respectively. According to achieved savings, it seems that these are also the sectors where it will be the most difficult to achieve defined savings.

BEST PRACTICES & CHALLENGES IN ESR SECTORS

Successful sectoral measures implemented in Croatia are presented below:

TRANSPORT

The following charges on motor vehicles using fossil fuels are implemented: special environmental fee for motor vehicles and special tax on motor vehicles. Financial resources are channelled through the Environmental Protection and Energy Efficiency Fund (EPEEF) for financial incentives for energy efficient vehicles and development of alternative fuels infrastructure.

BUILDINGS

Promotion of integral renovation of apartment buildings - In the period from 2014 to 2016, the programme was financed by funds raised in auctions, as implemented through the EPEEF. Energy savings in this period were estimated at 3.57 ktoe. At the end of 2016, the Ministry of Construction and Physical Planning (MCP) issued a new call for which energy renovation of 556 buildings is expected to be completed by the end of 2023.

- Programme for Energy Renovation of Family Houses 2014-2020 - In the period from 2014 to 2016, the Programme was funded by the national funds from ESIF through the EPEEF. Energy savings in this period are estimated at 16.72 ktoe.
- Programme for Energy Renovation of Public Sector Buildings 2014-2015 - The programme is implemented by contracting energy services in public sector buildings by the Croatia Real Estate Agency, and the EPEEF provides grants covering up to 40% of eligible costs of energy renovation. Energy savings of the programme are estimated at 4.23 ktoe.
- Programme for Energy Renovation of Public Sector Buildings 2016-2020 - Available ERDF funds within the OPCC amount to EUR 211 million for energy renovation of public sector buildings, and so far around HRK 1.499 billion have been awarded for energy renovation of 866 buildings. The projects within this programme are expected to be completed by the end of 2023.
- Programme pushing for the renovation of existing buildings and construction of new ones according to the nearly zero energy building standard (nZEB) - This measure supports the legal obligation that all newly built buildings from 2021 onwards comply with the nZEB standard and implies education and informing of participants in construction projects and the general public about the standard.
- Charter of Decarbonisation of the National Building Stock by 2050 - The signatories to the Charter are representatives of state and local government, academic community and the professional public, the construction and energy sectors, and supporting industries that promote and advocate for the decarbonisation of buildings in their activities, wherever possible. Partners signatories to the Charter are encouraged, through open partner dialogues, to actively and continuously cooperate on the development of the transition to a nZEB standard.

WASTE

In the case of the **waste** sector, Croatia has defined measures to reduce emissions from the sector based on the targets defined in Directive (EU) 2018/851. These measures are defined according to the Sustainable Waste Management Act (OG 94/13, 73/17, 14/19, 98/19) and Waste Management Plan of the Republic of Croatia for the period 2017- 2022 (OG 3/17); however, their implementation is lagging behind.

AGRICULTURE

The situation is similar in the **agriculture** sector, for which measures have been defined in the Croatian NECP based on the Plan for Air Protection, Ozone Layer Protection and Climate Change Mitigation in the Republic of Croatia for the period 2013-2017 (OG No. 139/13) but their implementation is missing.

SMALL INDUSTRY

- Increasing energy efficiency and use of RES in manufacturing industries – Available ERDF funds within the OPCC amount to HRK 450 million (EUR 60 million). The implementation of the measure started with a public call of the Ministry of the Environment and Energy on the basis of which around HRK 303 million was allocated for 90 projects. The use of these funds is expected by the end of 2023. Industrial plants in the Republic of Croatia have significant potential for improving energy efficiency, reducing energy consumption and reducing the share of conventional (fossil) fuels in total energy consumption by introducing renewable energy sources.

- CO₂ emission tax for the non-ETS stationary sources – All non-ETS stationary sources emitting more than 450 tons of CO₂ per year have the obligation to pay the CO₂ tax. The obligated parties investing in energy efficiency, renewable energy and other measures to reduce CO₂ emissions and other emissions pay a lower tax.

PUBLIC PARTICIPATION, TRANSPARENCY, INFORMATION IN SETTING NATIONALLY BINDING SECTORAL TARGETS

National energy and climate targets are defined in Croatian NECP and Energy Strategy of the Republic of Croatia. The public was involved in their development only through an on-line consulting process. And for the NECP the process was very short – it lasted only 8 days which is a legal minimum for conducting the public consultations. Minimal effort was invested to meaningfully include civil society and other stakeholders – some additional workshops were organised, but the majority of the comments that CSOs have had were not accepted. No national survey was implemented to analyse public support for national targets and measures defined and there is no independent body that supervises the implementation of measures defined. Greenhouse gas emissions for Croatia are calculated each year in the National Inventory Report (NIR) and data is publically available on UNFCCC and Ministry of Economy and Sustainable Development websites.

The additional issue with public participation lies in the fact that the government is not putting any effort in the inclusion of the general public, and that the public has no information on national targets nor on where to find more information.

The processes of drafting and adopting different strategic documents were not entirely inclusive or transparent and the Government is not communicating their measures and targets with the public.

The Ministry of Economy and Sustainable Development started the website on climate adaptation to promote climate adaptation measures – but the majority of the information on climate change, NECP, nLTS and other relevant strategic documents are scattered over the internet and it is not easily accessible.

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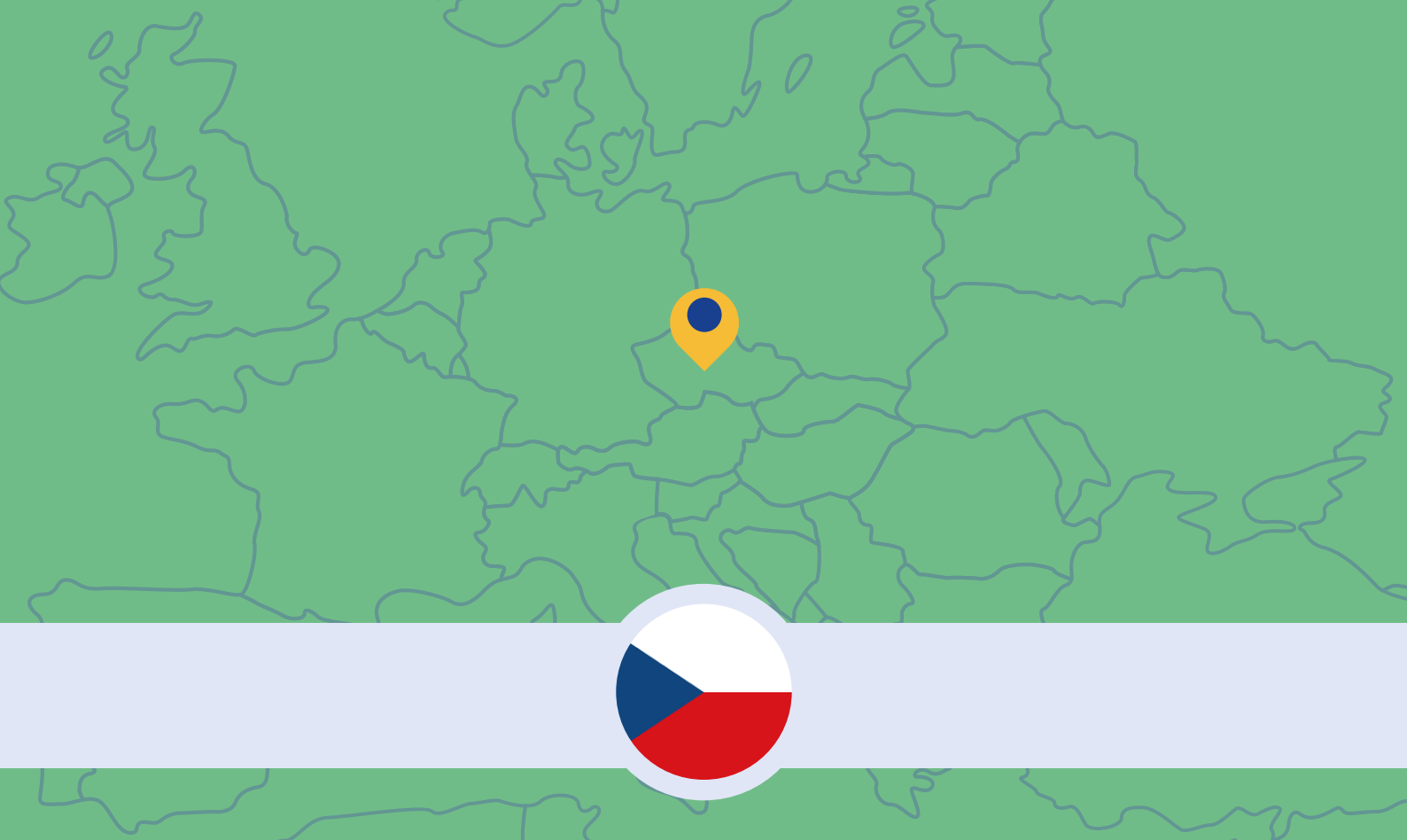
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CZECHIA

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GENERAL ASSESSMENT

Czechia had a very lenient target for its ESR emissions for 2020; the country was allowed to increase its emissions in the concerned sectors by 9 % compared to 2005 levels.

Even despite this rather easy starting position, Czechia was not able to achieve the required targets in some of the sectors. Most notably, Czech emissions grew more than they should have in the sectors of **waste, transport and small industries**. For example, the transport sector's emissions grew by 69% compared to the year 1990 and they will likely miss the 2020 target (latest available data shows that in 2019 Czechia missed its target by 3,1%). The waste sector has also experienced a linear growth since the 1990s and it missed the target in 2019 by a staggering 23,2%.

On the other hand, **Czechia achieved its 2020 target in the building sector and agriculture**. Emissions in both of these sectors fell rather sharply in the early 1990s, to then flat-line for much of the past two decades. Czechia will likely overachieve its 2020 target for buildings and agriculture (according to latest available data, in 2019

Czechia overachieved its target for buildings by 20% and for agriculture by 5,5%).

This data shows that there is a great potential for emission reduction in the building sector in Czechia. Buildings are responsible for 40% of energy consumption in the Czech Republic and therefore have to play a major role in the country's decarbonisation efforts. According to a study done by Chance for Buildings, it is possible to reduce building emissions close to zero by 2050. However, it is necessary to increase the speed of the renovations to three times of the current one and to improve their quality and scope as well. The Czech Republic has pledged to renovate 3% of state-owned buildings per year.

Transport emissions have risen so significantly since the 1990s as a result of several factors. The rising standards of living and economic growth have meant that more families could afford to own a car (or more than one) than before the Velvet Revolution. At the same time, Czechia still has one of the oldest car fleets in Europe, with the average age of vehicles being 15 years. There is also a dire

lack of incentives to support the transition to low-emission vehicles, nor has the government been sufficiently supporting the development of the charging infrastructure that would enable electrification of transport.

In terms of waste, the culprit behind the high emission rise is the overwhelming dominance of landfilling as a means of waste management. Around 50% of Czech municipal waste ends up in landfill (the EU average is 23%). Landfills are major producers of methane emissions. About 3% of municipal waste is incinerated for energy purposes. The Czechs are good at sorting their recyclable waste (about 69% of plastic packaging products get sorted), however, only around 50% of that gets recycled into new products. The Czech Republic does not employ sufficient policies and measures to support higher recycling or even prevention of waste, for example there is no deposit scheme for plastic bottles in place.



BEST PRACTICES & CHALLENGES IN ESR SECTORS

According to the EEA website, the Czech Republic has 48 policies and measures either planned or already in place to reduce emissions, which is below the EU average.

While the government claims that Czechia is fulfilling its targets under the Paris Agreement and the European Green Deal, the reality is different. According to an independent review of the implementation of the country's Long Term Strategy (called the Climate Protection Policy), the government has so far fulfilled only 4 out of 40 measures it set out.

BUILDINGS

One of the most successful measures is the **New Green Savings** subsidies programme for supporting building renovations. People can apply for funding to either fully or partially insulate their houses, build or buy houses with low energy intensity, install more environmentally friendly systems of heating or install renewable sources of energy in their homes. According to experts, it's one of the most efficient tools for both reducing emissions and also stimulating the domestic economy as it creates local job opportunities and brings money back into the state coffers through taxes. It also brings people savings on electricity and heating over time.

Up until now, the New Green Savings has been financed from the EU ETS revenues. However, now the government is planning to move it under the National Recovery Plan that will be financed from the EU Resilience and Recovery Fund. It is important to keep the allocations for this programme at least at the current levels, or even increase them, but the government shouldn't cut this programme, as it would risk reversing the positive developments of the past years. There is potential for even more and deeper building renovations to be done.

In terms of loopholes and inefficiencies, these can be found in the sectors that did not manage to reduce their emissions and instead their emissions rose, such as waste and transport.

TRANSPORT

In the transport sector, Czechia isn't using the fiscal tools available to incentivise low-emission types of transportation. For example, only a small fraction of Czech roads is covered by the toll system for freight transport. Moreover, the plans to move freight from road to rail have stalled due to the capacity limits, which have not been tackled. Similarly dismal situation can be seen in the personal transport sector, where there hasn't been any meaningful tax adjustment, which would incentivise low-emission vehicles over fossil-fuelled vehicles. Czech Republic is also still pursuing the widespread usage of biofuels, which are not only emission intensive, but also the rape seeds needed for these biofuels are taking up 1/7 of the Czech arable land. This brings more environmental problems such as extensive use of fertilizers, loss of biodiversity etc., as well as economic problems, as the production of rape seeds is heavily subsidised and this public money could be better used to support some truly sustainable solutions.

WASTE

Another problematic area is the waste sector. The Czech production of waste is increasing and the government has failed to make sure that biodegradable waste is not overwhelmingly ending up in landfill together with general municipal waste, where it releases dangerous methane. In 2018, the Czech Republic landfilled 46% of biodegradable municipal waste, even though the EU target for 2020 was maximum 35%. The fees for municipalities to use landfills are also set very low, therefore not motivating the municipalities to change their models. Furthermore, a new law aims to prolong the ban on landfilling of waste without prior modification from previously considered 2024 until 2030. It is estimated that all this landfilled waste will produce extra 10 million ton CO₂e.

PUBLIC PARTICIPATION, TRANSPARENCY, INFORMATION IN SETTING NATIONALLY BINDING SECTORAL TARGETS

The Czech Republic has got a notoriously poor track record in public participation when it comes to climate policy development and implementation.

When it comes to ESR, the government has not communicated this topic with the public. The only message coming from the top political representatives has long been that the Czech Republic is on track to achieving its 2020 targets. However, the data presented above shows that it is not the case for some sectors.

General greenhouse gas data is available on the website of the Czech Hydro-meteorological Institute and the Ministry of the Environment. However, it is harder to find more particular sectoral data. There is no "hub" where people could easily find all the relevant climate-related data.

There is no independent body that would monitor and evaluate the progress done by the Czech government in fulfilling its climate commitments. As mentioned above, Czechia is currently not fulfilling more than 4 out of 40 of its own climate mitigation measures and there is no official mechanism to supervise and remedy that.

The public is not involved in planning and introduction of climate policies and measures. Environmental NGOs have to fight for their place at the table and they are sometimes replaced by representatives of dubious NGO associations which lack transparency.

A recent independent opinion poll shows that the Czech society is not divided in its perception of climate change any more: a large majority of people agree that climate change is happening and has been caused mainly by human activities, and presents a serious challenge. Most Czechs strongly support climate measures such as carbon pricing, setting of emission limits for polluters and subsidising renovations and renewables, but most also react negatively to measures that would mean higher household costs and expected decrease in the standard of living.

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ESTONIA

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GENERAL ASSESSMENT

Estonian efforts in reducing emissions under the Effort Sharing sectors have been rather unsuccessful to date. Like a number of other CEE member states, Estonia has had a very soft target for the ESR sectors up to 2020, with the emissions covered under those sections allowed to rise up to 11% in comparison to 2005. Whereas relatively substantial reductions are foreseen for the current decade, as the Estonian ESR target is for 2030 -13% (-24% with the Fit for 55 proposal), progress so far in these sectors has few lessons learnt to offer in terms of successes. Building sector can arguably be seen as the one with the most successful emission reduction efforts so far.

For sectors covered under the ESR, mostly there has been a slight raise in emissions since 2005. There is no comprehensive public data available on the cost-effectiveness of the implemented measures under the ESR sectors, even though the Ministry of Environment is working on setting up a better system for ex-post and ex-ante evaluations of measures.

A thorough paper commissioned by relevant ministries was published in 2018, assessing the cost-effectiveness of measures in the ESR sector (both existing measures under WEM and additional measures under WAM). Yet, the paper only provides information on the perceived cost-effectiveness of measures, not actual data on cost-effectiveness of already implemented measures. Concrete information is available for select measures only, such as the building sector and those concerning low-emission vehicles.

Out of all Effort Sharing Sectors emissions, transport can have the biggest reduction potential, as its emissions make up the biggest share under the ESR in Estonia. In the past, transport emissions have been projected to rise even in the decade leading up to 2030 due to growth in motorisation and an uneconomical car fleet (both old and new). Measures taken so far in the transport sector by the government include allocation of money for rail transport electrification and supporting transition to public transport using biogas in bigger cities, as well support schemes for electric cars (albeit at a small scale).

However, the new Transport Sector Development Plan 2021-2035 concedes that the aforementioned will not be enough. As the lion's share of emissions in the transport sector comes from road transport (especially private cars), fiscal measures are becoming increasingly necessary to green the car fleet and reduce emissions. That would be a remarkable development, as so far Estonia has steered clear of using fiscal measures to further the green transition in the transport sector. Naturally, when adopting the principle of "user pays", it is difficult to implement fiscal measures to fight motorization and encourage people to use cheaper car fleets. It is a complex task that few political parties want to take up in their agenda. A larger scale modal shift would be needed to bring down emissions as well.

Another hard to move sector, which also contributes with a considerable share of emissions, is agriculture. There, according to current predictions, emissions are expected to rise even until 2050, based on the assumption of increasing production volumes. According to [the 2018 paper of cost-effectiveness of measures](#), the most cost-efficient measure in the agriculture sector would be direct sowing. However, that would entail dire environmental consequences despite its positive impact from a climate perspective and is therefore not considered as the best option to drive down emissions. Instead, production of biogas (biomethane) is seen as one of the best options to reduce agriculture sector emissions in the current decade, despite being more expensive.

Other sectors besides transport and agriculture might be easier to move. However, the reduction potential associated with these is more limited as these contribute a much smaller share of emissions or have set more ambitious targets already.

BEST PRACTICES & CHALLENGES IN ESR SECTORS

As mentioned previously, outlining best practices of emissions reduction in the Estonian ESR sectors can be somewhat complicated, as up to 2020 emissions were allowed to rise and did not have to be reduced under the Effort Sharing Decision regulation. Regardless, some sectors under the ESR have already been more successful in reducing emissions, whereas transport and agriculture can be presented as negative examples of sectors where the impact of any climate measures implemented so far has had a marginal effect.

BUILDINGS

The buildings sector can be presented as a best practice for implemented measures as well as for setting ambitious targets. Several successful programs have been implemented with the help of EU funding to incentivise uptake of renewable energy usage in buildings, as well as to improve energy efficiency. Among those, subsidies for renovation works for improving energy efficiency (for both apartment buildings and small residences) have been successful over the decade. The subsidies are distributed by Kredex, a foundation set up by the Ministry of Economic Affairs, and make use of both EU cohesion funding as well as Estonian own contribution. In addition, subsidies have been given for replacing boilers using fossil sources with alternatives based on renewable energy in the building sector.

Ambitious renovations in the building sector and investments into energy efficiency are also foreseen for the current decade. It is hard to assess to what extent these measures can be solely credited to the national set ESR targets, as they also contribute to renewable energy and energy efficiency goals.

WASTE & SMALL INDUSTRY

In the case of waste and small-scale industrial processes covered under the ESR sector, reduction potential is limited as they only amount to a small share of the overall emissions. For both sectors, sufficient emissions reduction is projected to be reachable in the framework of already existing or planned measures. While the goals set for the waste sector can be seen as ambitious, they are linked to increased recycling and reduction in disposal. It is worth mentioning that the reform of the Waste Act has been a matter of contention which has unsuccessfully been going on for years, which in turn can also endanger achieving climate goals in the sector.

For the small industries sector, roughly half of the emissions can be attributed to the Iru waste-to-energy CHP plant, which is subject to an exemption and therefore is currently counted under the ESR sector. Other than the question whether such exemption would continue indefinitely, reduction in the small industries sector is planned to be reached by restricting the use of fluorinated greenhouse gases (F-gases), to be achieved via the application of a system of credits, prohibitions and restriction as well through the project-based promotion of alternative low-global warming potential (GWP) refrigerants.

ESR FLEXIBILITY

Estonia has been supportive of the option to use ESR flexibilities in the past and continues to support such an option in the context of the revision of the regulation as part of the Fit for 55 package. To date, Estonia has taken advantage of the option to bank up allowances from previous years and accumulate them up to 2020. Even though there is predicted to be a surplus by the end of the ESD regulation period, selling annual emission allocations to other member states is not seen as promising due to perceived lack of interest from other member states.

LULUCF credits have not been used to offset so far, even though there has been some interest to do so in the period 2021-2030, when Estonian targets under ESR will be much harder to achieve. However, with the foreseen changes to the LULUCF regulation, this option might not be feasible either as the carbon sink of the Estonian LULUCF sector is diminishing quickly and therefore meeting the LULUCF target also poses an increasing challenge, as the discussions around the Fit for 55 package have showcased where Estonia is strongly opposed to its 2030 LULUCF national target set by the European Commission.

Currently Estonia is not among the nine Member States who would be eligible for the flexibility to access allowances from the EU ETS for offsetting emissions in the effort sharing sectors. However, Estonia has a strong interest in this option being extended to them and has indicated this to the European Commission on several occasions.

FUNDING FOR CLIMATE ACTION

There is **no set national level spending goal for climate action**, which has made the financing of measures contributing to reducing emissions at times haphazard, with fewer predictability about financing of specific measures than preferred by stakeholders. Over the years, EU funds have contributed significantly to implementing climate measures, as also acknowledged in the Estonian NECP. Out of EU 2014-2020 budgetary framework funds, primarily European Regional Development Fund, Cohesion Fund and Connecting Europe Facility – and to a slightly lesser extent also the Rural Development Fund, LIFE and Horizon 2020 have been made use of. Another source of funding for climate action have been the revenues from the EU ETS, for the allocation of which the national budget strategy contains a separate section.

PUBLIC PARTICIPATION, TRANSPARENCY, INFORMATION IN SETTING NATIONALLY BINDING SECTORAL TARGETS

On paper, public participation is quite satisfactory in Estonia as necessary public involvement processes are generally adhered to and documentation can be accessed online. However, at times, consultation is conducted too late in the process for it to be truly meaningful. For instance, stakeholders are invited to give feedback to specific measures at a stage when key assumptions outlining the whole process have already been determined without public participation.

As for overall monitoring of the progress and set targets, greenhouse gas data about Estonian emissions is publicly available by the state and kept up to date. However, Estonia lacks a fully independent or scientific body which would be responsible for monitoring and supervising the progress towards set climate goals.

For polling of public opinion and public support for climate action, polls about environmental awareness of the public have been commissioned bi-yearly by the Ministry of Environment since 2010. Whereas the latest report from 2020 includes a whole section about climate change, no information is available on public support for national climate measures. Instead, the public are polled on the overall awareness and concern about the impacts of climate change.

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FRANCE

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GENERAL ASSESSMENT

Agriculture, transport, buildings and waste account for 71% of France's emissions, making the non-ETS sectors the largest sources of greenhouse gases. The ESR target is therefore crucial in France to trigger emission cuts. Additional policies will urgently be needed in order to reach (and go beyond) the new ESR target for France under the European Green Deal of -47,5% of emissions by 2030. Current NECP projections show that France would fall short by 11 points on its former ESR target of -37% by 2030, if no additional measures are taken. The Citizens' Assembly for climate change identified many measures to curb emissions in those sectors in France, but the Government watered down most of them and rejected the rest. The recent French Climate Law and the Recovery and Resilience Plan will probably reduce the gap, but won't allow France to reach -37% emission cut. Bold additional measures are needed in the different sectors in order to comply with the European Green Deal. The compliance with the new ESR target must be checked all along the period in order to force corrective measures to be taken. Otherwise France won't be able to reach and go beyond -47,5%.

Transport is the most emitting sector in the country, accounting for 31% of total emissions, half of it is individual cars, and most worryingly, its emissions are stable for a decade. Tackling the emissions in the transport sector by both operating a modal shift toward public transport, railway and bicycle and developing low-emission vehicles is key to reaching the 2030 climate target. Despite 3 different laws addressing transport during this legislative term, results are bare.

Agriculture is the second most emitting sector, accounting for 19% of emissions (80% of which comes from livestock). Emissions of this sector are maintained high by the intensification of livestock production (and their dependence on soybean imports), the intensive use of chemical fertilisers, the lack of support for organic agriculture, and the too timid fooding policy, and incentivising plant protein production.

Buildings face a double challenge : they account for 17% of France's emissions and at the same time represent a massive social challenge with more than 12 million people living in energy poverty. Despite a reduction of emissions of 5,5% between 2015 and 2018, the pace of reduction is too slow to reach the 2030 target. 500,000 deep renovations per year are the level which would be required to achieve the objective of reducing the energy consumption in the buildings sector in France by 2030. Today, yearly renovation concerns only 70,000 buildings.

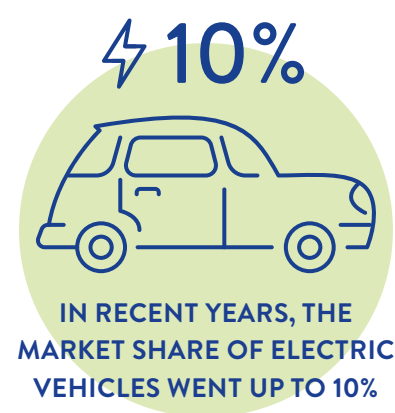
BEST PRACTICES & CHALLENGES IN ESR SECTORS

The Citizens' Assembly identified many leverages to reduce emissions in non-ETS sectors, but the Government failed to implement most of them. However, they are still relevant and could be considered as good practices.

TRANSPORT

Unfortunately, the **transport sector** did not contribute to reaching the 2020 ESR target in France, as emissions remained stable over the decade. In order to reach the 2030 ESR target, 3-4 million tonnes of eCO₂ should be reduced every year. Ambitious measures need to be implemented, so transport is not a climate free rider. The transition of the automotive sector will be absolutely key in that regard: the French law on mobilities opens the way of an end date for the sale of internal combustion engines by 2040, too late for having a short term effect on emissions. The EU CO₂ standards for light vehicles were efficient in forcing car manufacturers to develop electric vehicles. As a result, in recent years, the market share of electric vehicles went up to 10%. A positive development needs to be confirmed and intensified in the coming years. However, the positive effect is counterbalanced by the fact that fossil fuel vehicles are heavier and heavier, leading to an increase in emissions and energy consumption: the share of SUVs in the sale of vehicles went from 28% in 2016 to 39,2% in 2020. A financial penalty applies to vehicles heavier than 1800kg, but this only concerns 2,6% of the sales. 1300kg as proposed would have been more efficient covering 40%. In order to comply with the French carbon budget: the end date for the sale of internal combustion engines should be set in 2030 maximum. This would support the transformation of the automotive sector and therefore the reduction of emissions in the ESR sectors.

Besides tackling automotive emissions, the modal shift should be the second pillar. The French energy and climate plan foresees an increase in rail modal share by 27% by 2030. According to a study from Réseau Action Climat France, France Nature Environnement and the Fondation Nicolas Hulot, €3 billion additional annual investments would be needed to support the modal shift goals for passengers and goods and the decarbonation of the transport sector by 2030. The French Government invested €4,5bn of the recovery plan in regenerating the railways, but only €600 million is fresh money. The money is only a one-shot, whereas modal shift policy requires sustainable investments during the next decades. The lack of public investment can be an important loophole to reach the 2030 target. Additionally, the Citizens Assembly proposed to lower VAT on train tickets and to add a new tax on aviation. The same issue arises when we consider bike modal share targets. With a 3% modal share, France is for now off track in its commitment to reach a 9% modal share in 2024 and 12% by 2030. To reach these targets it would be necessary to increase investments into bike infrastructures by investing €500 million per year.



Finally, phasing out fossil fuel subsidies for diesel for road transport of goods must be a clear priority to rebalance the competitiveness between different modes of transport. The French Government engaged a first step in that direction in 2020 by reducing the subsidy by 2ct/l, but it is too little to support modal shift.

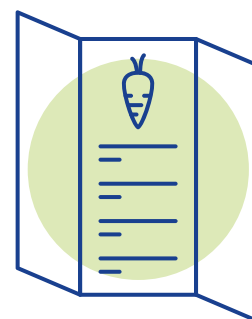
BUILDINGS

In the **buildings sector**, France plans on banning fuel heating for new and old buildings in 2022. A small step toward the decarbonation of heating, which also requires massive investments in the renovation of buildings. The Citizens' Assembly identified the compulsory minimum energy performance standards for buildings as a key measure to force deep renovation of buildings. It also suggests that the Administration paves the way by being obliged to renovate all public buildings in high energy standards by 2040. The Government watered down the proposal and implemented the interdiction to rent an accommodation with G energy performance by 2025, F by 2028 and E by 2034, but without requiring any depth of the renovations and nor further planning after 2034. Thus, the standard will not trigger deep renovations, but rather uncoordinated staged renovations and is too low to be fully efficient in incentivising owners to deep renovate their apartment/house. Similar measures can be taken at the EU level to support Member States in the renovation of buildings. €6bn of the recovery plan is allocated to the renovation of buildings, mainly public buildings. Reports show that at least €17 billion should be invested every year in order to deep-renovate the least efficient dwellings to eradicate energy poverty from 2024. Financing the renovation should be secured in the long run.

AGRICULTURE

For **agriculture**, the obligation to propose a vegetarian menu at least once a week in collective restoration as well as every day having vegetarian options from 2023 in administration's restaurants is a positive measure taken by the Government in order to reduce meat consumption and therefore emissions of the sector. Several measures have also been adopted to support the development of legume production, both to feed livestock animals and to provide pulses for human consumption: investment support for pulse production in the recovery plan, the adoption of the national strategy for vegetable proteins and the adoption of a financial supports in the national strategic plan (implementation of CAP) for the production of pulses for animal feed and for human consumption. But they are far from enough to really drive the transition of the sector. Similarly, the target is to have 20% of organic food in collective restoration has not been reached, since organic food accounts for only 5,6%.

The Citizens Assembly suggested creating a tax on nitrogen fertilisers in order to disincentivise its use. The idea was rejected by the government and no reduction target has been set for nitrogen fertilisers, although they are the second source of agricultural emissions. The national strategic plan will be key in driving emissions of the sector down, For example, by providing much greater support for the most sustainable livestock farms (maintaining grasslands and hedgerows, not resorting to soya imports, etc.). Finally, without an objective to get rid of the most industrial livestock farms, i.e. those that produce the most animals and have the most harmful environmental impacts, France will not be able to achieve the halving of emissions from the agricultural sector that is necessary to meet its national climate objectives.



PUBLIC PARTICIPATION, TRANSPARENCY, INFORMATION IN SETTING NATIONALLY BINDING SECTORAL TARGETS

The climate target is debated in the context of the national energy and climate plan with important consultations. Once set, the plan defines how the different ESR sectors contribute to the overall target. Civil society organisations are invited in public consultation on the low carbon strategy, which is the basis of the sectoral targets. The High council for Climate change is in charge of supervising and monitoring progress in reaching national targets.

After the Yellow Vest movement in 2018, the Government decided to introduce the Citizens Assembly on climate change, an unprecedented initiative, aiming at proposing ambitious climate measures at the national level. The idea was to strengthen social acceptance and public participation in climate policies' design. 150 randomly selected citizens elaborated 149 very ambitious measures, supposed to be implemented by the Government "without filter". Most of them had massive public support according to opinion polls. Nevertheless, the Government rejected and watered down most of them, not respecting its own words on the implementation of the measures.

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GERMANY

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GENERAL ASSESSMENT

In Germany, in the national emission reduction efforts, the building and transport sectors are the hardest to move as no substantial emission reductions have been achieved in those sectors during the past 20 years (especially true for the transport sector).

However, **without national commitments e.g. via ESR, Germany would most likely be in an even worse position.** The federal government only became under pressure when projection reports in 2013 and 2017 showed that the national 2020 targets could be missed and that the country was not on track for achieving the now almost outdated 2030 target of -38% emission reductions for the ESR-sectors. The impending payments for neglected climate protection, which would have flowed to other member states without real added value for Germany are even more important, because the federal government would have paid and had already planned money (around 200 million euros) in the federal budget. Overall, the threat of missing the target together with the payment obligation in

a context of a growing climate movement (e.g. with FFF) created a political momentum in which a federal Climate Law and effective measures for the ESR sectors could be seriously discussed.

In autumn 2019, the government presented a federal **Climate Law** flanked by the **climate protection programme 2030**. This programme included a new instrument for the road transport and building sectors: a national emission trading system. This shows the importance of **national ownership** for climate protection, and the ESR is one of the key tools to achieve it.

The potential of emission reductions is huge. Below are the cumulative emissions in Germany over 15 years (2005-2018) in mio. t CO₂ eq for the sectors:

- Agriculture: 996
- Building sector: 1.889
- Road transport: 2.140
- Waste: 199

Greenhouse gas emissions in Germany in 2019 (and in 2005 for comparison) in mio. t CO₂ eq:

- Agriculture: 2005: 70 - 2019: 68 (achieved emission reductions : 2 mio. t CO₂ eq)
- Building sector: 2005: 154 - 2019: 122 (achieved emission reductions : 32 mio. t CO₂ eq)
- Road transport (data from 2018): 2005: 154 - 2018: 156 (achieved emission reductions : -2 mio. t CO₂ eq)
- Waste: 2005: 21 - 2019: 9 (achieved emission reductions : 12 mio. t CO₂ eq)

Emission budgets targets for ESR sectors by 2030 in Germany in mio. t. CO₂ eq, as of 2021 (according to the 2021 revised German Climate Law):

- Agriculture: 56
- Building sector: 67
- Transport (incl. road): 85
- Waste: 4

BEST PRACTICES & CHALLENGES IN ESR SECTORS

The **climate protection programme 2030** as of 2019 provides measures for all sectors as well as cross-sectoral instruments. It was adopted by the Federal Cabinet in October 2019 and was slightly complemented in spring 2021 with small “additional” climate protection measures and a light “additional” quick climate protection programme due to a **revision of the German Climate Protection Law in 2021** (and its updated targets) aiming at climate neutrality by 2045 (instead of by 2050). Further Climate Action programmes are expected in 2022, following the revision of the Climate Protection Law and its updated targets for 2030 and 2045.

THE nETS FOR TRANSPORT & BUILDINGS

1. The programme’s main overarching Measure from 2019 is the introduction of a **national Emissions Trading System (nETS)** for the transport and buildings sectors which became effective in January 2021. With the introduction of a gradually increasing Price on emissions from the combustion of heating oil, natural gas, Gasoline and diesel, this instrument aims at making climate-friendly alternatives in future and investment decisions more attractive in the areas of heat and transport.

The introduction of national CO₂ pricing is anchored in the **Fuel Emissions Trading Act (BEHG)**. This measure is a start and should -according to the NECP - enable Germany to meet the 2030 national target set in 2014 almost exactly, especially regarding the emissions in ESR-sectors, more specifically transport and heating. The current revenues are used for the so-called Energy and Climate Fund via which mainly four measures are supported. First, the stabilisation of the price of electricity; second, the increase of the commuter allowance; third, the increase of housing support; and fourth, other support measures such as for electric vehicles.

Prices in the nETS are fixed at first and will later be determined by the market. The current set price per tonne CO₂ p.a. until 2026 (2021: 25 €/t; 2022: 30 €/t; 2023: 35 €/t; 2024: 45 €/t; 2025: 55 €/t; 2026: 55-65 €/t) are not high enough to have the necessary steering effect in a timely manner, especially regarding the upcoming update of ESR-targets planned in the Fit-for-55-package. Moreover, they represent a risk for social acceptability, because if they remain unchanged and as there is no price regulation from 2027 onwards, a rapid price increase within a shorter period of time (between 2027 and 2030) will be necessary in order to stay on track. The risk of a price explosion with strongly negative social implications is real. Therefore, the setting of higher prices in the very near future, a price corridor until 2030 and new social compensation measures (especially for rural areas) are necessary as soon as possible. All revenues should be returned to affected households; reduced levies on electricity can be one component, but a more important share of revenues should be used for a climate dividend (lump sum payment to all households). Besides, landlords, not tenants, should pay the carbon price induced increase of heating bills.

THE CLIMATE PROTECTION PROGRAMME 2030

2. As well as the new national trading system (BEHG), the climate protection programme 2030 defines a number of measures in order to achieve the climate targets set yearly for each sector by 2030. The climate protection programme 2030, which was published in 2019 and complemented in 2021, includes **many subsidies but lacks clear ambitious policies on the demand side** (e.g. less demand for fossil fuel driven cars). A strengthened policy mix with effective complementary instruments (not only a carbon pricing) is essential. Here are some of the currently applied measures for ESR sectors:

- **Transport:** Tax exemption for EV; campaign and incentives for e-mobility (purchase bonus); CO₂-related reform of the vehicle tax; investment programmes for loading stations. Furthermore: More money for public transport, cycle paths and rail transport; Slightly cheaper train tickets and somewhat more expensive plane tickets.
- **Building sector:** Tax incentives for energy-related refurbishment; Funding programmes for heating replacement; no new oil heating systems from 2026 (and further development of the energy standards through regulatory law).
- **Agriculture:** Implementation and enforcement of the Fertiliser Ordinance; Expansion of organic farming subsidies; support for soils, forests and moors to ensure their climate protection function
- **Waste:** improvement of landfill ventilation.

As mentioned above, further climate action programmes are expected in these sectors in 2022, following the revision of the Climate Protection Law as of 2021. The sectoral approach of the law linked to annual budgets per sector assigns clear accountability for each ministry and also implicates an increased inter-ministerial collaboration.

PUBLIC PARTICIPATION, TRANSPARENCY, INFORMATION IN SETTING NATIONALLY BINDING SECTORAL TARGETS

As a democratic constitutional State, Germany takes the rule of law seriously. Several hearings have taken place on specific aspects of the federal Climate Law (both in the run-up to its first publication in 2019 and in the run-up to the amendment in 2021) and on the 2030 climate protection programme in specialist committees and in party parliamentary groups of the Parliament (Bundestag).

Following the decision of the constitutional Court of Karlsruhe, as of April 2021 on the necessity of updating the Climate Law to address the fundamental rights of future generations, the government decided to amend the Climate Law. The bill amending the 2019 federal climate law was publicly commented on by several stakeholders, including civil society, and the draft as of 7 July 2021 has been publicly available on the government's website.

In Germany, greenhouse gas data is publicly available and regularly updated. Data on greenhouse gases and energy are updated at least once a year and published on several official websites of the government (e.g. Ministry for Environment, Ministry for Economic Affairs and Energy) and government agencies like the Federal Environment Agency (*Umweltbundesamt*). A monitoring report on the state of Energy transition is published every year.

Moreover, a new independent body of experts for climate: the so-called "Climate Council" (*Klimarat*) introduced by the Climate Law 2019 is monitoring the progress of emission reductions in the federal Republic. The Council examines the estimates of greenhouse gas of the previous year submitted by the Federal Environment Agency as well as the assumptions on which the information on the greenhouse gas reduction effect of immediate measures and climate protection programmes is based. The expert Council gives its opinion when the Federal Government changes the permissible annual emissions in the German Climate Protection Law, updates the climate protection plan 2030 and decides on further climate protection programmes. In addition, the German Bundestag or the Federal Government can commission the Expert Council on Climate Issues to prepare special reports.

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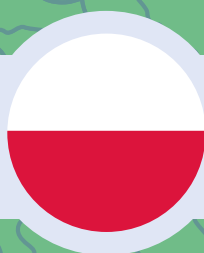
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POLAND

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GENERAL ASSESSMENT

In Poland the share of emissions related to installations covered by non ETS in the national emissions in 2005–2019 amounted to about 50% on average. Overall, there has been an increase in emissions in sectors not covered by ETS since 2015, which was mainly due to a significant increase in fuel consumption (especially in 2016-2017 by over 37%) in the road transport sector. Poland has high technical potential in non-ETS sectors for reductions of emissions that is currently not well utilised. This potential lies mostly in the building, transport and waste sectors.

In the building sector the potential stems from the fact that most Polish buildings have low energy efficiency, or have been modernised multiple times, but not to the highest possible standards. Currently the average Polish building has energy use above 150kWh/sq.m. and the current technical standard for new buildings has been set at 70 kWh/sq.m. Both numbers are far away from the technical possibilities that lay in new technologies, like passive buildings or plus energy buildings.

Secondly, technical possibility in the buildings sector lies in the underdeveloped sector of energy efficient and renewable heating of homes and buildings. About 55% of buildings are still equipped with solid fuel boilers that do not meet the requirements of anti-smog resolutions. The share of coal-fired boilers in the heating structure of Poland in 2020 was 51%, gas-fired 24% and biomass-fired 19%. Almost 40% of solid fuel boilers (coal, wood) are very often over 10 years old. Still, one third of single-family houses are not insulated. Single-family buildings (which is half of the country's residential buildings) need to be equipped with renewables. In the multi-family housing branch, many buildings are connected to collective heating systems, which are largely still based on fossil fuels. This creates a space for changes in both energy efficiency and fuel, also by means of ESCO companies or other possible solutions.

The weakness in unblocking this potential is the low technical awareness of building owners and their low financial capability of modernisation. In community heating systems there is a barrier of not enough capital to create investments in fuel change, but this can be supported by the investment in energy efficiency on the network side (ESCO and the like), but here the lack of know-how is visible. Much of the energy efficiency gains in the Polish energy sector can be made on market conditions (which can pay off in a short time), but still a significant starting capital is needed to trigger the action.

The financial support proposed by the government is not only insufficient but also too complicated and focused on supporting high and middle-income families, not the poor. Energy poverty in Poland is estimated at approx. 10%

In the transport sector there is also big potential for emission reduction, which stems from the fact that private cars in Poland are very old. Between 2005-2019, emissions increased over 83% (increasing the transport share of total emissions to 20,7% in 2019). This old car fleet needs urgent modernisation, at least to the standards that would reduce air pollution in Poland's biggest cities. This can be used to promote zero-emission cars (EVs); however, the obstacle that prevents this from happening quickly is the financial situation of potential consumers who either need a car for their work (carrying goods) or everyday life (such as families with many children or people without access to public transport). The conversion of transport from traditional to electric, with a nearly 80% share of electricity produced from fossil fuels, does little to improve the situation and the number of electric cars is growing too slowly.

Another transport potential lies in the fact that Poland has very extensive public transport services which could be intensified. This could be the case especially for rural areas, where in many places there is virtually no public transport. The barrier here is the cost of service delivery, which might be relatively high in many low-population-density areas. The area of low population density is growing due to an under-regulated spatial planning system. Another barrier is that in many areas an extensive network of public roads has been built, which creates easy flow of cars, which is a serious alternative to the slower, in this circumstances, public transport.

The coronavirus pandemic has severely disrupted the use of public transport. In 2020, slightly over 209 million passengers were transported by rail, which is around 37% worse than the year before. Therefore, the annual trend of increasing the number of public transport passengers, which has been ongoing since 2015, has ended. The drop in the usage of public transport in cities in 2020 was similar. On average, cities recorded a 40% decline, although there were cities (usually smaller) where data for the entire year were even worse.

In the waste sector the potential still lies in intensification of waste segregation and recycling efforts. In the period between 2005-2019 emissions decreased 2,5% (in 2019 the share of total emissions was 3,8%). Despite large progress in waste segregation over the last few years, there are a lot of inefficiencies in the system and a lot of waste is still going to landfill or is expected to be delivered to waste incineration plants. Many old landfill sites have not been cultivated so far, to reduce the CH₄ emissions as well as many sewage plants. Illegal waste storage continues to be a serious problem.

Agriculture is also an important sector. The emissions of nitrous oxide (85% of total emissions in Poland - (mainly from soil - as a result of nitrogen fertilisation) and methane (28% of total emissions - mainly from animal production) are of the greatest importance.

BEST PRACTICES & CHALLENGES IN ESR SECTORS

BUILDINGS

Poland is currently on a trajectory to increase its speed of building renovation. Many separate programmes have been working on this, which now are reduced to only two programmes dedicated to two separate types of buildings:

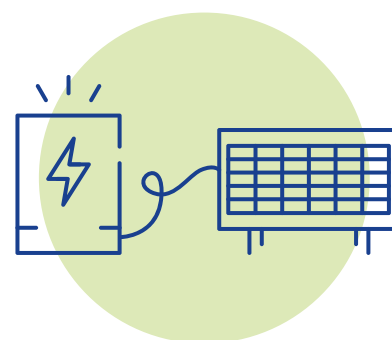
- *Multi-family housing*, which for many years has been benefiting from thermo modernisation surplus. The programme offers cheap loans for multifamily buildings renovation which brings energy savings, and also currently the installation of RES energy appliances.
- *Single-family housing*, which now can benefit from the “Clean Air” programme and its extension “Stop smog”, dedicated to the poorer population. These programmes give donations and cheap loans to homeowners, for energy audits and modernisation that would give energy savings and exchange heating systems. The heating systems are still exchanged into the higher standard coal furnace or natural gas boilers, but in the future probably only RES installations will be possible.

24% of the residents of single-family houses surveyed have not heard of any programme subsidies for the replacement of boilers, and a further 45% know that such programmes exist, but are unable to list them by name, indicating partial knowledge in this area. The current programmes have very successful predecessors, which were also financing the exchange of heating systems (KAWKA) or installing RES heating or energy (PROSUMER) on private housing. As an additional measure to these predominantly nationally-financed programmes, there were many EU-funded grant schemes at the regional level that gave a boost to the installation of RES on private homes, or, less often, renovation of buildings. This type of support cannot be achieved by a single action through the ETS system, because it is created more as a bottom up approach to the external need created by non-ETS regulations, such as air pollution requirements, energy efficiency regulations or RES regulations.

Another action delivered through the sector of buildings is a rising tide of PV installations in Poland, which has been caused by a triple kind of stimulus:

- Stable, relatively profitable prosumer regulation on the energy market;
- Direct donations to PV instalments from EU and national sources, like *Mój prąd* (My current) action, or action delivered on local level by municipalities;
- Combined donations to RES and building modernisation like “Clean Air” or “Stop Smog”.

Since 2016 there has been an exponentially rising number of installations of PVs: in the beginning of 2020 there was almost 4GW of extra PV power capacity and, by the end of November 2021, the number exceeded 7 GW.



TRANSPORT

However, the transport sector in Poland is far from being on the proper track to deliver the necessary greenhouse gas emission reductions, there are also actions at the national level that are triggered because of the non-ETS regulations.

First, is the National Electromobility Plan, that gives stimulus to purchase of new electric cars and buses. The plan, which is accompanied with an Electromobility Law, aims for the total exchange of public bus fleets to electric by 2030, through the mechanism of push and pull actions. The push action is an eBus programme that aims to increase the production of electric buses in Poland and their delivery is at a relatively low price to the local authorities. The pull action is the national targets set for the municipalities on the number of zero-emission buses in their fleet and on the road in 2030.

Together with the action on buses there is also a plan to deliver a massive exchange of private cars to electric vehicles. This should happen also through push and pull actions designed by the Electromobility Law. The push should be given by the Polish Electromobility Fund, which should give donations to the buyer for each electric car purchased. The pull action planned is the establishment of Clean Car Zones in every big city. Both push and pull actions are not yet fully implemented, but are definitely not led by the ETS regulations, instead they rely on air pollution regulations.

The government launched support for the purchase of electric cars, which turned out to be a failure, and a new solution is currently being introduced in this area. The effects are not known yet.

Another transport sector action that seems to be effective in Poland, but was not effective without non-ETS regulations in the transport sector is a renovation of large lorries for international transport. This has been described by us in the [PlanUP](#) inventory of measures. This has been achieved through progressive environmental taxation in road tolling, which is not that effective on the national scale, but is effective in the EU.

Unfortunately Poland is not very progressive in promoting modal shifts in the transport sector. Modal shifts cannot be easily achieved with ETS regulations alone.

AGRICULTURE

Poland has also been rather reluctant to introduce any climate related regulations dedicated to agriculture to increase, permanent binding carbon in soil or use of agricultural biomass. Unfortunately, cultivation techniques that contribute to this (e.g. introduction of catch crops, use of legumes for “green” fertiliser, no-till cultivation) are not supported and rarely used by farmers. Even uptake of biogas installations in Poland is now very low, while this is a relatively low-hanging fruit in this sector, it could be more actively pushed with anti-nitrogen regulations

Poland is actively selling ETS credits on a European scale and gaining high revenues from this.

There is no national budget dedicated to reach any national climate goal, because there is no official climate goal for Poland up to 2050 as there is no nLTS for the country. Existing climate goals are for the energy sector only – stated in Polish Energy Policy to 2040.

PUBLIC PARTICIPATION, TRANSPARENCY, INFORMATION IN SETTING NATIONALLY BINDING SECTORAL TARGETS

During the process of preparation of nationally binding sectoral goals there was no public consultation on the national level. The goals were at that time accepted by the government as they were proposed by the EC.

Greenhouse gas data is publicly available and it is up to date on the website of the national public NIR preparation institution, which is KOBiZE. The data is provided as the whole report and is not translated into other types of communication by any other public institution (here the UNIFY NECP tracker is the first tool that tries to do that). KOBiZE is independent enough from the government to keep the trust in the provided calculations and the methodology is transparent.

The public might or might not be involved in the introduction of the described measures – it depends on the measure, because they were usually implemented separately through different laws.

There was a lot of publicity and big public involvement during the debates on how to promote prosumer regulation in national law however, this was before current measures were enacted in 2015. Current measures – so called ‘prosumer discount’, were enacted in 2016 without any public consultation and cancelled the regulation that was enacted before with strong public support.

Public consultation, with special hearings with stakeholders, took place during the preparation of the National Electromobility Plan. Anybody could remark on the proposed plan.

All of the other described measures were not usually publicly consulted on much.

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SLOVENIA

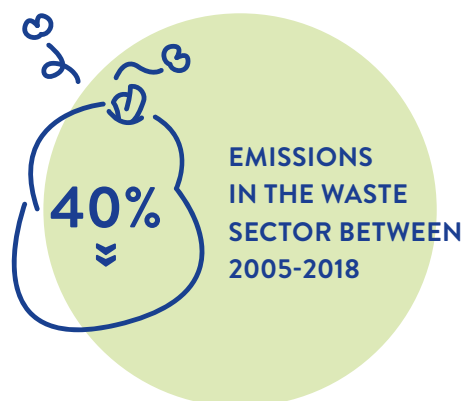
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GENERAL ASSESSMENT

Slovenia's 2020 non-ETS target was not to increase emissions by more than 4% compared to 2005. Based on the 2018 data it seems that the target will be reached, however the emissions trend is not in line with the targets, since emissions in 2018 increased by 2%. In this context current fulfilment of the target does not mean long-term emission control, which is of utmost importance for achieving 2030 targets.

Two sectors that moved forward relatively quickly are the waste sector and building sector. In the waste sector, emissions decreased throughout the period in line with the sectoral target by 2020 (except 2015). In 2018 emissions decreased by 7,4%, but they are still 3,6% above the 2020 target. In the period 2005-2018, the emissions of this sector decreased by 299kt CO₂eq or by 40.4%. This was mostly due to measures such as separate collection of waste and, in particular, the construction of systems for the mechanical biological treatment of mixed municipal waste before disposal. There is still the potential of increasing the share of recycling and reducing the amount of waste.



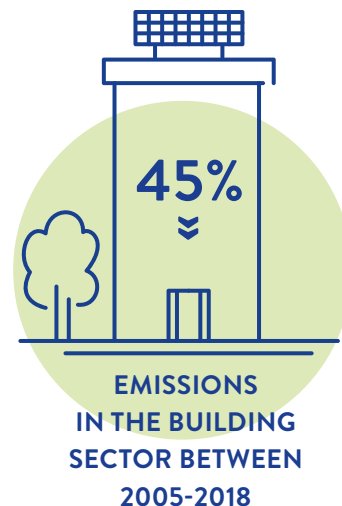
Emissions in the building sector were reduced by 45% in the period from 2005-2019, or by 1347,5 kt CO₂eq. There is still potential for larger reductions especially in public sector buildings. In the period from 2014-2019 a total amount of 695 million EUR of investments and public funds was approved in the building sector, resulting in emission reductions of 281,5 kt CO₂ eq.

By far, the most problematic sector is the transport sector. It is the largest source of emissions in the non-ETS sector. In 2018 it represented 52,9% of emissions. It is also the only sector in which emissions increased in the period 2005-2018 (by 1,408 kt CO₂ eq. or by 31.9%). The growth rate of emissions in the transport sector needs to be reversed and emissions significantly reduced (by 4,9%) in order to achieve the target. Nonetheless there are huge potentials for higher ambition in the transport sector, such as additional measures and investments in public passenger transport, more intensive investment in the development of the railway network, construction of cycling infrastructure, changes in the parking policies, road charges etc. This vast potential will remain untapped according to the adopted NECP. In the transport sector there were 94,54 million EUR of supported investments and 24,59 of paid support, resulting in emission reductions of 2,6 kt CO₂.

In agriculture, emissions in 2018 were 5.6 percentage points below the 2020 target. In 2018 agriculture emissions amounted to 1,722ktCO₂eq, which is 0.6% less than the baseline value in 2005. The evolution of emissions from the agricultural sector is currently in line with the set target, however the target was set very low. There is far more potential through the adoption of more transformational measures such as promotion and support for regenerative organic agricultural practices and promotion of plant-based diets.

In the (non-ETS) industry sector emissions decreased significantly, by 347 kt CO₂eq or by 22.5% (2005-2018), but there is a trend of rising emissions in the last 5 years. 603 SMEs projects were implemented with total approved funds of around EUR 60 million resulting in 8.7 kt CO₂ eq (2013-2019).

Cost analysis was made (under Podnebno Ogledalo project) for energy efficiency and renewable energy measures in the public sector, households, industry and transport. It shows that in 2019 a total of 71 million EUR support was paid out which resulted in emission reductions of more than 57kt CO₂ per year. The effect and effectiveness of support is improving each year. In 2019 and 2014 the support for measures was comparable, however in 2019 twice as many emissions reductions were achieved. In 2019, slightly less than 1300 EUR of financial support was needed to achieve 1 tonne of CO₂ emissions cuts. However the problem is that subsidies that are contrary to the achievement of emission targets rose again in 2017 - they amounted to 135,2 million EUR. The most problematic is the refunds of excise duties on diesel fuel for commercial purposes.



BEST PRACTICES & CHALLENGES IN ESR SECTORS

In the Operational Programme for greenhouse gas emission reduction by 2020, Slovenia envisioned measures to tackle emissions in all of the non-ETS sectors as well as some horizontal measures. However, not all of those were implemented or were not implemented fully. For example, the intention to phase out harmful subsidies by 2020 was not acted upon, nor was the planned redesign of travel cost reimbursement scheme for employees ever implemented.

TRANSPORT

In the transport sector measures such as promoting the competitiveness of public passenger transport, subsidy schemes for new low-emission vehicles and voluntary commitments for freight transport and subsidies for the purchase of new low emissions vehicles. Measures to increase the share of rail freight transport have contributed the most to the reduction of greenhouse gas emissions in the sector.

AGRICULTURE

In the **agriculture** sector measures such as implementation of higher-standard farming methods that contribute to the reduction of nitrous oxide and methane emissions, training programmes, consultancy and demonstration projects etc.

BUILDINGS

In the buildings sector measures such as a change of regulations on energy efficiency of buildings, subsidies and loan schemes for households and the public sector, support scheme for heat production from RES, continued operation of a network of energy consultants (ENSVET network) were implemented. The measures that have contributed the most to reducing emissions are investments in improving the thermal performance of buildings and other energy efficiency measures, as well as the replacement of heating oil with low-carbon energy sources.

Out of the measures introduced the ones that seem to work the best are those to reduce energy use in buildings:

One of those is the **ENSVET programme**, which provides free energy consulting for households, financed by Eco fund, a Slovenian Environmental Public Fund. The programme offers free consulting for households on energy efficiency measures in buildings, and it is implemented by a network of energy consultants, spread over the entire country. Eco fund's yearly report from 2019 shows that according to the methodology for calculating energy savings and CO₂ emission reductions, the 7346 consultations implemented in 2017 enabled 23.2 GWh of energy savings and CO₂ emission reductions of 6,025 tons per year to be achieved in 2019 due to the operation of the ENSVET network.

The second example of good practice is the implementation of Article 7 of the Energy Efficiency Directive. In Slovenia the obligation to achieve the energy savings under Article 7 is divided among energy providers in Slovenia and Eco fund. The goal for providers is to achieve 0,75% of savings compared to the previous year's sales and the goal for Eco fund is to achieve 262 GWh savings per year. Energy providers need to finance the measures themselves, while the Eco fund programme, which provides support for energy efficiency measures in households and companies, either through subsidies or low interest loans, is financed by the »energy efficiency tax« which is paid by energy consumers.

Third, Slovenia's success story is the Eco funds energy poverty programme - ZERO and ZERO500 programmes. The ZERO programme provides free home visits by energy consultants to energy poor households, advice on the more efficient use of energy and water as well as free packages of materials and devices for reducing energy and water consumption. ZERO500 provides 100% subsidies for investments in energy efficiency such as building insulation, installation of energy efficient windows, change of water heating system with solar heat system or heat pump, installation of recuperation system. The programme is co-financed by the Cohesion fund and the National Climate Fund. The estimated savings of the ZERO programme are 320 kg of CO₂ per year per household. There is no data available regarding emission savings for the ZERO500 programme.

PUBLIC PARTICIPATION, TRANSPARENCY, INFORMATION IN SETTING NATIONALLY BINDING SECTORAL TARGETS

The Operational Programme for emissions reduction by 2020 which includes the targets and measures to achieve the 2020 emissions reduction target was adopted by the Government in the regular decision making process which allowed participation of different stakeholders. The targets set in the OP for greenhouse gas in 2020 go beyond the targets assigned to Slovenia by ESR (official ESR target is +4%, OP greenhouse gas emissions target is -7%).

Greenhouse gases data is publicly available and up-to-date. Emission records are available to the public and data is gathered on a separate page by the Slovenian Environment Agency. Annual progress reports are published. The reports follow the Operational Programme for greenhouse gas reduction and record the progress achieved. Some selected measures are presented in more detail, with an overview of the additional benefits and barriers identified in implementation, including proposals to address these barriers. But there is no official body that supervises measures and progress towards climate goals.

According to data from REUS (which conducts research on energy efficiency in Slovenia). 82% of households in Slovenia are thinking about how to be more efficient regarding energy use, while 92% of organisations that were part of the research acknowledge that they can reduce energy use in the public sector with simple measures.

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SPAIN

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GENERAL ASSESSMENT

In Spain the overall emissions in the non-ETS sectors have only shown a significant reduction since 2013 in the year 2020, with a very clear effect from the Covid pandemic.

Provisional data for the year 2020, recently published by the Spanish Environment Ministry (MITECO), shows that emissions from ESR sectors decreased by 10.4% compared to 2019, while ETS sectors (which account for 32.7% of the total) decreased by 18.7%.

However, when compared to the year 2005, the baseline year for measuring achievements in the ESR sectors, according to official estimates, overall gross emissions for these sectors had fallen by around 24% by 2020 (2007 was the year of peak greenhouse gas and ESR emissions in Spain).

Through Decisions 2013/162/EU, 2013/634/EU and 2017/1471/EU, the annual emission allocations (AEAs), national objectives established for the ESR sectors which mark the path of annual compliance, were as follows for the 2013-2020 period in Spain:

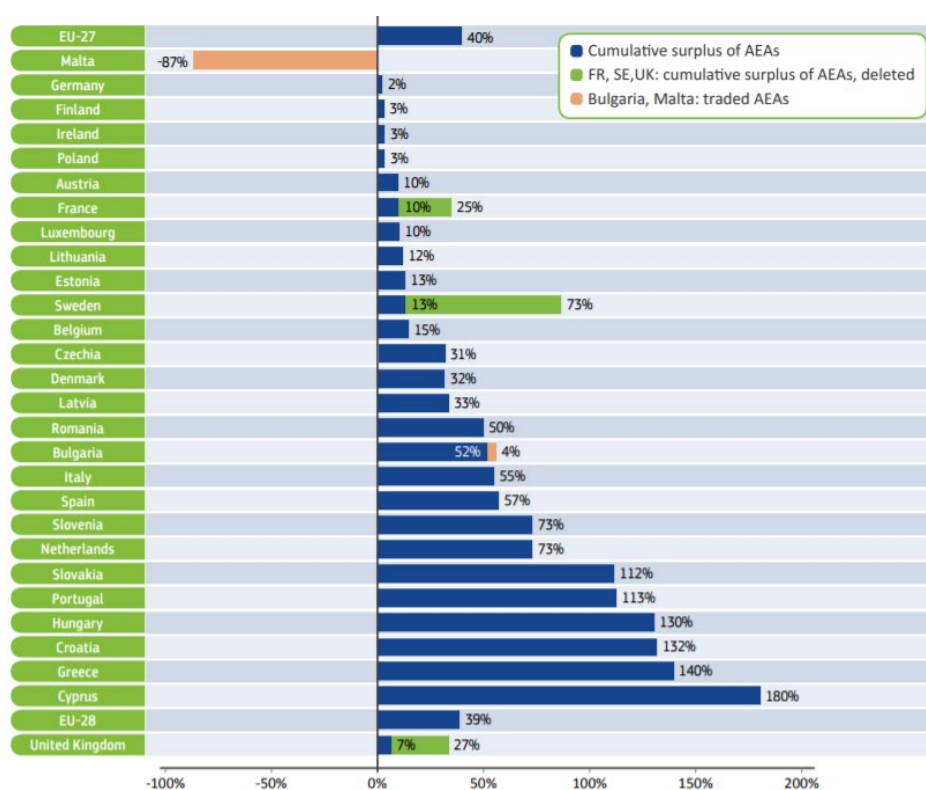
2013	2014	2015	2016	2017	2018	2019	2020
227.564	225.648	223.733	221.817	218.263	216.306	214.348	212.390

Spain's Annual Emissions Allocation, AEAs, (ktCO₂e) 2013-2020

	2013	2014	2015	2016	2017	2018	2019	2020
Annual Emission allocation	228	226	224	222	218	216	214	212
Annual ESR Emissions	200	200	196	198	201	203	202	181
Difference	-28	-26	-28	-24	-17	-13	-12	-31
Cumulative ESR credits	-28	-54	-82	-106	-123	-136	-148	-179

Spain's emissions and cumulative credits under the Effort-Sharing Decision/Regulation (MtCO₂e)

In these 8 years, emissions were below the AEAs, with overall accumulated credits of 148 million tonnes of CO₂ equivalent (MtCO₂e) by 2019, and an estimated further 31 MtCO₂e in 2020, making a total of 179 MtCO₂e by the end of this period. The achieved emissions reductions during the 2013-2020 period for the ESR sectors amount to 10%, thus complying with Spain's obligation of 10% under the Effort Sharing Decision.



Cumulative surplus of Annual Emission Allocations (AEAs) as percentage of 2005 base year emissions, 2013-2018. Source: EC

Transport: Spain's transport sector is responsible for the highest share of emissions (27.7% of the national overall total in 2020). Road traffic, especially private vehicles, is by far the dominant source (road transport alone accounted for 25.6% of total emissions in 2020). Mobility restrictions due to Covid reduced the consumption of gasoline and diesel by 21% and 16.7% respectively in 2020, and this resulted in an 18% fall in emissions between 2019-2020 to 75.3 MtCO₂e, below the figure predicted for 2020 in the NECP (87 MtCO₂e). In interpreting this fall, Covid mobility restrictions were undoubtedly a major factor, and transport emissions had increased steadily from 2013-2019. This is despite several measures designed to reduce transport emissions (e.g. incentives for electric vehicle purchases, investments in public transport and sustainable mobility plans) and it is notable that vehicle ownership, and diesel vehicle ownership in particular, increased substantially in Spain during this period.

Agriculture: Agricultural emissions in Spain in 2020 represented 14% of overall emissions, at 38.3 MtCO₂e, slightly lower than the figure for 2005. Nonetheless, the 2020 figure is more than 10% higher than the prediction for the agriculture sector in Spain's NECP (34.6 MtCO₂e), and emissions rose overall from 2013-2020, reflecting increased cow and (especially) pig numbers and growth in fertiliser use over this period. In 2020, emissions from the livestock sector accounted for nearly $\frac{2}{3}$ of the total for agriculture. More than half of Spain's meat production is exported.

Buildings: In 2020, emissions from Spain's residential, commercial and institutional buildings sector were 24.2 MtCO₂e, representing 8.2% of total emissions and below the 2005 and 2013 levels of 30.8 and 27.3 MtCO₂e respectively. Despite some fluctuations, emissions have fallen markedly in recent years, and the sector in 2020 was well below the level predicted in the NECP of 28.5 MtCO₂e. Interpretation of trends in this sector needs to take account of demographic factors (population, number of households, typology of households) as well as the influence of weather, but the recent downward trend may in part also be due to the cumulative effect of the various mitigation measures undertaken over the last decade (cleaner heating and cooling facilities, more efficient appliances, building refurbishment).

Waste: In 2020, emissions in Spain's waste sector totalled 14 MtCO₂e (5.1% of overall emissions), compared to 13.3 and 14.6 MtCO₂e in 2005 and 2013 respectively. With some fluctuations, there has been a slight fall in emissions in this sector since the peak year of 2009 (at 15.6 MtCO₂e). The waste sector in Spain is especially resistant to emissions reductions as it is dominated by decaying wastes in landfill, which account for over 80% of the total emissions in the sector. Methane emissions from buried waste are usually only collected when landfill sites are sealed and closed.

Fluorinated gases: Of all the diffuse sources, and especially within the small industry (non-ETS), most progress has been made in the reduction of fluorinated gases (see details in later section). However, it is a relatively minor sector in terms of overall emissions (estimated 2% in 2020; 5.3 Mt CO₂e). In 2005, emissions from this sector totalled 10.9 MtCO₂e, rising to 15.9 MtCO₂e in 2013. The reduction from 2013-2020 has therefore been very significant, due to a series of carefully targeted and enforced measures at EU and national level (see later section).

Spain under the ESR 2021-2030: Looking ahead, Spain's NECP proposes an ESR objective of 39% emissions reduction by 2030 in relation to the 2005 baseline, compared to the minimum national objective of 26% established in the effort-sharing provisions in the existing EU legislation approved in 2018. This compares to the new proposal for Spain of 38% in the European Commission's 'Fit for 55' package, so if this is approved, Spain's existing NECP is already fully aligned with the Commission's new proposals for the ESR sectors for 2030.

The greatest challenges in reaching this objective will undoubtedly remain in the transport, buildings and agriculture sectors. Here, as well as identifying and designing the appropriate measures (most of them have already been included in the NECP and the National Recovery Plan), greater effort will be required in these sectors from various Ministries at national level, as well as the regional and municipal authorities. Measures must be well-funded, designed to achieve results in terms of emission reductions, and applied promptly, effectively and transparently, with continuous dialogue between the responsible authorities and affected sectors, communities and individuals over the need for the measures and the results achieved through their application. A strong focus will also be needed on identifying and removing barriers to the successful achievement of this objective and implementation of the associated measures, and ensuring that high quality data is collected and analysed to be able to show how widely measures are adopted, how successful they are, and why.

BEST PRACTICES & CHALLENGES IN ESR SECTORS

THE NATIONAL LEVEL

Some of the measures introduced at the national level to reduce emissions in ESR sectors are:

- CLIMATE PROJECTS promoted through the Carbon Fund for a Sustainable Economy (FES-CO₂) to mark a path of transformation of the Spanish productive system towards a low-carbon model.
- ENVIRONMENTAL PROMOTION PLANS to give impetus to a set of concrete measures that will contribute to the improvement of environmental conditions, including measures to combat climate change at the national level.
- BUILDING ENERGY REHABILITATION PROGRAMME, TECHNICAL BUILDING CODE and BUILDING ENERGY CERTIFICATION SYSTEM to promote energy renovation and the reduction of final energy consumption and CO₂ emissions in the building stock.
- MOVES' PLANS I and II to boost sustainable and efficient mobility through the scrapping of old polluting vehicles and the purchase of electric vehicles or the installation of charging points.

THE LOCAL LEVEL

At regional and municipal level, measures introduced include:

- In the agriculture sector: correct management and treatment of manure and slurry from intensive livestock units, diet modification to reduce methane emissions during enteric fermentation, support for organic agriculture and extensive livestock farming, proper use (optimisation and reduction) of fertilisers on agricultural soils, crop rotation including fallow and use of legumes, use of management techniques that avoid losses of organic carbon from soils (e.g. maintenance of inert plant cover, maintenance of spontaneous or seeded live plant cover, avoiding tillage on sloping land, incorporation of agricultural residues into the ground), use of renewable energies to replace fossil fuels (such as: replacement of diesel boilers with small biomass boilers or solar irrigation), reduction in fuel consumption due to better and efficient management of agricultural machinery.
- Waste: the main efforts are aimed at reducing the amount of biowaste that is deposited in landfills, on the one hand, avoiding the generation of such waste, for which the Strategy 'more food less waste' has been launched, and on the other, encouraging their separate collection and subsequent recovery by composting or biomethanisation (gradual introduction in municipal recycling systems of organic waste).
- Transport: measures to promote modal transfer in passengers and merchandise, measures to promote alternative fuels in transport, measures to promote efficiency in transport and active mobility.
- Buildings: normative and regulatory development aimed at greater efficiency and savings in energy consumption in buildings, together with active policies to promote energy improvement in existing buildings and high energy efficiency in new buildings.

- Small industry: projects of energy efficiency in industry, use of waste heat, contracting electricity with a certificate of guarantee of renewable origin, substitution of fossil fuels with renewable sources or with less polluting fossil fuels.

Most of these initiatives rely on the European Regional Development Fund (ERDF) supported in some cases by the creation of national funds such as the National Energy Efficiency Fund. ETS revenues have also been used in some cases. In the case of agriculture emissions, various measures are available under the European agricultural fund for rural development (EAFRD). Spain has no overall national Climate Action Fund, due to the wide dispersion of responsibilities already described.

SMALL INDUSTRY - IMPLEMENTING NATIONAL TAX ON FLUORINATED GASES

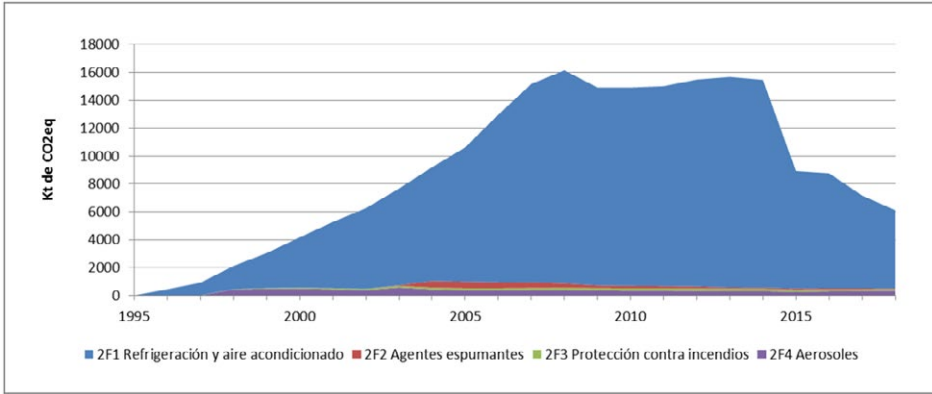
This tax came into force on January 1, 2014 and was phased in from 2014-2016, reaching 100 Euros/tonne from 2016 onwards. It is levied on the emissions of fluorinated gases with a heating power equal to or greater than 150.



Fluorinated gas emissions in EU 27 (above) and Spain (below). Source: EEA greenhouse gases - data viewer

The fall in emissions has also been influenced by the implementation in 2015 of the HFCs quota system included in Regulation (EU) 517-2014, on fluorinated greenhouse gases. However, comparison with the overall EU situation shows that the reduction at national level in Spain has been better than the EU overall, with the national share of EU F-gas emissions falling from a peak of around 20% in 1999 to just 8% in 2019.

Seven years after the introduction of the tax, emissions of fluorinated gases in Spain have been reduced by more than 50% as a consequence of the changes that have occurred in the sectors that use these gases and, particularly, in the refrigeration and air conditioning sector that represents more than 90% of the use of these gases.



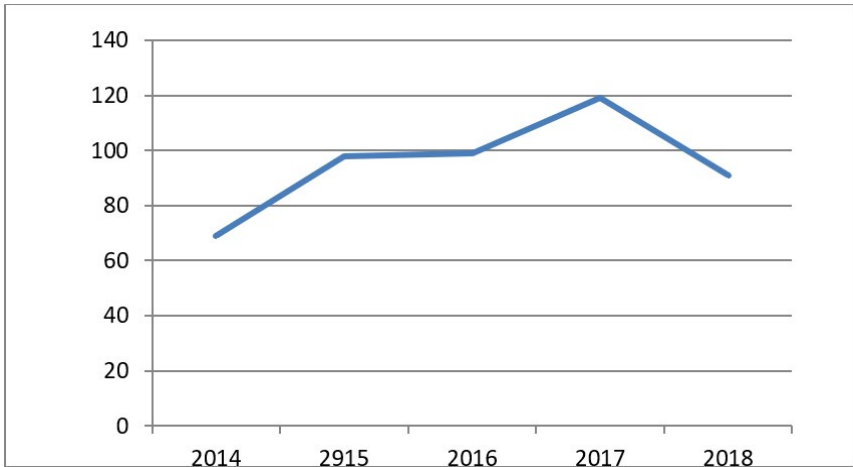
Evolution of fluorinated gas emissions in Spain.

In new facilities, technologies that use alternative gases such as CO₂ in commercial refrigeration or NH₃ in industrial refrigeration have been introduced, while in existing facilities measures such as automatic leak detection systems, conversion of existing facilities to the use of fluorinated gases with low heating potential compatible with the installations or the closure of refrigerated cabinets in supermarkets.

In other minority sectors the use of fluorinated gases has also promoted technological changes: in the fire extinguishing sector it has promoted alternative gases to fluorinated gases and in the case of electrical equipment with SF₆ it has helped to reduce the leakage rates of existing equipment.

2014	2015	2016	2017	2018
6 €/tCO ₂ e	13 €/CO ₂ e	13 €/tCO ₂ e	20 €/tCO ₂ e	20 €/tCO ₂ e (1Q & 2Q) 15 €/tCO ₂ e (3Q)

Tax rates of the national tax on fluorinated gases (DG de Tributos)



Evolution of the collection of the national tax on fluorinated gases (AET, 2019)

TRANSPORT - REDUCING ROAD TRAFFIC IN CITIES

The mobility-transport sector contributed 24.7% of emissions in 2013 and in 2020 continues to be the sector with the greatest weight in overall emissions (27.7%). Despite a range of measures targeted at sectoral, municipal, national and individual levels, transport emissions in Spain are still high.

The Spanish Climate Change and Energy Transition Law and NECP foresee from 2023 the delimitation of low-emission zones with limited access to the most emitting and polluting vehicles in all cities with more than 50,000 inhabitants, measures in which the regional and local administrations are key actors. Also, Spain's national Covid recovery plan, introduces a range of measures to reduce transport emissions in cities (e.g. increased financial support for cities, businesses and individuals to replace combustion vehicles with electric vehicles and to install charging infrastructure). Whilst priorities for regional development funding have not yet been identified for the 2021-2027 period, similar measures are likely to receive support from the ERDF.

A wide range of Spanish cities have undertaken local actions to reduce road traffic and promote more sustainable, active and clean urban mobility. Unfortunately, these successful measures usually are not accompanied with comprehensive data and effectively measurable support of emissions reductions or relate them to Spain's obligations under the ESR. Some of these best practises can be found in the following examples:

- [Ciudades Que Caminan](#) (Walking Cities) a pioneering initiative disseminating policies for the transformation to friendly and healthy cities with less private transport and more public spaces for people. The initiative is championed by Pontevedra, whose pedestrianisation model is already an international reference
- [Barcelona sustainable and active mobility](#) initiatives, including the Bicycle Strategy, the new bus network, the tram network connection, the electric vehicles master plan and the Strategy for Electric Mobility 2018-2024
- [Málaga sustainable mobility](#) initiative, including the dissemination of information on the different modes of electric and active mobility as well as the infrastructures and services available for their development, and with the [Pact for mobility](#) since 2002
- [Murcia Sustainable urban mobility plan Move on](#), approved in December 2013 and oriented to the environment protection and the improvement of citizens health, reducing the environmental impacts of transport, contributing to the reduction of greenhouse gas emissions, and optimising the use of non-renewable energy resources and prioritising the use of sustainable transport
- [Pamplona mobility](#) including the Cycling Plan (electric bicycle public system, school pathways, plan for the friendliness of the city centre), and the [new mobility regulation Pamplona 30](#)
- [Pontevedra alternative mobility](#): Pontevedra was recognised by UN Habitat as one of the most comfortable European cities to live in, thanks to its urban quality, mobility and accessibility. It has also been awarded the Urban Excellence Award.

- [Sevilla Breathe](#): Plan against climate change and for a more liveable, healthy and green city
- [Valencia municipal bicycle agency](#), focused on the creation of the cycling ring that surrounds the historic city centre, and the simultaneous development of other cycle paths
- [Valladolid, close city](#) including the pedestrianisation of more than 35,000 m² of streets, 155 km of cycle lanes and cycle paths, 7 underground car parks in the city centres and 7 deterrents car-parks in the periphery.
- [Vitoria-Gasteiz Sustainable Mobility and Public Spaces Plan](#) prepared in 2007 and planned to develop until 2023, whose starting point was the Citizen Pact for Sustainable Mobility that defined the framework for new mobility guidelines that allow maintaining the quality of life and convert cities and their surroundings into an ideal space to live

PUBLIC PARTICIPATION, TRANSPARENCY, INFORMATION IN SETTING NATIONALLY BINDING SECTORAL TARGETS

The methodology for the Diffuse Sectors Road Map was explained to the environment NGOs and presented to the National Environment Advisory Council and the National Climate Council (with representation from environmental NGOs, consumer organisations, trade unions, business and farming interests, as well as regional governments in the case of the climate council).

NGOs requested a clear coordinated and transparent monitoring system to track the application of the measures proposed and evaluate their effectiveness, given the diversity of sectors affected, measures proposed, and authorities responsible. However, such a system was not implemented, and only in the case of the fluorinated gases can emissions reductions be clearly associated with policy measures.

Opinion polls conducted at national level (CIS, Elcano, SEO/BirdLife) and by the EU (Eurobarometer) repeatedly demonstrate public concern about climate change and support for climate action. Spanish citizens are repeatedly identified as amongst the most concerned about climate change in the EU.

The success of emissions reduction policies in ESR sectors is by the very nature of the sectors, difficult to monitor and evaluate. This is especially the case in Spain, with its very complex division of policy competence for ESR sectors between the state level, 17 autonomous regions, two autonomous cities and 8.131 municipalities. Many different policy approaches are taken in the different sectors.

Within the Spanish government, climate goals are supervised by the Spanish Office for Climate Change and its different departments. The [Spanish greenhouse gas emissions inventory](#) includes good, updated data for all sectors and presents emissions data for the ETS and ESR sectors separately. Comprehensive details of legislation, policies and measures are provided on the lead Ministry's [website](#), although it is more difficult to find information evaluating the success of the policies and measures adopted. This situation may be improved by new requirements in the 2021 Climate Change and Energy Transition Law, for more standardised data collection and for the establishment of an independent expert committee to advise on and evaluate climate and energy policies and measures.

Overall, there is a lack of institutional, business or public focus on or knowledge of the 'identity', objectives or mechanisms of the effort sharing regime in Spain. Understandably, it is easier to identify with the specific actions associated with an individual business, sector, municipality or lifestyle (home, car etc.) than with the somewhat abstract concept of the ESR regime. In general terms, there is a need for more coordinated and focused publicity and social awareness-raising campaigns on the need to adopt measures which will ensure rapid and lasting emission reductions. Possible models can be found in the public information campaigns of the type used to promote safe driving, save water, reduce domestic violence, eat healthily or respect racial diversity.

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