Overview of reported national greenhouse gas policies and measures in Europe in 2021

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Executive summary

Key messages:

- The number of reported single national policies and measures to reduce greenhouse gas emissions increased since the last reporting cycle, by around 11% between 2019 the previous reporting year and 2021.
- This increase is consistent with the reported increase in emission savings expected by 2030. This reflects the preparation of National Energy and Climate Plans to achieve the EU's 2030 climate and energy targets. However, the number of reported national policies and measures by a country is not necessarily related to its level of ambition.
- The completeness of reported information on national policies and measures has not improved compared with previous years. This relates to both the achieved (*ex post*), expected (*ex ante*) effects of these measures on greenhouse gas emissions and their costs and benefits. Quantitative information from policies and measures remains insufficiently reported.
- In 2021, most of the reported policies and measures are regulations or economic instruments, targeting energy supply or energy consumption (including for transport), and implemented in response to Union policy.

In 1992, under the United Nations Framework Convention on Climate Change (UNFCCC), developed countries committed to adopting national policies and taking corresponding measures on the mitigation of climate change. Under the Paris Agreement, all countries committed to pursue domestic mitigation measures in order to achieve the objectives of their nationally determined contributions. In 2021, EU Member States reported that they had already adopted or were planning to adopt 2 052 national policies and measures to reduce greenhouse gas emissions and achieve climate targets. Many of these measures also help achieving energy efficiency (31%) and renewable energy targets (22%). While action is clearly taking place across Europe, EU Member States still provide insufficient evidence on the effectiveness and costs of these measures.

This report presents an overview of the information on national policies and measures for climate change mitigation, reported in 2021 by Member States to the European Environment Agency (EEA) under the EU Governance Regulation[1]. Detailed information on policies and measures introduced by European countries to reduce greenhouse gas emissions and to achieve climate change and related energy targets is also available online.

An important share of the reported Member States policies and measures are planned. Almost all Member States also included one or more planned policies and measures in the 2021 reporting.

In 2019, EU Member States had reduced their emissions by 24 % below 1990 levels. According to their own projections, Member States expect that current policies and measures can deliver a 34 % reduction

(1) Regulation (EU) 2018/1999 of the European Parliament and of the Council of 11 December 2018 on the Governance of the Energy Union and Climate Action, amending Regulations (EC) No 663/2009 and (EC) No 715/2009 of the European Parliament and of the Council, Directives 94/22/EC, 98/70/EC, 2009/31/EC, 2009/73/EC, 2010/31/EU, 2012/27/EU and 2013/30/EU of the European Parliament and of the Council, Council Directives 2009/119/EC and (EU) 2015/652 and repealing Regulation (EU) No 525/2013 of the European Parliament and of the Council (https://eur-lex.europa.eu/legal-content/EN/TXT/?toc=OJ:L:2018:328:TOC&uri=uriserv:OJ.L_.2018.328.01.0001.01.ENG)

by 2030, comparing to 1990, while planned additional policies and measures could deliver a 41 % reduction by 2030 (including international aviation)[2].

In 2021, Member States reported a similar share of planned policies and measures compared to the total number of policies and measures. However, more EU Member States reported planned measures (Figure ES.1). In 2019, 20 EU Member States reported planned policies and measures while this increased to 25 Member States in 2021. The increase in the number of reported policies and measures might still reflect the preparation and finalisation of the National Energy and Climate Plans, which lay out how Member States plan to achieve their respective objectives in the five dimension of the Energy Union by 2030. These additional policies and measures are not always very clearly defined and they are still to be implemented as reported. For some Member States the number of policies and measures did decline substantially between 2021 and 2019.

Figure ES.1 **Share of planned policies and measures (%) of the total reported single policies and measures per MS (light blue) and for EU27 (dark blue).**

Source: ETC/CME, 2018.

(2) EEA (2021) Trends and projections in Europe 2021. Report 13/2021. https://www.eea.europa.eu/publications/trends-and-projections-in-europe-2021

Most often reported measures are economic and regulatory instruments targeting energy emissions in response to EU legislation. Of the 2 052 climate change mitigation policies or measures reported by Member States in 2021:

- Most primarily target energy-related greenhouse gas emissions, which represent 80 % of all greenhouse gases emitted in the EU (45% of single PaMs are directly linked to energy consumption and/or supply). Reported measures commonly address energy efficiency in buildings (18%), renewable energy deployment (14%), switching to low carbon fuels or electric vehicles (9%) and modal shift (8%).
- Most correspond to economic policy instruments (e.g. subsidies or feed-in tariffs, 44%) or regulatory instruments (e.g. energy efficiency standards, 41%).
- Many (18 %) were implemented in the 5 years following the adoption of the 2009 climate and energy package (between 2010 and 2014), although in the current reporting the period 2019-2021 are by far the most important years of implementation (32% of policies started in this period).

The adoption of national policies and measures is also driven by EU pieces of legislation. According to Member States, their national policies are mostly related to the Renewable Energy Directive (15%), the Energy Efficiency Directive (14%), the Effort Sharing Decision/Regulation (setting national targets for emissions from the sectors not covered by the EU Emissions Trading System, 10% and 14% respectively). For newer policies and measures; also the Governance Regulation was an important driver of national policies and measures (7%).

The Governance Regulation also introduced a number of new reporting requirements. Reporting is not always very complete regarding these new requirement. For geographical coverage, reporting was very complete. As could be expected, the majority of PaMs were national PaMs (90%), but also a substantial share was regional (almost 10%).

Information on policy effectiveness did not improved and remains highly incomplete, especially concerning the realised effects of existing measures.

While qualitative information on policies and measures helps to understand better the nature of climate actions at national level, additional information on the effects of these actions is needed to help identify successes and failures, and to provide a key knowledge base to inform policy decisions. This is why Member States must also report, where available, quantitative information on the greenhouse gas emission savings achieved by, or expected from, the reported policies and measures either individually or for groups of policies and measures.

The quality of the information reported in 2021 did not improve substantially in terms of its completeness, consistency, accuracy and transparency, compared with the reporting in 2019. Quantitative information on achieved, *ex post* policy evaluations, costs and benefits, and indicators remains underreported. Some Member States however have increased completeness of reporting substantially.

The number of Member States reporting expected, *ex ante*, effects of policies decreased in 2021 compared with 2019, and remains insufficient. 23 Member States reported some information on expected emission savings. The number of policies with reported effects differs significantly. In total Member States reported *ex ante* savings in the year 2030 for 29% of national policies (592 single or grouped PaMs).

In 2021, ten Member States (Belgium, Bulgaria, Finland, France, Greece, Ireland, Luxembourg, Poland, Slovenia and Spain) reported information on the *ex post* emission reductions achieved for 8% of total national policies and measures (167 single or grouped PaMs). This is a slight increase compared to 2019.

This does not allow for a comprehensive analysis of the impacts of existing national climate policies across the EU, and makes comparing and summing up to *ex post* emission savings a highly uncertain exercise. Some Member States, such as Belgium, do report extensively on the impact of a part of their national policies and measures.

It again highlights the further need for Member States to increase their efforts to assess the effects of implemented policies more systematically. The low level of quantitative information reported can partly be explained by technical reasons. For example, Member States do not use common evaluation approaches and methodologies, and may use different assumptions or find it difficult to separate the effects of individual policies from others. Other reasons could be that some policy makers may prefer to focus on new proposals and are often not very interested in communicating the actual effects of past actions.

Detailed and transparent information on national policies and measures is essential to track climate action at national and EU levels. Additionally, policy evaluation plays a crucial role in policy processes, for example, by allowing policy makers to assess the contribution of specific policies to the achievement of climate mitigation objectives, and to understand success factors and obstacles to policy implementation. Further efforts on reporting and evaluation activities are considered important to support climate policy. The new EU Regulation on the Governance of the Energy Union and Climate Action is expected to facilitate the streamlining and integration of the reporting of climate and energy policies and measures and of their effects.

The information on national systems for reporting on policies and measures and greenhouse gas projections was for most countries complete and transparent.

In 2021, EU Member States also had to report on their national system for reporting policies and measures and greenhouse gas projections. An exhaustive table in the implementing regulation of the Governance Regulation specifies the information that needs to be provided. This includes for example information on legal, administrative, procedural and institutional arrangements, as well as a description of data collection, quality assurance and quality control processes and how models and assumptions are selected. All Member States provided this information.

1 Introduction

This report presents a synthesis of the information on national climate change mitigation policies and measures (PaMs) and national systems for policies and measures and projections reported by EU Member States under the EU Governance Regulation[3] and its Implementing Regulation[4]. In the Governance Regulation PaMs are defined as "all instruments which contribute to meeting the objectives of the integrated national energy and climate plans and/or to implement commitments […] of the UNFCCC, which may include those that do not have the limitation and reduction of greenhouse gas emissions or change in the energy system as a primary objective".

Reporting on policies and measures was already mandatory under the Monitoring Mechanism Regulation, the predecessor of the Governance Regulation, from 2015[5]. Member States reported in 2015, 2017, and 2019, with voluntary reporting in intermediate years by a selection of Member States. This report covers the information reported by Member States in the first mandatory reporting year of the Governance Regulation. The reporting requirements for the Governance Regulation were elaborated in Article 37 and Annex XXIV of Implementing Regulation No 2020/1208 on the structure, format, submission processes and review of information reported by Member States.

In 2021, all Member States also had to report on their national system for policies and measures and projections, following article 39 of the Governance Regulation and further described in article 36 and Annex XXIII of the Implementing Regulation No 2020/1208. Those systems includes the relevant institutional, legal and procedural arrangements established within a Member State for evaluating policies and measures and making projections of anthropogenic greenhouse gas emissions. The national system should describe the use and application of data, methods and models, and the implementation of quality assurance and quality control activities and sensitivity analysis. In addition, the national system should ensure the timeliness, transparency, accuracy, consistency, comparability and completeness of the information reported. Reporting is mandatory once in 2021, while in subsequent years only modifications of the national system need to be reported.

To facilitate reporting by Member States, the EEA developed an online reporting webform starting from the 2015 reporting cycle that followed the template of the implementing act. This webform, available via Reportnet[6] has been updated to reflect the changes in reporting under the Governance Regulation and has been integrated into the new e-reporting on environmental and climate data. The information that is reported by the EU Member States is also available there for consultation and for downloading (https://reportnet.europa.eu/public/dataflow/112).

The data presented in this report are also aggregated by the EEA and can be accessed by the general public via the online EEA database on climate change mitigation policies and measures in Europe (http://pam.apps.eea.europa.eu/) and the online PaM dataviewer. The search engine gives access to

(3) Regulation (EU) 2018/1999 of the European Parliament and of the Council of 11 December 2018 on the Governance of the Energy Union and Climate Action, amending Regulations (EC) No 663/2009 and (EC) No 715/2009 of the European Parliament and of the Council, Directives 94/22/EC, 98/70/EC, 2009/31/EC, 2009/73/EC, 2010/31/EU, 2012/27/EU and 2013/30/EU of the European Parliament and of the Council, Council Directives 2009/119/EC and (EU) 2015/652 and repealing Regulation (EU) No 525/2013 of the European Parliament and of the Council.

(4) Commission Implementing Regulation (EU) 2020/1208 of 7 August 2020 on structure, format, submission processes and review of information reported by Member States pursuant to Regulation (EU) 2018/1999 of the European Parliament and of the Council and repealing Commission Implementing Regulation (EU) No 749/2014

(5) Member States have a mandatory reporting requirement on their national policies and measures every two years, and can update information also annually if important changes have been implemented.

(6) https://reportnet.europa.eu/

detailed information for each of the PaMs (or groups of PaMs) as it was reported by the Member States. The interface allows easy access, filtering and downloading of the information.

1.1 Scope of the analysis

The analysis was based on information reported by Member States as part of their submissions under the Governance Regulation. Regarding policies and measures, information requested for each measure that falls under Article 18 of the Governance Regulation and its implementing acts includes:

- name, objective (quantified if available) and description of each single or group of PaMs;
- type of instrument used;
- gases and sectors targeted;
- objectives of the PaMs;
- EU policy responsible for implementation of the policies and measures;
- current status and period of implementation (start and end year);
- entities responsible for implementing the policy;
- indicators used to monitor and evaluate progress;
- projected emissions savings (in years 2025, 2030, 2035, and 2040), divided between ETS, ESR and LULUCF, when available;
- realised emission savings divided between ETS, ESR and LULUCF, when available;
- projected and realised costs and benefits of the reported PaMs.

An analysis is provided of the overall trends in the PaMs data, but focuses on key trends in new developments in policies and measures.

1.2 Outline of the report

Chapter 2 gives an overview of important changes in policies and measures compared to the 2019 reporting.

Chapter 3 presents a description of policies and measures reported by Member State and estimates on the reported expected emissions savings resulting from the reported policies. Further, it addresses reported costs and benefits and presents information on reported indicators to monitor the reported policies.

Chapter 4 looks into the reporting by Member States on the national system for reporting on policies and measures and greenhouse gas projections.

Chapter 5 provides information on the data availability and quality of submissions.

The final chapter, chapter 6, provides conclusions and recommendations to further improve the reporting on PaMs.

2 Recent developments in climate policies and measures in Member States

2.1 Union policies that affect national climate PaMs

The period between the previous (2019) and the current (2021) reporting cycle was a period with further important developments at EU and international level.

At the European level, EU countries have agreed on a new 2030 framework for climate and energy, including EU-wide targets and policy objectives for the period between 2020 and 2030. In 2018, these ambitions were laid down in new Union legislation on energy efficiency[6] , renewable energy[7], greenhouse gas emission targets not covered by the EU Emission Trading System (EU ETS)[8] , LULUCF[9] , and on the Governance of the Energy Union and Climate Action[10].

The Governance Regulation required Member States to submit a draft and final Integrated National Energy and Climate Plan. These plans specify all Member States' national objectives and contributions to EU targets across the five dimensions of the Energy Union, including decarbonisation. The plans also define the actions and policies and measures needed to achieve these targets. The National Energy and Climate Plan (NECP) process therefore has been an important factor in the development of new climate policies and measures in EU Member States.

More recent developments at the European level, such as the European Climate Law and the recently launched Fit-for-55 package with proposals to overhaul most climate and energy Union policies, will have a very important impact on national climate policies in future. It will be important to track how this increased ambition, will translate in additional policies and measures to ensure these targets will be achieved.

At the international level, the operationalization and implementation of the Paris Agreement is still underway. In December 2020, the EU enhanced its nationally determined contribution to at least a 55% reduction in economy-wide net domestic greenhouse gas emissions by 2030, compared to 1990. Thus bringing the international contribution in line with the EU ambition of the Green Deal.

2.2 New national climate PaMs

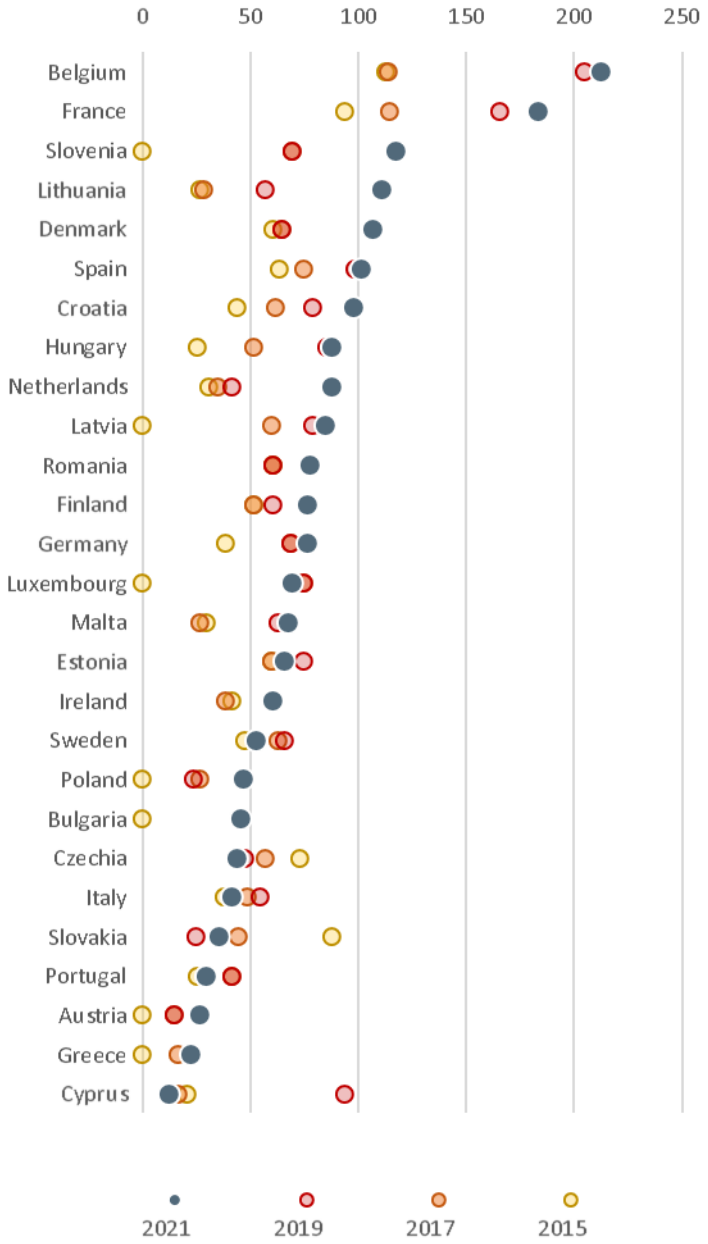
The total number of single PaMs reported increased from 1 849 in 2019[7] to 2 052 in 2021. There are on average 76 single PaMs per Member State. This is a 11% increase compared to 2019. In most countries, the number of reported single PaMs increases over time, with the highest number of single measures reported in 2021. This is the case for example for Lithuania, Slovenia and the Netherlands. There are only a few clear exceptions to this rule, such as Cyprus, Portugal and Italy. This can be explained by new PaMs that are planned, adopted and/or implemented between reporting years, but also because in some countries reporting of already implemented PaMs is further complemented, adjusted, and refined.

There are still significant differences among Member States in the number of reported PaMs. The higher number of reported PaMs has made the difference between the country with the most and the least reported PaMs even larger. Belgium and France still report the most individual measures and Austria, Greece, and Cyprus the least (Figure 2.1). Both Belgium and France report their PaMs at a highly disaggregated level, while other Member States report their PaMs in a more aggregated level. For example in the case of Belgium, many regional policies and measures are reported. This could be because of differences in reporting culture, understanding of the legislation and the existing reporting to the UNFCCC in the National Communications and Biennial Reports, which are both closely linked to

(7) To allow comparison, this excludes policies and measures from the United Kingdom.

Governance Regulation reporting. Some countries updated the PaM reporting more substantially, resulting in important increases of decreases in the number of PaMs. The number of PaMs in Cyprus increased substantially in 2019, probably as a reaction to the preparation of the NECPs, but reduced the number of PaMs again in 2021. The number of single PaMs is not a good indicator of the past, current and future ambition level of Member States.

Figure 2.1 **Number of single policies and measures reported by Member States in different reporting years.**

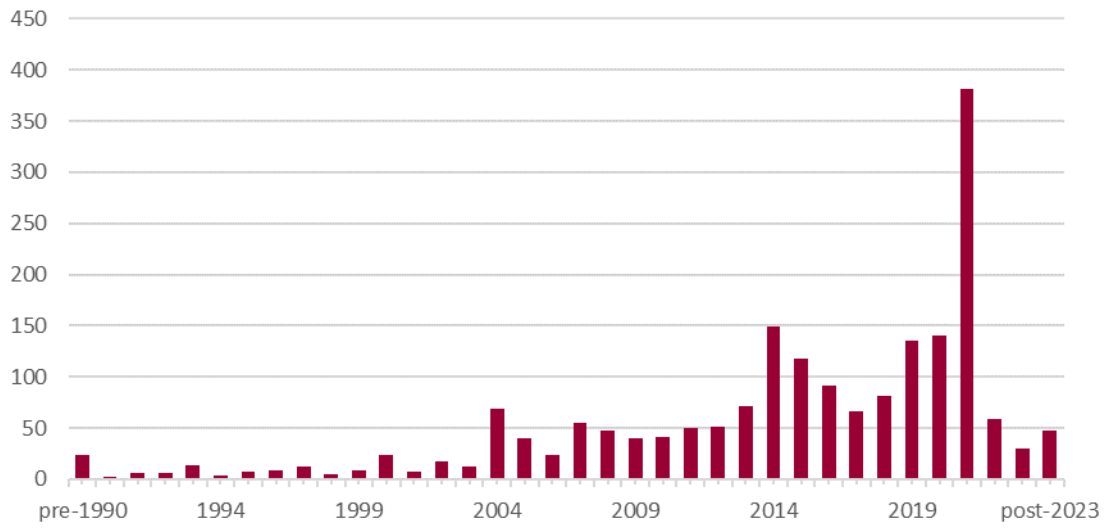


Source: ETC/CME, 2021.

Looking at the starting year of these reported PaMs (Figure 2.2), there appear to be three periods of acceleration of policy development. In 2004 there are markedly more policies and measures implemented than before. This has also been the case in previous reporting years, but the effect is less outspoken and the number of PaMs with starting year 2004 is decreasing over time, with some of these

PaMs expiring and being replaced by updated measures. In 2014, there is a second increase in the number of single PaMs that started. In the reporting year 2019, this was the year with the most number of single PaMs starting. In the 2021 reporting, this was surpassed by the year 2021: the reports by the Member States show that national PaMs most often started in 2021. The higher number of PaMs might reflect that many Member States have and will have to implement new policies and measures in order to meet their 2030 climate and energy objectives. Some of these policies and measures have been described and included in the NECPs and are now also reported under the Governance Regulation. 19 countries also reported PaMs starting in 2022 or later. Denmark, Estonia, Italy, Lithuania, Slovenia and Slovakia each reported more than 10 single PaMs starting in 2022 or later.

Figure 2.2 Number of single policies and measures reported by EU Member States per start year.



Source: ETC/CME, 2021.

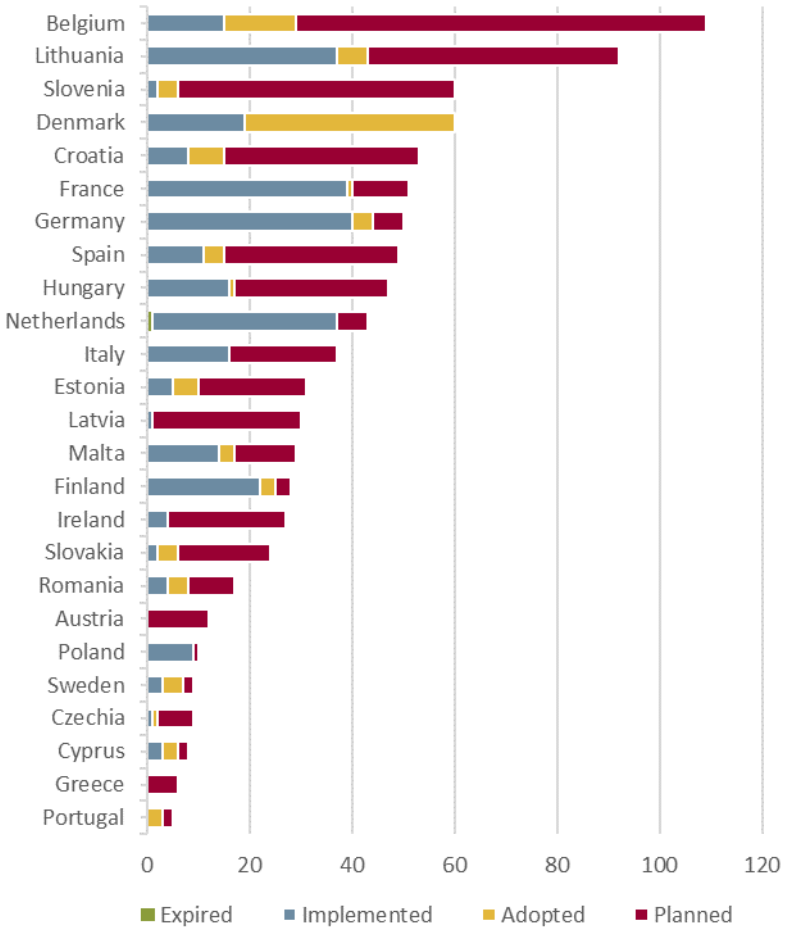
Out of the 2 052 single PaMs, there were 896 from EU Member States that were implemented on or after 2019, which can be considered 'new' PaMs. The status of implementation of the reported PaMs can be classified as follows:

- *planned*: planned PaMs are options under discussion that have a realistic chance of being adopted and implemented in the future;
- *adopted*: adopted PaMs are those for which an official government decision has been made and for which a clear commitment to proceed with implementation exists;
- *implemented*: implemented PaMs are those for which one of the following applies: a) national legislation in force; b) one or more voluntary agreements have been established; c) financial resources have been allocated; d) human resources have been mobilized;
- *expired*: expired PaMs are those for which the timeline of the policy has passed. Expired policies may still have a long-term impact on greenhouse gas emissions savings.

Most of the single PaMs starting on or after 2019 are planned (49%), but there is still a significant number of PaMs that have already been implemented in 2019 to 2021 (38%) or adopted (106%). Nevertheless, there is a higher overall rate of reporting planned PaMs in 2019 than in previous years. In reporting year 2017, 10% of single PaMs were planned, while in 2019 this has increased to 25% of all PaMs and in 2021 this was 22%. Again, one explanation why Member States have reported considerably more planned PaMs in 2019 (and continue to do so in 2021) could be the preparation and submission of the National Energy and Climate Plans.

It should also be noted that Member States reporting is not always consistent with respect to implementation status, start/end year, and projection scenario. Especially when the start year is close to the reporting year. In this case, there are differences in interpretation when a PaM is implemented or adopted, reflecting national circumstances and alignment of the PaM reporting with the reporting of greenhouse gas projections. Guidelines are provided in this case, but it is evident that there could be a potential conflict between the consistency of start year and the status of the PaM and the consistency of the status and the projection scenario.

Figure 2.3 **Number of expired, implemented, adopted, and planned single policies and measures with start year on or after 2019.**



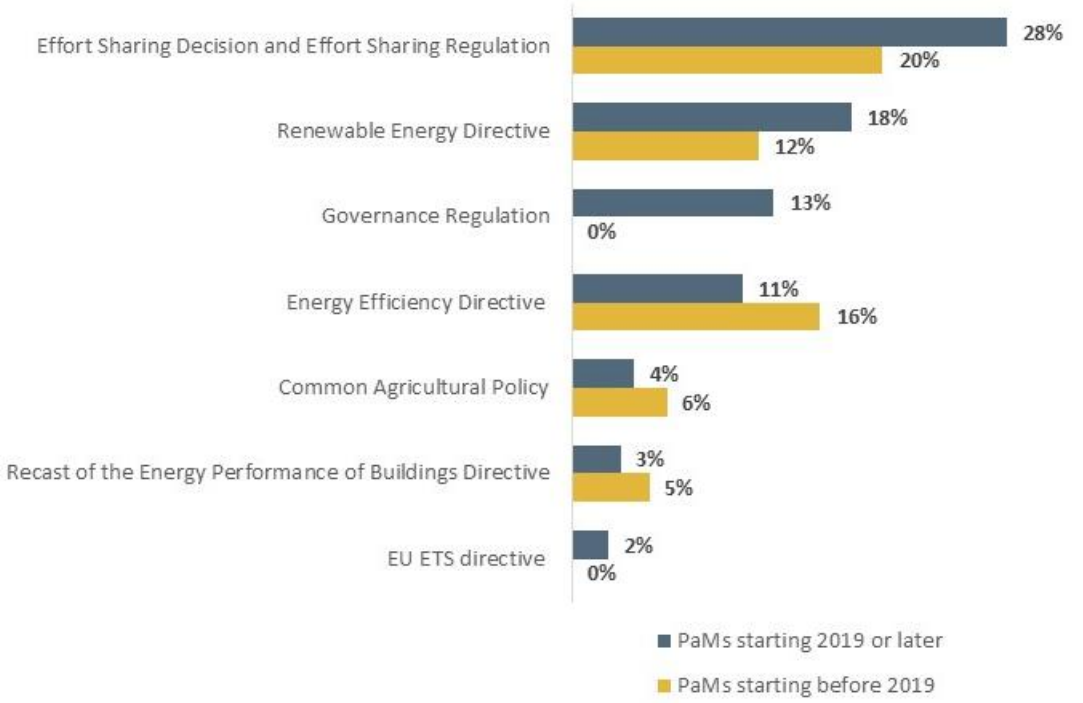
Source: ETC/CME, 2021.

The characteristics of these new PaMs with start year 2019 or later ("*new PaMs*") are very similar to the PaMs starting before 2019 ("*old PaMs*"). The sectors with the most PaMs are the sectors energy supply (23%), energy consumption (31%) and transport (28%). The other sectors represent 13% (agriculture) or less of the reported PaMs. Only for energy consumption, there is a more substantial difference between new PaMs (28%) and old PaMs (37%).

With respect to the instrument type, both new and older PaMs also have a similar outcome. Economic and regulatory instrument types are predominantly used in both cases, respectively 33% and 26% for older PaMs (start year < 2019) and 30% and 31% for new PaMs, while the other instrument types have a much smaller but also similar share.

Most single national policies and measures are implemented in response to one or more Union policies. For the new PaMs the Union policies that were selected most were the Effort Sharing Regulation EU 2018/842 (21%), Directive 2018/2001 on the promotion of the use of energy from renewable sources (18%), Regulation (EU) 2018/1999 on the Governance of the Energy Union and Climate Action (13%) and the Energy Efficiency Directive 2012/27/EU as amended by Directive 2018/2002 (11%). For the old PaMs, the Energy Efficiency Directive 2012/27/EU (16%), the Renewable Energy Directive (12%) and the Effort Sharing Regulation (12%) are the key Union policies triggering the adoption of national climate and energy policies and measures. The EU ETS is one of the most important Union climate mitigation policies, but because it requires less national policies and measures to implement in countries, is therefore selected relatively less.

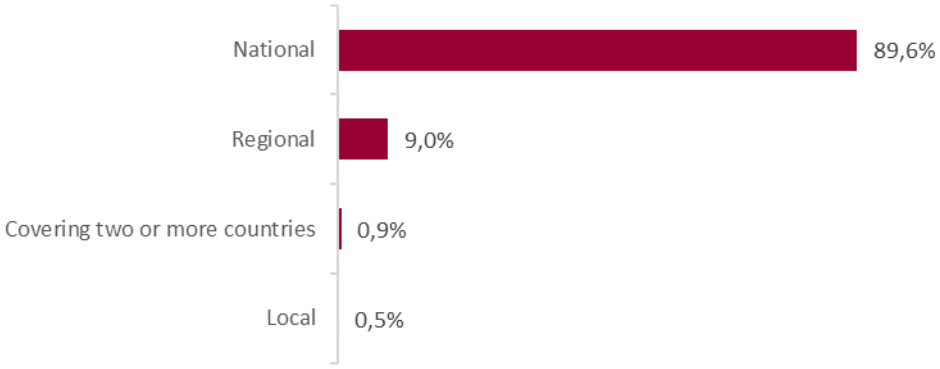
Figure 2.4 **Share of single policies and measures reported by Member States linked to the 7 most common Union policies.**



Source: ETC/CME, 2021.

The Governance Regulation also introduced a number of new reporting requirements, not included in the previous reporting under the Monitoring Mechanism Regulation. This included: geographical coverage of the PaM, whether or not the PaM related to air quality, an assessment of the contribution to the long-term strategy, and non-greenhouse gas benefits (see chapter 3.5). Reporting is not always very complete regarding these new elements. For geographical coverage, reporting was however very complete. As could be expected, the majority of PaMs were national (Figure 2.5). A substantial share was also regional (almost 10%). The vast majority of these PaMs were reported by Belgium, but also Czechia, France, Lithuania, the Netherlands, Poland, Slovakia, Spain, and Sweden reported one or more regional PaMs.

Figure 2.5 Geographical coverage of single PaMs (% of total).



Source: ETC/CME, 2021.

2.3 Link with the final National Energy and Climate Plans (NECPs).

In December 2019, Member States had to submit their final NECPs. The plans include the policies and measures countries plan to adopt to meet the 2030 objectives in the area of energy efficiency, renewable energy, and the mitigation of greenhouse gas emissions. Since 2019, some of these PaMs that are presented in the NECP will have been implemented. To assess how this affects the biennial reporting on greenhouse gas PaMs, the submissions were screened to check if Member States referred to the NECPs specifically. This was not always the case. Belgium, Croatia, Estonia, Finland, Greece, Hungary, Italy, Luxembourg, Slovenia, and Spain included a reference to the NECP which could be a link to the NECP document or a specific reference to the NECP in the name of description of the PaM. As the NECPs cover the period 2021-2030 we also provide the number of PaMs starting in 2021 or later. This could also be an indication of the impact the NECP had on policy implementation in countries. This overview is presented below.

Country	Link with National Energy and Climate Plan
Austria	No PaMs explicitly linked to the Austrian NECP. Austria did report new planned PaMs in 2021. In 2019, no planned PaMs were reported.
Belgium	11 PaMs explicitly linked to the Belgian NECP, either in the description or comment box. Belgium reported 35 out of 213 PaMs starting in 2021 or later, with an additional 57 planned PaMs for which start year is not yet known. For most PaMs the end year is not known.
Bulgaria	No PaMs explicitly linked to the Bulgarian NECP. No PaMs with a start year after 2015, but the majority of PaMs (44 of 46) have expected end year of 2030.
Croatia	All PaMs make a reference to the Croatian NECP weblink. Croatia reported 45 out of 98 PaMs starting in 2021 or later, but all are adopted. Almost all (95) PaMs have a long time horizon, with expected end year 2030 or later.
Cyprus	No PaMs explicitly linked to the Cypriot NECP. The reporting is not very complete but some PaMs planned or adopted in 2021. 2019 reporting include more planned PaMs.
Czechia	No PaMs explicitly linked to the Czech NECP. Seven planned PaMs are reported, expected to start in 2021, 30 single PaMs out of 44 have and expected end year of 2030 or later.
Denmark	No PaMs explicitly linked to the Danish NECP. Denmark reported 42 out of 104 PaMs starting in 2021 or later, but all are adopted. 87 PaMs have a very long time horizon, with expected end year of 2050.

Country	Link with National Energy and Climate Plan
Estonia	25 out of 66 PaMs make a reference to the Estonian NECP. Estonia reported 24 PaMs starting in 2021 or later, and two planned PaMs with unknown start year. For most PaMs the end year is not known.
Finland	Two PaMs make a reference to the Finish NECP. Finland reported 10 out of 77 PaMs starting in 2021, and one planned PaM with unknown start year.
France	No PaMs explicitly linked to the French NECP. France reported 18 out of 184 single PaMs starting in 2021 or later. For most PaMs the end year is not known.
Germany	None of the PaMs make a reference to the German NECP in the description, although four PaMs refer to the NECP in other parts of the webform. Germany reported 20 out of 77 PaMs starting in 2021 or later, 15 of which are already implemented.
Greece	Two PaMs make a reference to the Greece NECP in the description. Geece reported 6 out of 23 PaMs starting in 2021 or later. All of these have an expected end year of 2030.
Hungary	One PaM was the Hungarian NECP. Hungary reported 7 out of 88 PaMs starting in 2021 or later and a further 26 are planned without known start year.
Ireland	No PaMs explicitly linked to the Irish NECP. Ireland reported 22 out of 61 single PaMs starting in 2021 or later. For most PaMs the end year is not known.
Italy	Two PaMs make a reference to the Italian NECP in the description. Italy reported 21 out of 42 PaMs starting in 2021 or later. For none of the PaMs an expected end year was reported.
Latvia	No PaMs explicitly linked to the Latvian NECP. Latvia reported 29 out of 85 PaMs starting in 2021 or later, all planned. 30 PaMs have an expected end year of 2030.
Lithuania	No PaMs explicitly linked to the Lithuanian NECP. Lithuania reported 67 out of 111 PaMs starting in 2021 or later.
Luxembourg	One PaM made a reference to the NECP, although for 15 PaMs a quantified objective might be defined in the framework of the implementation of the NECP. Luxembourg did not report PaMs starting in 2021 or later.
Malta	No PaMs explicitly linked to the Maltese NECP. Malta reported 11 out of 68 PaMs starting in 2021 or later and six without a starting year reported.
Netherlands	No PaMs explicitly linked to the Dutch NECP. The Netherlands reported 6 out of 88 single PaMs starting in 2021 or later. For 26 PaMs the expected end year is 2030 or later.
Poland	No PaMs explicitly linked to the Polish NECP. Poland reported 1 out of 47 single PaMs starting in 2021 or later. For 13 PaMs the expected end year is 2030 or later.
Portugal	No PaMs explicitly linked to the Portuguese NECP. Portugal did not report single PaMs starting in 2021 or later. For all PaMs the expected end year is not known.
Romania	No PaMs explicitly linked to the Romanian NECP. Romania reported 9 out of 78 single PaMs starting in 2021 or later. For 22 PaMs the expected end year is 2030 or later.
Slovakia	No PaMs explicitly linked to the Slovakian NECP. Slovakia reported 22 out of 36 PaMs starting in 2021 or later. For none of the reported PaMs an expected end year is provided.
Slovenia	13 PaMs make a reference to the Slovenian NECP in the description of the PaMs. Slovenia reported 57 out of 118 PaMs starting in 2021 or later and one planned PaM where start year is unknown. End years are mostly non reported.
Spain	45 PaMs make a reference to the Spanish NECP in the name and/or description of the PaM. Spain made the link between the NECP and the PaM reporting very explicit. Spain reported 38 out of 102 PaMs starting in 2021 or later. An equal number of PaMs have an expected end year of 2030 or later.
Sweden	No PaMs explicitly linked to the Swedish NECP. Sweden reported 7 out of 53 single PaMs starting in 2021 or later. For most PaMs the end year is not known.

2.4 Iceland, Norway and Switzerland.

In 2021, also Iceland, Norway and Switzerland reported on their National greenhouse gas PaMs. In total, 154 single PaMs were reported or on average 51 single PaMs. Compared to the EU Member States, the PaMs are more evenly distributed over the different sectors. PaMs affecting emissions from transport are reported most frequently (26%) and share for the other sectors ranges between 7% (waste) and 16% (other). There are thus relatively fewer PaMs affecting energy consumption (11%) and energy supply (9%) than in EU Member States.

The type of instruments that are used to reduce greenhouse gas emissions are more alike. Regulations (44%) and economic (32%) instruments are most often reported. Also voluntary/negotiated agreements are included relatively often (11%).

3 Reported effects and costs of policies and measures

3.1 Reported *ex post* emissions savings from policies and measures

Ex post emissions savings from PaMs are essential information to assess the effectiveness and efficiency of national climate PaMs. However, it is often complicated to evaluate the exact progress made towards the objective. Many PaMs have been introduced with goals besides direct climate change mitigation, and interactions between instruments and external changes make the distinction of the effects of one policy very difficult. Further, there is no specific methodological approach to assessing *ex post* emissions savings prescribed by the Governance Regulation, meaning that there could be considerable differences across Member States in their methods and assumptions used to calculate emissions savings. This complicates comparing and adding up *ex post* emission savings.

The reporting on ex post emission savings should be considered very incomplete.

In 2021, ten countries reported quantitative data on *ex post* emission savings: Belgium, Bulgaria, Finland, France, Greece, Ireland, Luxembourg, Poland, Slovenia and Spain. This is very incomplete compared to the reporting on *ex ante* emission savings.

Table 3.1 Number of data reported on *ex post* emission savings by Member States.

	Number of PaMs	Number of quantified data	ETS emission savings	ESD emission savings	LULUCF emission savings	Total emission savings
BE	25	288	132	248	0	0
BG	25	38	0	0	0	38
ES	2	2		2	0	2
FI	14	14	4	1	0	14
FR	4	4	0	0	0	4
GR	15	28	5	16	1	28
IE	60	237	65	202	0	237
LU	4	4	0	0	0	4
PL	17	24	4	13	1	24
SI	1	1	0	0	0	1
EU27	**167**	**640**	**210**	**482**	**2**	**352**

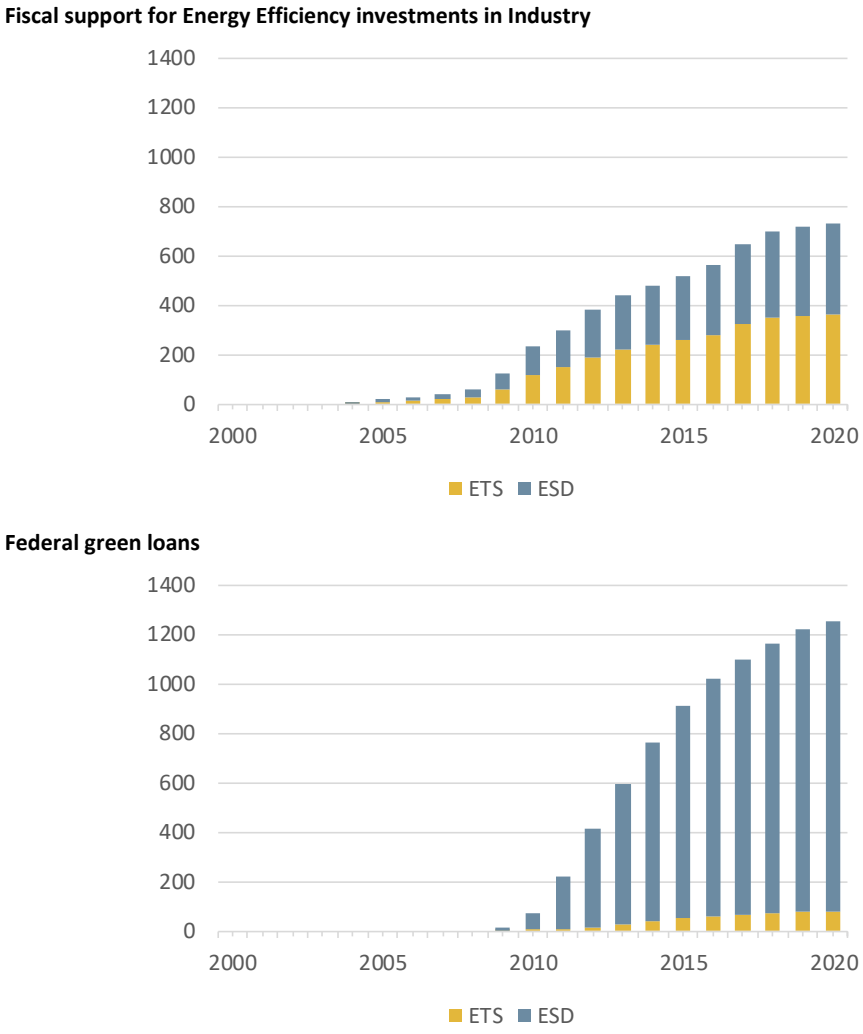
Note: Number of quantified data: Combination of the number of PaMs and years for which data is provided.
Emission savings ETS, ESR and LULUCF: Combination of the number of Pams and years for which data is provided for this specific sector.

Source: ETC/CME, 2021.

Box 3.1 ***Ex post*** **emission savings reported by Belgium**

Belgium is one of the countries that reported most complete on *ex post* emission savings, at very disaggregated level for single PaMs. In addition, information was provided for multiple years, allowing assessing trends in past emission savings for each PaM.

Figure **Reported observed emission savings in Mt CO_2-eq. of two policies and measures in Belgium (split between ETS and ESD).**



Source: 2021 sibmission Belgium, ETC/CME, 2021.

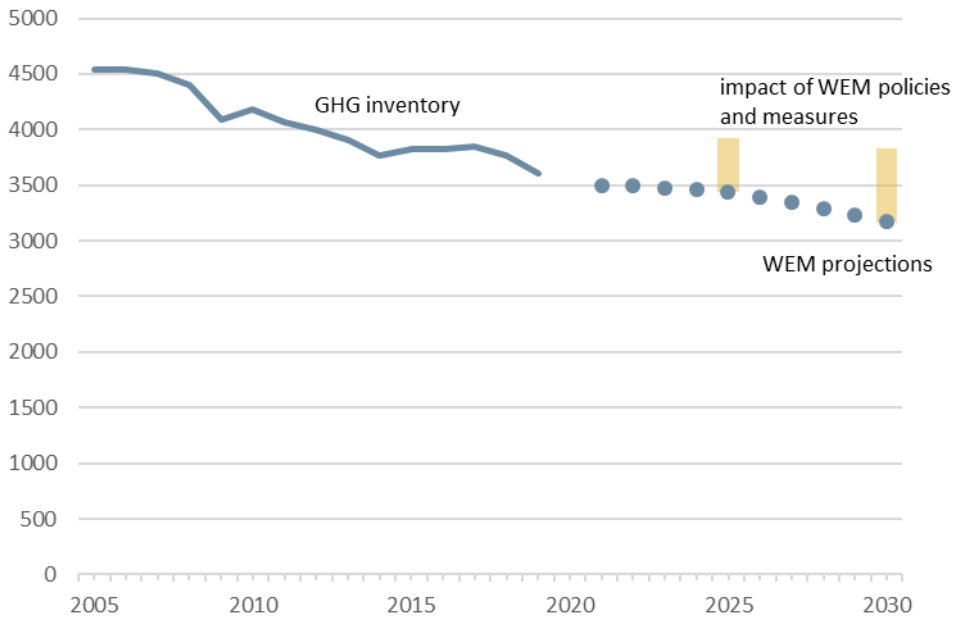
3.2 Reported *ex ante* emissions savings from policies and measures

Reporting of quantitative data is only mandatory when available. *Ex ante* estimates of PaMs emissions savings have to be reported for a sequence of four years ending with 0 or 5 immediately following the reporting year (i.e. 2025, 2030, 2035 and 2040). This ensures that data for the same years and for the same period are obtained.

Information on aggregated, *expected* emission savings in relation to historic and projected 2025 and 2030 greenhouse gas emissions for the EU27 are presented in Figure 3.1. Expected emission savings from policies and measures belonging to the with existing measures (WEM) scenario are reported to be respectively 14% and 21% of total projected greenhouse gas emissions in 2025 and 2030.

The EU27 historic greenhouse gas emissions decreased between 2000 and 2019. The projected total greenhouse gas emissions in 2020 including the LULUCF sector (with existing measures scenario) are expected to decrease further. The aggregated expected, reported emission savings from existing policies and measures are presented on the top of projected emissions to allow easy comparison. If reporting of policy effects would be complete (which is not the case) and fully integrated with reporting on greenhouse gas projections the reported impact of existing measures would represent a scenario excluding all implemented, adopted or planned policies and measures, a so called 'without measure scenario'.

Figure 3.1 **Aggregated reported expected emission savings of policies and measures in 2025 and 2030 in relation to historic and projected greenhouse gas emissions with existing measures (excluding LULUCF).**



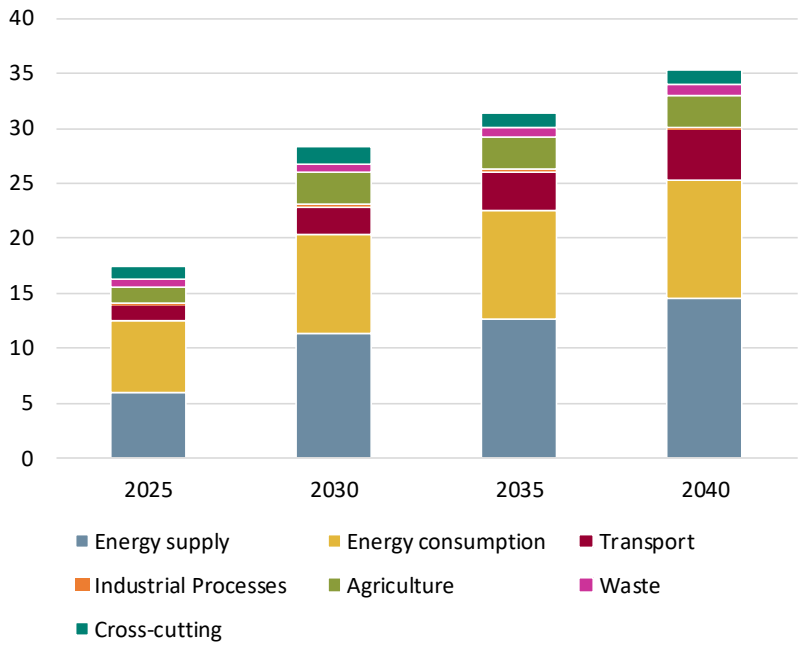
Source: ETC/CME, 2021.

Box 3.2 ***Ex ante*** **emission savings reported by Ireland**

Ireland is one of the countries that reported *ex ante* emission savings at very disaggregated level for all single PaMs. The total impact of these emission savings amount to 17 Mt CO_2-eq. in 2025, increasing to 35 Mt CO_2-eq in 2040. Most of these emission savings are to be expected in the sectors energy supply and energy consumption, with smaller contributions from the transport and agriculture sector. The emission savings from transport policies and measures will however become more important, both in absolute and relative terms (compared to total emission saving from all policies and measures). This can be attributed to implemented and planned policies and measures to electric vehicle deployment.

The very complete reporting, allows for a good overview of how different policies and measures are expected to contribute to greenhouse gas emission reductions. As can be expected, substantial emission savings are achieved by only a few key policies. In Ireland, almost 50% of the emission savings in 2025 will come from five key horizontal policies and measures (covering different instruments) promoting renewable electricity, energy efficiency and more sustainable agricultural practices.

Figure **Reported expected emission savings in Mt CO_2-eq. of implemented, adopted and planned policies and measures in Ireland (split between sectors).**



Source: 2021 submission Ireland; ETC/CME, 2021.

23 Member States reported quantitative *ex ante* savings for at least one year and at least one PaM. This has decreased from 25 Member States reporting such information in the 2019 reporting round. There is no specific guidance provided on methods for assessment of *ex ante* impacts for reporting under Governance Regulation (or its predecessor the Monitoring Mechanism Regulation), which means that there could be considerable differences across Member States in their approach and their assumptions used to calculate the emissions savings of PaMs. This makes comparison of emissions savings particularly difficult.

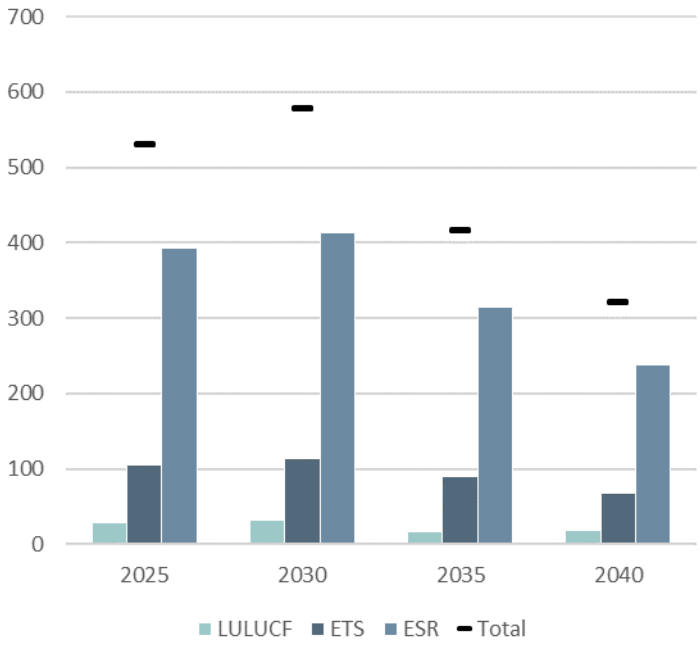
Table 3.2 Number of data reported on *ex ante* emission savings by Member States.

	Number of PaMs	Number of quantified data	ETS emission savings	ESR emission savings	LULUCF emission savings	Total emission savings
AT	16	44	4	37	0	7
BE	48	178	51	157	0	52
BG	1	4	4	0	0	0
CZ	34	114	20	108	0	112
DE	64	251	28	169	8	249
EE	28	109	28	81	0	109
ES	35	101	28	99	2	101
FI	40	138	53	86	2	138
FR	14	40	3	18	0	40
GR	23	46	8	36	4	46
HR	15	60	20	52	4	60
IE	60	237	57	202	0	237
IT	4	4	0	1	0	3
LT	74	121	5	79	10	110
LU	9	27	3	27	0	27
LV	37	98	2	36	48	98
MT	22	63	22	34	4	59
NL	6	12	7	10	2	0
PL	19	36	7	14	4	36
RO	13	50	4	18	4	49
SE	2	2	0	1	0	3
SI	27	108	20	92	4	108
SK	1	3	3	3	0	3
EU27	**592**	**3 480**	**114**	**423**	**32**	**529**
IS	9	35	0	20	12	7
NO	33	33	5	19	4	33

Note: Number of quantified data: Combination of the number of PaMs and years for which data is provided (e.g. if for one PaM impacts are reported for three different years, this is counted as three).
Emission savings ETS, ESR and LULUCF: Combination of the number of PaMs and years for which data is provided for this specific sector.

Source: ETC/CME, 2021.

Figure 3.2 **Number of policies and measures with *ex ante* emission savings in 2025 to 2040 (split between ETS, ESR, LULUCF and total).**

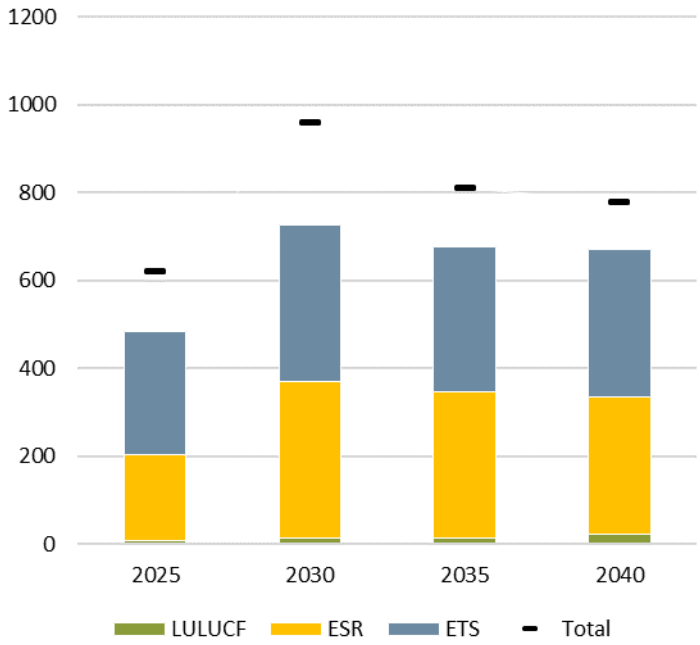


Source: ETC/CME, 2021.

The savings for 2025–2040 are not consistent with expectations for increasing savings and appear to be incomplete. Of the total number of single and grouped PaMs reported by EU27 Member States, 531 had *ex ante* emission savings reported for 2025 different from zero and 578 had *ex ante* savings reported for 2030. For 2035 and 2040, reporting was less complete, with respectively 416 and 322 single or grouped policies and measures.

Despite the fact that the impact on ESR emissions is reported for more PaMs than for any other sector (Figure 3.3), the expected emission savings in ESR and the ETS sector are very similar. On average almost 20% of the reported emission savings could not be allocated to the ETS, ESR and/or LULUCF sector and where reported as a total.

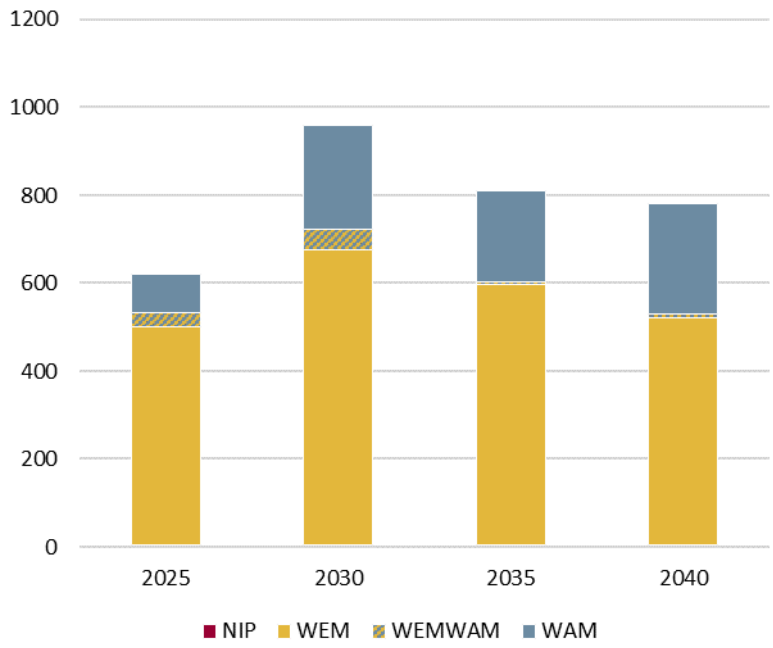
Figure 3.3 **Reported expected emission savings in Mt CO_2-eq. of policies and measures in EU Member States (split between ETS, ESR, LULUCF and total)**



Source: ETC/CME, 2021.

The reported emission savings are to a large extent reported for policies and measures belonging to the WEM projection scenario. This is not surprising considering that expired, implemented or adopted policies and measure make up a large share of the reported policies and measures. Nevertheless, also substantial emission savings are reported for planned policies and measures, suggesting that there is a higher completeness of reporting.

Figure 3.4 **Reported expected emission savings in Mt CO_2-eq. of policies and measures in EU Member States (split between WEM, WAM and NIP)**



Note: WEM with existing measures, WAM with additional measures, NIP not included in projection scenario, WEMWAM denotes groups of PaMs that include single PaMs belonging to the WEM and WAM scenario.

Source: ETC/CME, 2021.

3.3 Reported costs and benefits of policies and measures

The Governance Regulation also requires that Member States report information on the projected (*ex ante*) and realised (*ex post*) costs and benefits of climate PaMs, when available. Historically under the Monitoring Mechanism Regulation reporting this data has been rather incomplete, and so it was in 2021. Only eight Member States (Belgium, Czechia, France, Lithuania, Luxembourg, Latvia, Malta and Spain) reported any data on costs and benefits for at least one PaM. Information on projected costs is reported most, for 41 PaM estimates have been provided either in absolute or relative terms.

Table 3.3 **Number of data reported on costs and benefits by Member States.**

Data	Number of Member States reporting data for at least one PaM	Number of single or grouped PaMs
Projected costs	5	41
Projected benefits	1	1
Projected net costs	2	22
Realised costs	2	4
Realised benefits	1	1
Realised net costs	1	1

Source: ETC/CME, 2021.

The completeness of reporting has decreased: in 2017 ten Member States reported quantitative information on the costs of some of their climate PaMs; in 2019 this number of Member States reduced to nine, and in 2021 this reduced to eight.

3.4 Indicators used to monitor progress of PaMs

The role of an indicator is to better understand progress in implementing PaMs. Article 13(c) of the Monitoring Mechanism Regulation ((EU) No 525/2013) outlines the reporting rules for national PaMs, whereby under (iv) the reporting of indicators is required where they are used to monitor and evaluate progress over time. According to Annex XI of the implementing Regulation (EU 2020/1208), indicators shall be reported by providing a description, values and units, whereby the values can be either *ex post* or *ex ante*. It must be specified for which year the value applies. Performance indicators identified by Member States shall be relevant, accepted, credible, easy and robust.

17 Member States reported indicators for at least one PaM. Ideally, the reporting of indicators should include the indicator description with a unit, the years and values. This is however not always provided, and often only qualitative information is reported, i.e. the description and a unit, without quantitative data.

Table 3.4 Number of indicators reported by Member States.

	Number of PaMs with indicator	Number of PaMs with quantified indicator	Number of indicators	Number of quantified indicators	Number of quantified data
Austria	4	4	4	4	13
Bulgaria	46	37	46	37	93
Czechia	34	0	34	0	0
Estonia	24	15	37	25	47
Finland	23	19	24	20	45
France	23	23	29	29	37
Germany	7	0	7	0	0
Greece	21	0	22	0	0
Hungary	6	5	13	12	11
Ireland	45	0	45	0	0
Latvia	47	15	47	15	12
Netherlands	14	7	17	10	10
Poland	37	30	88	75	89
Slovakia	21	16	52	44	59
Slovenia	18	18	25	25	36
Spain	53	50	82	77	122
Sweden	0	0	0	0	0
EU27	**423**	**239**	**572**	**373**	**574**
Iceland	1	0	2	0	0
Norway	9	0	9	0	0

Source: ETC/CME, 2021.

Box 3.3 Indicators reported by Bulgaria, Poland, and Spain

Bulgaria reported for almost all single PaMs a quantified indicator (37 out of 46 PaMs), many of which are quantified for more than one year. An example is the policy to increase high efficient combined heat and power, which resulted in an increase of generated electricity and heat by co-generation between 2016 and 2020 of 28 610 GWh. The indicators cover all sectors, with the exception of the transport sector.

Poland reported quite extensively qualitative and quantitative information on indicators related to their national policies and measures. These indicators cover different sectors such as agriculture, land use, land use change and forestry, industrial processes and transport, although most indicators relate to energy supply and consumption. The reported indicators can be generic, such as *Final electricity saved* or *Reduction of final energy consumption*, but in some cases are also more specific such as *Number of refuelling points for LNG and CNG* or *Number of Park and Ride carparks*.

Also Spain reported qualitative and quantitative information on indicators related to many national policies and measures (53 single PaMs). These indicators also cover different sectors with most indicators relating to energy supply and consumption and can be both *ex post* as *ex ante*. Spain also reported quantitative information on 16 indicators for 4 years. This allows to assess to some extent time trends. Spain also reports the same indicator (e.g. number of electric vehicles) for different PaMs, which allows for a comparison of the effectiveness of different PaMs.

3.5 Non-greenhouse gas mitigation benefits

New for the Governance Regulation, information on the non-greenhouse gas mitigation benefits of PaMs was requested for the first time. This was split into projected benefits and realised benefits. Only Greece and Spain provided any information.

Information on monetary cost and benefits and non-greenhouse gas mitigation benefits remains underreported. Additional guidance might be needed to support Member States with reporting.

For projected non-greenhouse gas mitigation benefits, Greece provided quantified air pollution emissions reductions expected for five PaMs. Spain reported information for six PaMs, describing the promotion of the circular economy reducing the risk of water contamination, reducing air pollution, improvements to organic soils, increased job opportunities, and increased food safety.

On realised benefits, Greece provided quantified information about air pollution emissions reductions for one PaM on improvements to national power generation system. Spain provided information for eleven PaMs regarding the increased job opportunities in rural areas, the conservation and improvement to biodiversity, prevention of desertification and land erosion, improvements to people's health, improvements in air quality. Rural Development Programmes were identified as increasing adaptation to climate change impacts.

Information might be scarcely available for individual PaMs, difficult to extract from other national resources, etc. resulting in a lower response rate by reporting Member States.

4 National System reporting

Reporting on the National System for reporting on policies and measures and greenhouse gas projections was already mandatory under the EU Monitoring Mechanism Regulation. In the Governance Regulation, the requirements have been further specified. Countries have to report on 12 different reporting items and for each guidance has been provided in the implementing act and the guidance document for reporters[8]:

Reporting item	Guidance
Name and contact information for the entities with overall responsibility for the National System for policies and measures and projections	List only the responsible entity or entities, and their specific roles and responsibilities in preparing the reporting of policies and measures and greenhouse gas projections.
Institutional arrangements in place for preparation of reports on policies and measures and of projections as well as for reporting on them, including an organogram	Define the overall structure/set-up of your national system. List all organisations involved in the preparation of the report on policies and measures and projections and in the archiving of information, their responsibilities, and their interactions. Provide the organogram or the description of the organogram to show the organisational structure of the National System for policies and measures and projections, including the functional and hierarchical interrelationships between organisations.
Legal arrangements in place for preparation of reports on policies and measures and of projections	Report the legislation (name and reference) in force and describe concisely the scope, where applicable.
Procedural and administrative arrangements and timescales in place for the preparation of reports on policies and measures and of projections, to ensure the timeliness, transparency, accuracy, consistency, comparability and completeness of the information reported	Report the cycle for preparation of report on policies and measures and of projections. Summarise the methodologies and mechanisms how timeliness, transparency, accuracy, consistency, comparability and completeness of the information reported are ensured. Report on assurance of consistency with preparation of reports on policies and measures, where relevant, and of projections under Directive (EU)2016/2284. Optionally, provide diagrams that show the processes involved in the national system. These diagrams could include the information flows through the system, and at which points QC and QA measures are applied.
Description of the information collection process	Provide a summary of the process for collecting information for developing policies and measures, evaluating policies and measures and for developing projections. Explain if and how consistent processes are used for collecting and using information for policies and measures and projections.
Description of the alignment with the national inventory system	Provide information on the alignment with the national system for the greenhouse gas inventory, such as processes to ensure consistency of the data used.
Description of the links to arrangements on integrated national energy and climate reports pursuant to Art. 17 of Regulation (EU) 2018/1999	Provide a summary of the linkages between the processes used to collect data related to policies and measures and projections, and relevant processes to report on progress other dimensions of the Energy Union, e.g. processes to foster consistent use of energy-related data for the development of policies and measures and projections and for integrated progress reporting. As integrated progress reporting will only apply from 2023, it is enough for the 2021 reporting to briefly describe the linkages currently in place. One element could for example be if and how the energy projections underpinning the greenhouse gas projections are coordinated with or sourced from the ministry responsible for energy.

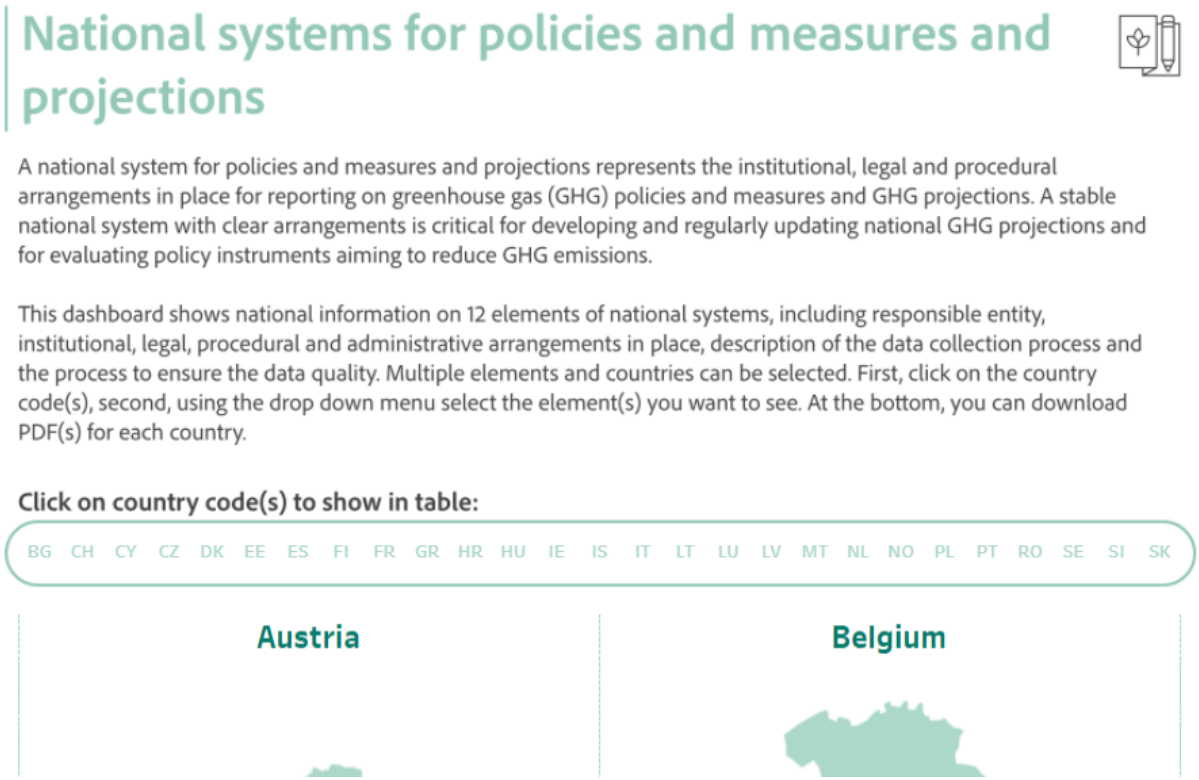
([8]) https://www.eionet.europa.eu/reportnet/docs/govreg/national-systems/2021_reporting-guidelines-pams-and-projections_-national-systems_govregart39_v1.pdf/view

Reporting item	Guidance
Description of the quality assurance and quality control activities for reporting of policies and measures and projections	Provide a summary of the Quality Control activities applied to help ensure accuracy and completeness in the policies and measures and Projections reports. Report the Quality Assurance activities in place, such as the checks that are done and the responsible entities.
Description of the process for selecting assumptions, methodologies and models for making projections of anthropogenic greenhouse gas emissions	Describe the process behind the selection of assumptions, methodologies and models used. Member States may also report the reasons for their choices, or cross reference to other reports (please provide an URL or upload it on Reportnet) providing this information.
Description of procedures for the official consideration and approval of the Member States national system for policies and measures and projections	Describe the process for officially approving the national system or changes to the national system.
Information on relevant institutional administrative and procedural arrangements for domestic implementation of the EU's nationally determined contribution, or changes to such arrangements	Refer to the arrangements for implementing policies and measures as means of domestic implementation and to the arrangements for national projections of anthropogenic greenhouse gas emissions by sources and removals by sinks as means to track domestic progress.
Description of the stakeholder engagement undertaken in relation to the preparation of policies and measures and projections	Report a description of the stakeholder engagement undertaken in relation to the preparation of policies and measures and projections.

27 EU Member States and 3 non-EU Member States (Iceland, Norway, and Switzerland) reported information on their national system for reporting policies and measures and projections. Most reports were in English, with the exception of four reports in German, French and Spanish.

The information reported by Member States on the National System is available on Reportnet (https://reportnet.europa.eu/public/dataflow/111), where the submissions and any additional information that countries provided can be consulted and downloaded. In addition, this information has also been combined by the European Environment Agency and published on the Climate and Energy Plaform (https://climate-energy.eea.europa.eu/topics/climate-change-mitigation/national-systems/intro).

Figure 4.1 Screenshot of the National System reporting on the Climate and Energy Portal.



Source: https://climate-energy.eea.europa.eu/topics/climate-change-mitigation/national-systems/intro

4.1 Overall responsibility

In most cases, overall responsibility lies with only one institute. This is the case for 24 countries (22 EU and 2 non-EU countries). Belgium, Estonia, Lithuania, Malta, Spain and Norway reported more entities with overall responsibility. For example, in the case of Estonia, this split reflects differences in entities with the overall responsibility (Ministry of Environment) and the institution that has the overall responsibility of maintaining the national systems for all greenhouse gas reporting. In Norway there are different responsible entities for reporting on policies and measures and projections.

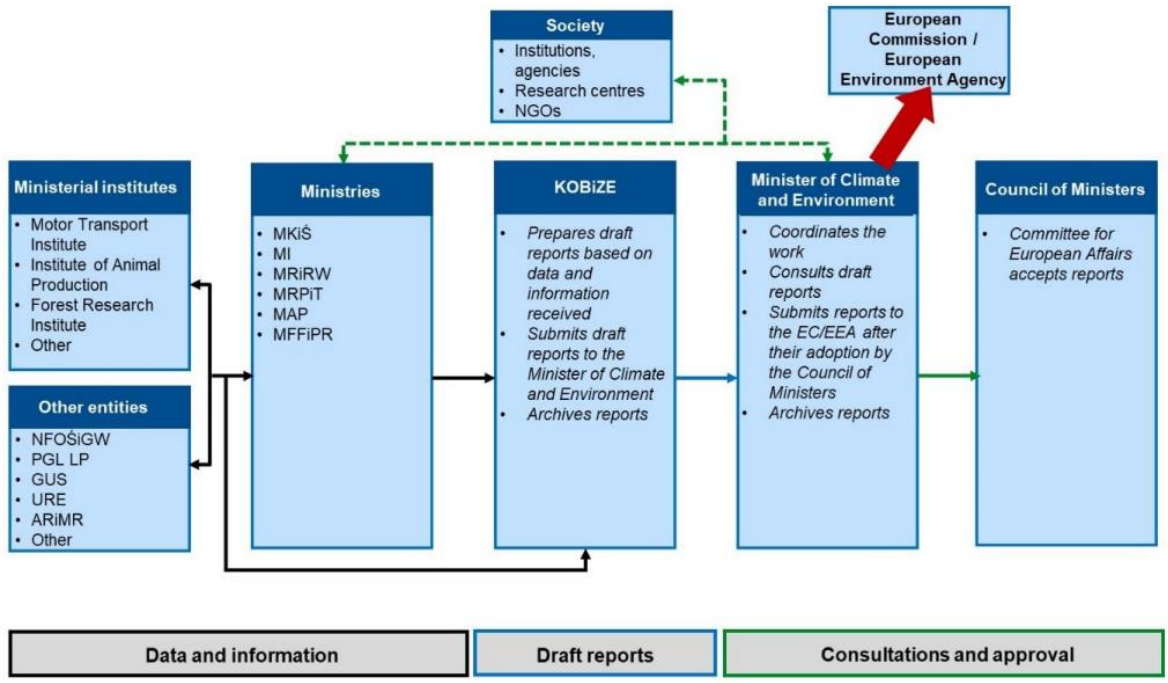
In most cases, the overall responsibility lies with different Ministries. Across all reporting, 34 different Ministries were included. Usually this is the Ministry for Climate and/or Environment, although that is not always the case. In Finland for example, the Ministry of Economic Affairs and Employment is responsible for the compilation and reporting of information collected from different sectoral ministries. Apart from Ministries, also environmental protection agencies have a lead role in some countries (Portugal, Ireland and Lithuania).

4.2 Institutional arrangements

In the most complete reporting this section includes the overall structure of the national system, with all organisations involved in the preparation of the report on policies and measures and projections and in the archiving of information, their responsibilities, and their interactions. To depict relations, organigrams can be a very useful tool. 22 countries added an organigram to the reporting. These

organigrams can be quite extensive and detailed (such as for Denmark) or more concise (such as for Poland), but help in understanding the different responsibilities and interactions of organisations involved in the national system.

Figure 4.2 Organigram included in the Polish report on National Systems.



Source: https://reportnet.europa.eu/public/country/PL

4.3 Legal arrangements

19 EU countries and one non-EU country reported on national legal arrangements in place for the preparation of reports on policies and measures and greenhouse gas projections. The type of legal arrangement differs among countries. For example, in the Netherlands the reporting is enshrined into the national climate act of 2019. This act sets the national target for the reduction of greenhouse gas emissions[9], mandates that the government has to adopt a national climate policy plan every 5 years with a time horizon of 10 years, and includes various provisions to monitor and evaluate the progress of the climate plan. This includes reporting on policies and measures and on greenhouse gas projections.

Some countries explicitly reported that no specific legal arrangements are in place. Collaboration for reporting in these cases could be based on the resolutions defining the overall responsibilities of the different ministries (e.g. Denmark). Slovenia and Slovakia reported that legislation is still under preparation.

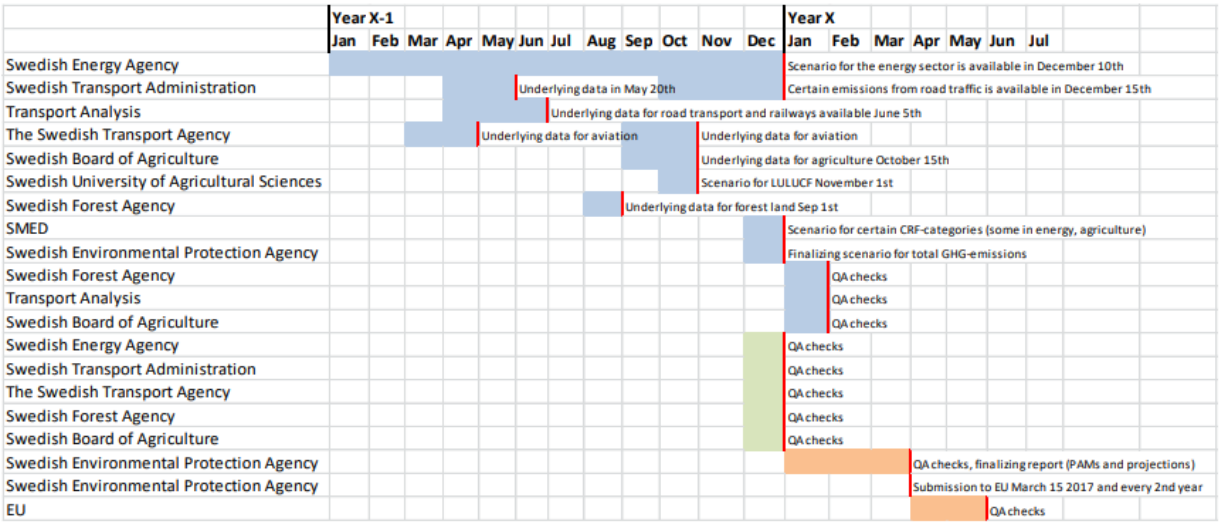
([9]) 49% by 2030 and 95% by 2050 compared to 1990 levels

4.4 Procedural and administrative arrangements and timescales

15 countries include a timescale for the preparation of reporting on policies and measures and projections. The level of detail differed among countries. In the case of Germany for example, the process was split into five different phases, described in detail but without specifying the timing of each phase.

Other countries included a more elaborate overview of the timing of different steps in the preparation of the policies and measures and the greenhouse gas projections reporting.

Figure 4.3 Timeline included in the Swedish report on National Systems.



Source: https://reportnet.europa.eu/public/country/SE

4.5 Information collection process

In the most detailed reporting, countries report the sources of the main data sources that are used to report on policies and measures and greenhouse gas projections.

4.6 Alignment with the national inventory reporting

This only applies for projections reporting. There are two different elements that are mentioned in the reporting to ensure alignment.

The first are methodological alignments. Member States report for example how the data sources and methods for both inventory and projection reporting are coherent.

The second element are the institutional and procedural arrangements that have been taken to ensure alignment. Member States for example report how the same entities are responsible for the inventory and the projections, or even that the same team of sectoral experts are responsible for both inventory and projection reporting.

4.7 Links to arrangements on integrated national energy and climate reports

This section is still under development as also the implementing act for Article 17 of the Governance Regulation (on Integrated national energy and climate progress reports), defining more concretely the reporting templates, is being prepared. Integrated national energy and climate progress reports will have to be submitted for the first time by Member States by 15th March 2023 and every two years thereafter.

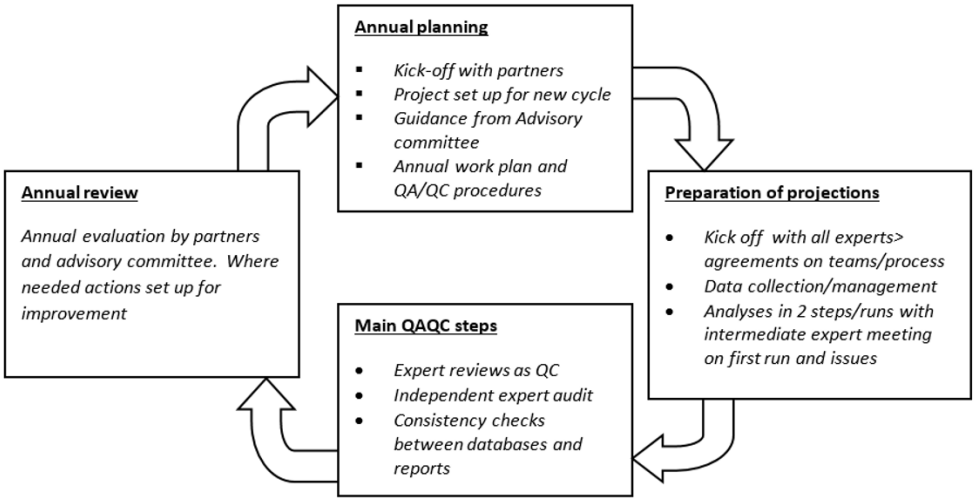
Member States made reference to the Integrated National Energy and Climate Plans and arrangements that were made to ensure integrated reporting on energy and climate with subsequent reporting under the Monitoring Mechanism Regulation in 2019 and 2020 and the Governance Regulation in 2021. In addition, Member States also reported how arrangements will stay the same for the progress reporting, for example Czechia. Member States also explained how the same scenario, models and tools were used for reporting in the National Energy and Climate Plans and greenhouse projections to ensure consistent reporting.

4.8 Quality assurance and control activities

A good example of reporting on the quality assurance and control activities is Greece. The report describes the different steps and arrangements that are taken to ensure that quantitative information on projections is properly checked before it is submitted.

The Netherlands included a graphical representation of how QA/QC is part of the reporting cycle. This clearly depicts how QA/QC is not only used to check reporting, but also used to improve future reporting. The quality assurance can also be partly covered in good institutional, procedural and administrative processes.

Figure 4.4 Steps in the annual QAQC cycle included in the Dutch report on National Systems.



Source: https://reportnet.europa.eu/public/country/NL

4.9 Selecting assumptions, methodologies and models for projections

This section of the report complements the technical report that many countries submit with their greenhouse gas projections. This section can be quite short, although some countries provided a more elaborate description of the process and the models that are used to prepare greenhouse gas projections (e.g. Denmark, Belgium and Czechia).

4.10 Procedures for the official consideration and approval

13 countries interpreted this as the procedures for the official consideration and approval of the projections and policies and measures reporting. For many countries the national system is defined in a law, order or ministerial agreement and therefore changes can only be made with changes in the legal arrangements. In the case of Denmark and other countries were the national system for policies and measures and greenhouse gas projections reporting is founded on the general responsibilities of the different ministries no formal or official approval for changes is needed. Other countries, such as Belgium or Poland, on the other hand reported that the national system and any changes need approval by the responsible entity, whether a National Commission or Ministry.

4.11 Relevant institutional administrative and procedural arrangements for domestic implementation of the EU's nationally determined contribution

Examples of arrangements in place are presented in the table below.

Country	Arrangements for domestic implementation of the EU's NDC
Austria	The sectoral goals and procedures required for the corresponding Austrian contribution are set out in the Climate Protection Act. The Climate Protection Act and the Energy Efficiency Act also contain the obligation to submit annual national reports to present progress in terms of target achievement.
Belgium	As far as the Flemish Region is concerned, the Flemish Energy and Climate Plan 2021-2030 provides the general framework for the implementation and monitoring of energy and climate policy. This plan provides for annual Flemish progress reporting. This is also the case for the Brussels Energy and Climate Plan 2021-2030. In Wallonia, the Walloon Energy and Climate Plan 2021-2030 and the Walloon Air Energy and Climate Plan 2016 – 2022 (imposed by the climate decree) provide the general framework for the implementation and monitoring of energy and climate policy. In order to optimize the monitoring and the implementation of the transversal measures of the Plan, an inter-administration working group was recently created.
Denmark	The domestic implementation of Denmark's contribution to the EU's nationally determined contribution can be seen as Denmark's EU commitments under the Effort Sharing Regulation and the additional domestic commitments adopted with the Danish Climate Act (a target of reducing greenhouse gas emissions in Denmark by 70% by 2030 compared to a 1990 baseline and a long-term target for Denmark to be a climate-neutral society by 2050 at the latest). The Climate Act mandates the setting of a new national climate target every five years, with a 10-year perspective. This means that a new legally binding climate target for 2035 must be set in 2025. At the same time, the Climate Act stipulates that a new climate target must be no less ambitious than the most recently set target. The Agreement on a Climate Act also sets out that in connection with the 2020 climate action plan, the Government must propose an indicative target for 2025. The Climate Act requires the Government to present a climate action plan with a ten-year perspective, at least once every five years, and, as a minimum, in connection with setting the climate targets.
Finland	Domestic implementation of the EU's nationally determined contribution in the climate and energy sector is outlined and coordinated through national strategies and plans in different sectors. The most important documents are the overall Climate and Energy Strategy and the Medium-term Climate Policy Plan which are prepared once in a government term. Each sectoral ministry is responsible for policy preparation and implementation of climate change mitigation measures in its respective remit. The Annual Climate Report is a document that, under the Climate Change Act, the Government each calendar year submits to Parliament. The report examines the trends in greenhouse gas emissions and the achievement of the 2020 and 2030 targets in the effort-sharing sector, as well as the trends and projections of total emissions in relation to the 2035 carbon neutrality target. The report also contains information on the policy measures in the Energy and Climate Strategy, the Medium-term Climate Change Policy Plan and the National Climate Change Adaptation Plan.
France	The Energy Transition Law for Green Growth of 2015 sets France's carbon budgets until 2033 in 5-year periods. These budgets were drawn up on the basis of AMS 2018 scenario, which makes it possible to achieve France's various climate and energy objectives, including those adopted at European and international level. They thus ensure the achievement of France's objectives, including those expressed by the EU NDC, and allow for close monitoring of progress. Also, the energy and climate law of 2019 creates the High Council for the Climate, an independent body mandated to produce annual reports on the progress of France's climate policy, to which the government must respond to Parliament within 6 months. This strengthening of the governance system improves monitoring progress made.
Hungary	In 2018 the Deputy Secretariat of State for Climate Policy was established under the Ministry for Innovation and Technology. The Climate Policy Department (under the Deputy Secretariat of State for Climate Policy) is responsible for the elaboration and implementation of the second National Climate Change Strategy (NCCS-2) which was adopted in October 2018. The NCCS-2 contributes to the goals of Paris Agreement and has three main parts: National Decarbonisation Roadmap, National Adaptation Strategy and "Partnership for Climate" Awareness-Raising Plan. As NCCS-2 is a framework strategy, action plans specify the concrete actions. The First Climate Change Action Plan (CCAP-1) was approved by the Government on 8 January 2020. The Second Climate Change Action Plan (CCAP-2) is planned to be adopted in 2021. The set of measures of the CCAP-1 and the CCAP-2, was developed as a result of series of professional and thematic consultations implemented with wide involvement (e.g. other ministries, national authorities, background institutions). The outstanding results of the established partnership are the large number of developed measures, the high professional standard, as well as the communication and cooperation between the individual organizations. Furthermore, there is an inter-ministerial working group on climate change, which is usually convened by the Deputy Secretary of State for Climate Policy.
Ireland	The Climate Action Plan 2019 provides for enhanced governance arrangements for the implementation of national climate mitigation and adaptation policies and measures. The Plan provides for a mechanism of quarterly reporting to Government in relation to committed actions under the Climate Action Plan and for publication of these progress reports. The Plan also

Country	Arrangements for domestic implementation of the EU's NDC
	provides for the establishment of a Climate Action Delivery Board within the Department of the Taoiseach to oversee its delivery. The Climate Action Plan also provides for a number of other governance and implementation mechanisms which will be given statutory effect in 2021 through a Climate Action and Low Carbon Development (Amendment) Bill. The Bill will establish a 2050 climate neutrality objective in law and place all relevant climate plans and strategies on a statutory footing. The Minister for the Environment, Climate and Communications will be required to prepare an annual update to the Climate Action Plan commencing in 2021, and not less than once every 5 years, a National Long Term Climate Action Strategy. The Bill will define how five-year carbon budgets and related sectoral targets will be set. A carbon budget programme, consisting of three five-year budgets, will be proposed every five years by the Climate Change Advisory Council, for adoption by Government and endorsement by the Oireachtas (the national legislature of Ireland). Within the ceilings of each carbon budget programme, the Government will agree 'Sectoral Emission Ceilings,' identifying the sectors to which ceilings will apply and with the possibility that different ceilings may apply to different sectors. The Bill also provides appropriate oversight by Government, a strengthened Climate Change Advisory Council and a significantly strengthened accountability and oversight role by the Oireachtas. Each year, relevant Ministers will be required to give account annually to an Oireachtas Committee on their performance in adhering to their sector's sectoral emissions ceiling. Where Ministers are not in compliance with the targets, they will need to outline what consequential measures are envisaged and respond to any recommendations made by the Committee within three months. This 'comply or explain' approach will ensure greater oversight to drive delivery. The annual revision to the Climate Action Plan acts as a further review mechanism and opportunity to re-adjust or refocus actions, if required, to ensure targets are achieved. The annual process of updating policies and measures and related actions to deliver on these policies and measures through the Climate Action Plan will, in turn, inform the preparation of annual greenhouse gas emissions projections by the EPA.
Malta	The domestic implementation of the national determined contribution is underpinned by the legal framework provided by the Climate Action Act (Chapter 543), which establishes a number of obligations, both in terms of principles and tangible activities. Among these is the obligation on Government to prepare and regularly review a national Low Carbon Development Strategy (LCDS), and the transparent and accurate monitoring of the actual and projected progress made by the Government in fulfilling its obligations under the UNFCCC to limit or reduce anthropogenic greenhouse gas emissions. The implementation of the LCDS lies within the MECP.
Netherlands	The national climate act provides the legal institutional arrangements which ensure that adequate policies and measures are planned, implemented, monitored and evaluated in order to attain the climate targets for 2030 and 2050. In summary: • Every five years, the government is required to adopt a national climate policy plan for the next 10 years in which it stipulates what policies and measures will be implemented. The first climate plan for the period 2021-2030 was published in 2019 . The Council of State, the highest legal advisor of the government, is consulted before adoption of the climate plan; • The government reports annually to the Parliament on the progress of the climate plan. Every two years, the government evaluates the progress of the climate plan and proposes adjustments to the plan if deemed necessary; • The Netherlands Environmental Assessment Agency (PBL) publishes a climate and energy outlook (KEV) in order to assess the (expected) impact of policies and measures. The government includes the updated KEV and its implications for the climate plan to Parliament; • In order for the government to track the progress of the implementation of policies and measures, an annual Climate Policy Monitor is prepared by RVO. The first monitor was published in 2020 (12). This monitor is sent to Parliament together with the KEV. The purpose of the national climate policy plan is to ensure not only the attainment of national climate targets but also commitments to the EU and UN. Therefore, the legal institutional arrangements in the national climate act also ensure the domestic implementation of the contribution of the Netherlands to the EU's nationally determined contribution.
Sweden	Sweden has set up a national climate policy framework consisting of a Climate Act, national climate targets and a Climate policy council. The climate act will impose responsibility on the current Government, and on future governments, to pursue a climate policy that is based on the national climate tar-gets and to provide clear feedback on the progress. The national climate tar-gets are in line with, or more ambitious, than the EU's nationally determined contribution, wherefore the institutional set up should be sufficient.
Norway	The implementation of the nationally determined contribution (NDC) of the EU in Austria or the determination of the required to achieve the sectoral goals and procedures required for the corresponding Austrian contribution are set out in the Climate Protection Act. The Climate Protection Act and the Energy Efficiency Act also contain the obligation to submit annual national reports to present progress in terms of target achievement.

4.12 Stakeholder engagement

The reporting by countries can be divided into three main elements.

The first is the link to the stakeholder consultation and role during policy preparation, adoption and implementation. In total 13 countries made a reference to this.

The contribution of different stakeholders to the collections, combination, quality checking and reporting of information on policies and measures and greenhouse gas projections was also mentioned here by 14 countries. In this respect it often overlaps with other earlier reporting items, such as institutional, procedural and administrative arrangements.

Ten countries also made a reference to the consultation process for the NECPs. As part of the preparation of the NECPs, EU Member States had to describe the consultations and involvement of national and Union entities and their outcome. This included the national parliament, local and regional authorities, stakeholders (including the social partners, and engagement of civil society and the general public), other Member States and the Commission.

5 Quality of the reported information on climate policies and measures

The webform includes automatic quality checks to ensure completeness of the reported information. These checks only provide a warning to reporters that there could be potential errors in the submissions. The webform does not have any checks that prevent reporters from submitting information, such as blockers.

To improve the reporting process and quality of the reported information, the EEA organized a workshop for Member States and prepared detailed reporting guidelines to assist the Member States through all steps of the reporting process. These guidelines are based on previous guidelines, updated and further improved each reporting year.

5.1 Quality control process

After submission of the policies and measures webform, the ETC/CME subjected the reported information to quality checks. This quality control process is set up to improve countries' submissions and to enable direct communication. The quality control process is also presented in the guidelines to Member States on reporting PaM information.

The core of the QC checks are: timeliness, transparency, accuracy, completeness, consistency and comparability (TTACCC) criteria, which build the framework for the QC procedure:

- Timeliness: the date of submission was recorded. Countries had to report their information on policies and measures for the first time on 15 March 2021.
- Transparency: a verification of the submission took place. This including checking whether references, supporting information, the description and title of the PaM were provided.
- Accuracy: emissions savings were compared with total emissions or, when available, differences between without measures (WOM), with existing measures (WEM) and with additional measures (WAM) projections.
- Completeness: verification took place to see if all mandatory reporting requirements had been fulfilled. In addition, a comparison was made with the available most recent Biennial Report or National Communication.
- Consistency and Comparability: this check focused on whether or not the information in all fields was consistent (e.g. whether the selected sector(s) or greenhouse gas(es) corresponded with the description and name of the PaM). Also the coherence of reported PaMs and greenhouse gas projections was checked. More specifically the ETC/CME checked whether differences between sectoral WEM and WAM projections corresponded with planned PaMs affecting that sector.

After the QC process, all findings were communicated to the Member States with, if needed, a request for clarification or revision of the reported information.

The submissions on national systems for reporting policies and measures and greenhouse gas projections were quality checked for a limited number of completeness and transparency checks. The ETC/CME also identify good cases, included non-exhaustively in the analysis in chapter 4.

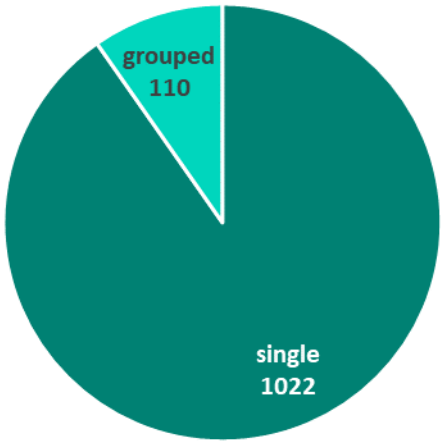
5.2 Quality control results – policies and measures

Reporting information on PaMs is essential for monitoring the actions taken at national level to reduce greenhouse gas emissions and evaluating their effects. Detailed and transparent information on PaMs provides an essential piece of the knowledge base to understand and analyze greenhouse gas emission trends at national and EU level. In 2021 Member States had to report for the first time under update

reporting requirements of the Governance Regulation and Reportnet 3. In general, some quality issues related to the reporting on policies and measures persist. The completeness of qualitative information is particularly low and seems to be further decreasing for *ex post* impacts on greenhouse gas emissions and costs and benefits.

In total the ETC/CME reviewers had 1 132 questions or comments for reporters from EU Member States. The majority of these questions related to one PaM. In some cases, similar questions or comments were grouped for 2 or more PaMs. In total the ETC/CME asked 110 grouped questions. In total these comments cover over 4 000 PaMs. For some PaMs more than one question was raised in case there were different findings. The medium number of questions or comments per country was 30. With Iceland, Norway and Switzerland the total number of questions increased to 1 159.

Figure 5.1 **Number of questions for clarification to EU Member States (split between questions relating to one PaM and questions relating to 2 or more PaMs).**



Source: ETC/CME, 2021.

5.2.1 Timeliness

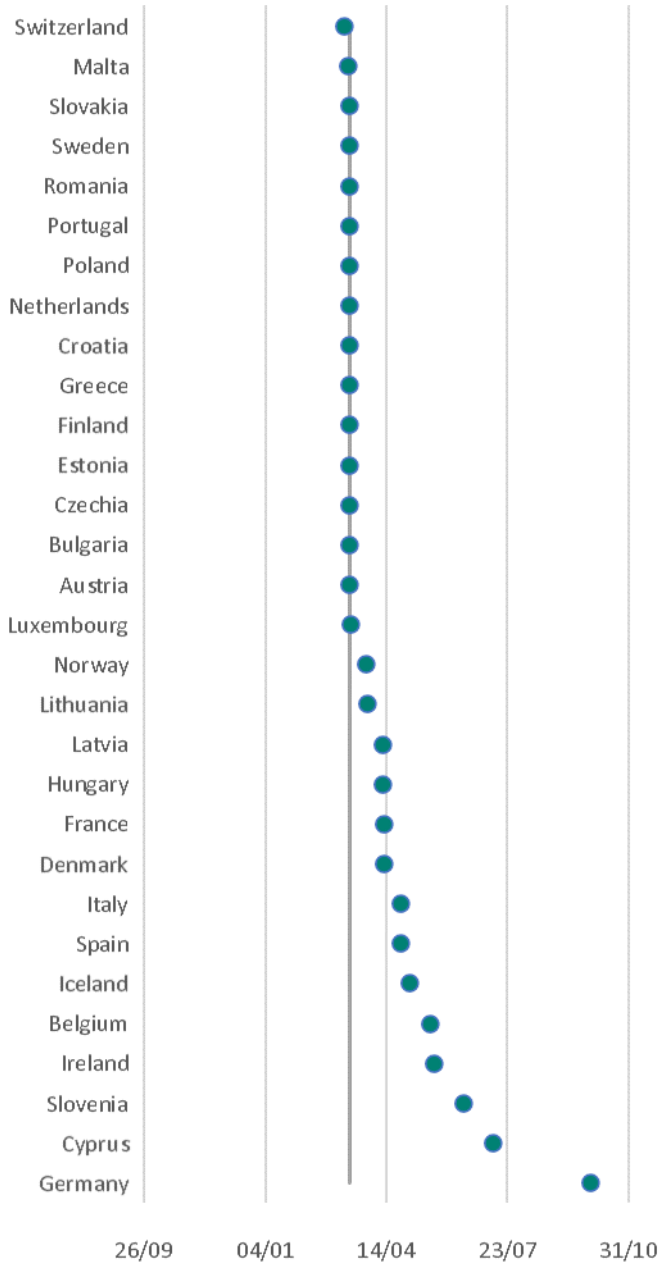
The Governance Regulation requires that Member States report on greenhouse gas policies and measures by the 15th of March. 16 countries (15 EU Member States) submitted the report on their national policies and measures before or on the 15th of March. The majority of countries (20 with 18 EU Member States) released the report in March. The last report was submitted on 30 September. This does not include any later resubmission by countries, before[10] or after QA/QC.

Despite the new webform, the support provided to reporters prior to the reporting deadline (e.g. webinar, guidelines and tutorials) ensured that countries could report before or on the reporting deadline. In most cases the delay in reporting was also relatively short. Only for two countries, the submission was after June. In 2017 and 2019, only nine Member States reported on time. While information from previous reporting could be reused, it did require more updating and adjusting than in 2019.

([10]) Some countries resubmitted information on PaMs before QA/QC.

One explanation for delayed reporting, remains a preference to link reporting of both greenhouse gas projections and PaMs. The QC process also took more time in 2021.

Figure 5.2 First submission date of reporting on policies and measures.



Source: ETC/CME, 2021.

5.2.2 Completeness

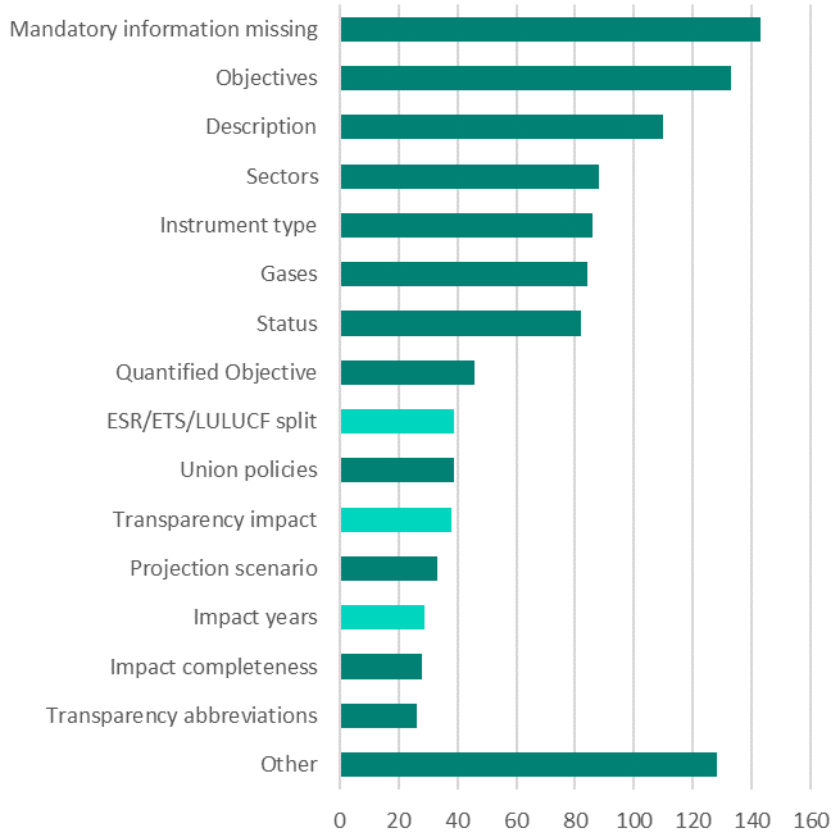
In 2021, a substantial part of the questions of the ETC/CME review team was related to information that was not provided. This could include missing mandatory information on greenhouse gases (37 times for EU Member States), sectors (80 times for EU Member States), start year (111 times for EU Member States), Policy impacting EU ETS, LULUCF and/or ESD/ESR emissions (320 times for EU Member States)

etc. Although difficult to attribute to one specific reason, to some extent this seemed to have been caused by the new reporting under the Governance Regulation, introducing new information to be reported for each PaM, and the new webform.

Apart from complete missing fields, reporting could also be incomplete. This occurred in previous reporting years as well. For example, the information provided on the quantitative objective could be missing an end year. This explains partially the questions on quantified objectives in Figure 5.3. Sometimes information on a quantified objective was not provided.

In the webform, several fields have an 'other' option requiring further clarification by the reporter in a separate box. For example in the case of the sector and objective. More often than before, this additional information was missing in the original submission, respectively 40 and 33 times in first submissions of EU Member States.

Figure 5.3 Number of questions grouped per quality check



Note: Reporting on PaMs is grouped in different reporting tables: Table 1 for qualitative information and indicators, Table 2 for *ex post* and *ex ante* impacts on greenhouse gas emissions and Table 3 for costs and benefits. Dark green bars are linked to reporting items in Table 1, light green bars are linked to reporting items in Table 2.

Source: ETC/CME, 2021.

5.2.3 Consistency and comparability

In 2021, there are still some issues with consistency and comparability, these relate to:

- The interpretation of what is a single PaM, which explains partially the differences among countries in the number of PaMs. While some Member States (e.g. Greece) clearly aggregated individual measures into one entry of group of PaMs in the questionnaire, other Member States (e.g. France) clearly reported on individual measures. While this was flagged during the QC procedure, it is not always possible for Member States to address this during the QC process.
- The interpretation of what means implemented in response to a Union Policy. For some Member States this means that national PaMs implemented before the Union policy, by default, cannot have been implemented in response to a Union Policy. For other Member States this is interpreted less stringently. This partially explains differences among Member States in the number of Union Policies that are linked to national PaMs.
- The level of detail in the description of the PaMs.
- The ETC/CME also checks whether the selected greenhouse gases match with the description of the PaM. In many cases, policies and measures affect more than on greenhouse gas, albeit that this effect can be very small for particular gases. The guidelines recommend to only report the greenhouse gases that are either specifically targeted by the policy or measure, or to report the greenhouse gases that are primarily affected.
- Status, start- and end year and projection scenario also results in some inconsistencies in initial submissions. Especially if start year is near the reporting year. In total automatic checks revealed 199 potential issues of an inconsistency between the status (planned, adopted, implemented, expired), the start year, the end year and/or the projection scenario (WAM, WEM, WOM and NIP)[11].

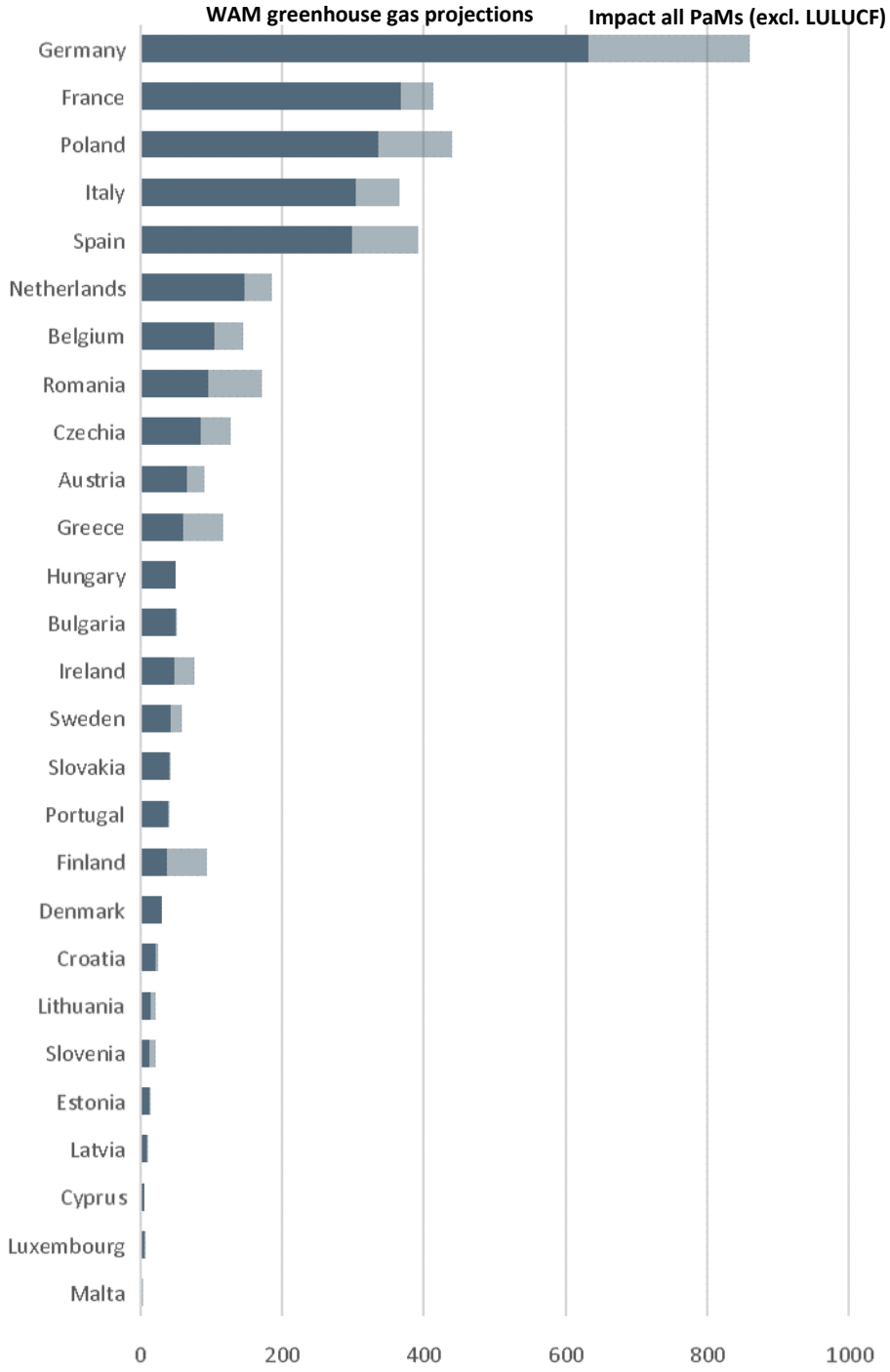
Some of these issues were identified and corrected by the Member States during the QC process. However, on some issues, such as what is a single PaM, Member States were reluctant to adjust their reporting.

5.2.4 Accuracy

Assessing the accuracy of quantitative information on PaMs is done through expert judgment. One indicator that can be used is to compare the reported emission savings against reported greenhouse gas emission inventory data and greenhouse gas emission projections. Large reported emission savings from PaMs compared to the projected greenhouse gas emissions, could indicate potential errors or double counting. Figure 5.4. shows the share of total greenhouse gas emission savings from expired, implemented, adopted and planned PaMs compared to the total greenhouse gas emissions in the WAM scenario (or WEM scenario if WAM was not reported). Because of the low completeness of reporting in the LULUCF sector, emission savings and emissions from LULUCF were excluded.

(11) Some combinations can be considered as potentially incorrect. For example a PaM cannot be planned and already belong to the WEM projection scenario.

Figure 5.4 **Total greenhouse gas emission (excluding LULUCF) according to WAM projections (dark blue) and expected total emission savings from PaMs (light blue) in 2030 (Mton CO_2-eq.)**



Source: ETC/CME, 2021.

5.2.5 Coherence – interlinkage with projections

In most cases, differences between WEM and WAM projections can be explained by planned PaMs. This means there is coherence between the reporting on projections and PaMs. For some countries

differences between WEM and WAM projections do not reflect the impact of new, planned PaMs, but reflect differences in assumptions on the impact of existing PaMs.

Table 5.1 Coherence between reporting planned policies and measures and WAM projections.

	Energy supply		Energy consumption		transport		Industrial processes		Agriculture		Waste		LULUCF	
	WAM projections	PaMs belonging to WAM scenario	WAM projections	PaMs belonging to WAM scenario	WAM projections	PaMs belonging to WAM scenario	WAM projections	PaMs belonging to WAM scenario	WAM projections	PaMs belonging to WAM scenario	WAM projections	PaMs belonging to WAM scenario	WAM projections	PaMs belonging to WAM scenario
AT	X	X	X	X	X	X	X		X	X				
BE	X	X	X	X	X	X	X	X	X	X		X		X
BG	X		X		X		X						X	
CY	X		X	X	X		X		X		X	X	X	X
CZ	X	X	X	X	X	X					X			
DE														
DK														
EE	X	X	X	X	X	X	X	X	X	X	X			
ES	X	X	X	X	X	X	X	X	X	X	X	X	X	X
FI	X	X	X	X	X	X	X	X	X	X			X	X
FR														
GR	X	X	X	X	X	X	X						X	X
HR	X	X	X	X	X	X	X	X	X	X		X		X
HU	X	X	X	X	X	X	X	X	X	X	X	X	X	X
IE	X	X	X	X	X	X	X		X	X				
IT	X	X	X	X	X	X								
LT	X	X	X	X	X	X	X	X	X	X	X	X	X	X
LU	X		X		X				X		X			
LV	X	X	X	X	X	X			X	X	X	X	X	X
MT				X		X	X	X						
NL	X		X	X	X	X	X		X	X				
PL	X	X	X		X		X			X				
PT	X	X	X	X	X	X		X	X			X	X	
RO		X	X	X	X	X			X	X	X	X	X	X
SE														
SI	X	X	X	X	X	X	X		X	X			X	X
SK	X	X	X		X	X	X			X	X	X	X	X

Note: X means either WAM projections were different from WEM projections or policies and measures belonging to the WAM scenario were reported.

Source: ETC/CME, 2021.

5.2.6 Transparency

A technical report was submitted together with the PaM webform by 27 EU Member States and one other country. This technical report often combines information related to the PaMs, greenhouse gas projections and national system.

The Governance Regulation also requests Member States to provide additional information on:

- updates relevant to their long-term strategies referred to in Article 15 and progress in implementing those strategies
- information on planned additional national policies and measures, or groups of measures, envisaged with a view to limiting greenhouse gas emissions beyond their commitments under Regulation (EU) 2018/842 and Regulation (EU) 2018/841;
- Information regarding the links between the different policies and measures, or groups of measures, reported pursuant to point (c) and the way such policies and measures, or groups of measures, contribute to different projection scenarios.

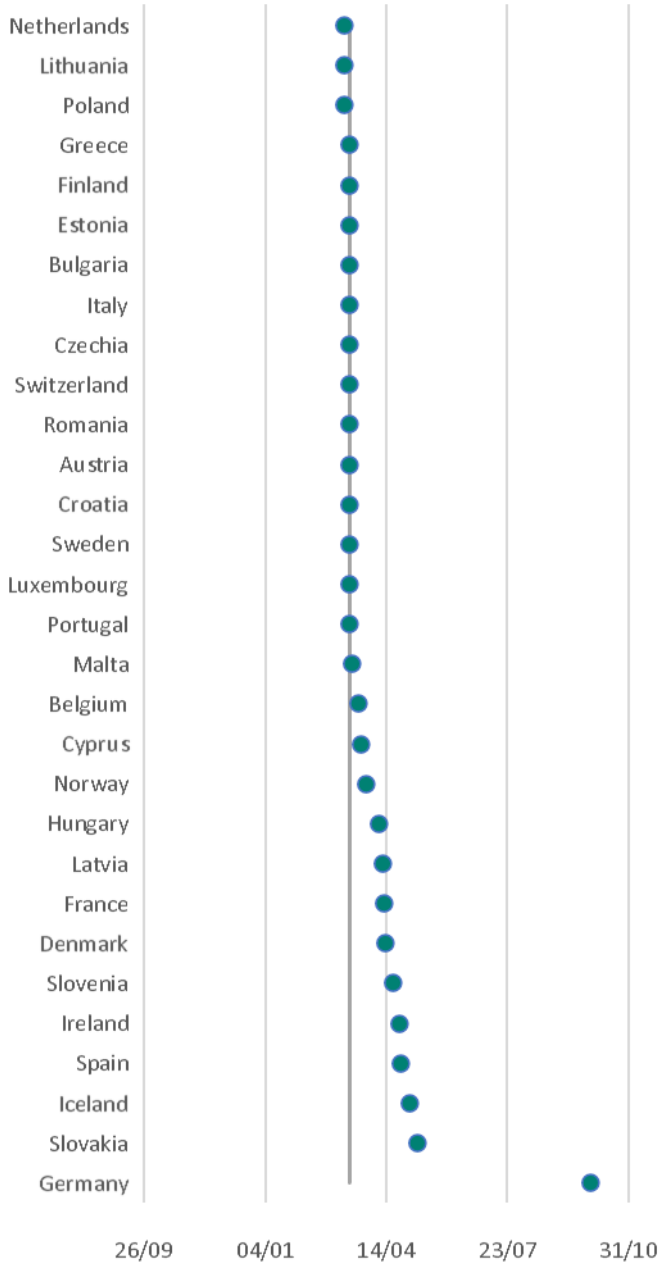
Respectively, 16, 14, and 15 EU Member States provided information on this transparently in the technical report together with the webform submission. Nine countries did not provide any information. Twelve EU Member States reported transparently on all three items. In some cases incomplete reporting seems justified. For example, some Member States have not submitted their Long-Term Strategy yet, so cannot report on updates.

5.3 Quality control results – National system

5.3.1 Timeliness

The Governance Regulation specifies that information on the National System shall be included in the reporting under Article 18 (Integrated reporting on greenhouse gas policies and measures and on projections). Therefore information had to be provided by the 15th of March. 17 countries (16 EU Member States) released the report on their national systems before or on the 15th of March. The majority of countries (21 with 18 EU Member States) released the report in March. The last report was submitted on 30 September. This does not include any later resubmission by countries, e.g. after recommendations were provided.

Figure 5.5 **First submission date of national systems for reporting on policies and measures and greenhouse gas projections.**



Source: ETC/CME, 2021.

5.3.2 Completeness and transparency

Overall completeness and transparency of reported information on the national system was high. Due to the automatic checks in Reportnet 3, all fields were completed. In the first submissions 33% of first submissions did not included contact information of the responsible entity. A similar percentage of first submissions also lacked an organigram depicting the institutional arrangements in place, despite being explicitly requested in the Governance Regulation's implementing act. The information provided per reporting field tended to be concise, which explains the sometimes lower scores on completeness.

Transparency was high. Most of the reports were in English (although this is not a prerequisite), links were made to other relevant documents such as legal texts, and abbreviations were explained.

Table 5.2 Share of countries passing the different quality checks on the national systems for reporting on policies and measures and greenhouse gas projections.

Reporting on national system	Technical report/link	44%
	Report in English	93%
Name and contact information for the entities with overall responsibility for the National System for policies and	Name and contact information provided	67%
	No use of abbreviations and description clear	96%
Institutional arrangements in place for preparation of reports on policies and measures and of projections as well as for reporting on them, including an organogram	Covers both PaMs and projections	88%
	Organigram included	67%
	No use of abbreviations and description clear	96%
Legal arrangements in place for preparation of reports on policies and measures and of projections	Covers both PaMs and projections	78%
	Reference to legal document	81%
	No use of abbreviations and description clear	85%
Procedural and administrative arrangements and timescales in place for the preparation of reports on policies and measures and of projections, to ensure the timeliness,	Covers both PaMs and projections	93%
	Timescales included	56%
	No use of abbreviations and description clear	96%
Description of the information collection process	Covers both PaMs and projections	78%
	No use of abbreviations and description clear	93%
Description of the alignment with the national inventory system	Covers both PaMs and projections	59%
	No use of abbreviations and description clear	96%
Description of the links to arrangements on integrated national energy and climate reports pursuant to Art. 17 of	Covers both PaMs and projections	67%
	No use of abbreviations and description clear	81%
Description of the quality assurance and quality control activities for reporting of policies and measures and	Covers both PaMs and projections	78%
	No use of abbreviations and description clear	93%
Description of the process for selecting assumptions, methodologies and models for making projections of	Covers all models/sectors	55%
	No use of abbreviations and description clear	92%
Description of procedures for the official consideration and approval of the Member States national system for policies	Covers both PaMs and projections	69%
	No use of abbreviations and description clear	85%
Information on relevant institutional administrative and procedural arrangements for domestic implementation of	Is reported	92%
	No use of abbreviations and description clear	96%
Description of the stakeholder engagement undertaken in relation to the preparation of policies and measures and	Is reported	88%
	No use of abbreviations and description clear	88%

Source: ETC/CME, 2021.

6 Conclusions and recommendations

Following conclusions can be drawn from the 2021 reporting. On the reported information by Member States:

- As previous years, the number of single PaMs reported by Member States increased. The share of planned policies and measures remains high, with many reported PaMs (22%) expected to start in future.
- The increase in the number of single policies and measures could be an effect of the NECPs by Member States. This could explain why for planned PaMs the Governance Regulation was mentioned as important driver of implementation.
- The number of single policies and measures of a Member State is not necessarily related to its ambition level. However, in order to achieve the 55% objective in 2030, additional action by Member States is needed. This requires further strengthening of existing and implementing new policies and measures.
- Reporting on quantitative information remains incomplete, especially for *ex post* emissions savings, cost and benefits, and indicators to monitor progress. The trend that completeness improved each reporting round, seems to be slowing down.
- The reported policies and measures are mostly regulations or economic policy instruments, targeted to the energy consumption, energy supply or transport sector and are implemented in response to a Union policy such as Energy Efficiency Directive, Renewable Energy Directive or Effort Sharing Decision/Regulation. For PaMs starting 2019 or later, also the Governance Regulation was an important factor.

On the quality of reported information:

- All Member States and Iceland, Norway, and Switzerland reported information on national PaMs. All used the online webform and submitted a technical report. This is a clear improvement compared to the reporting in 2019.
- This was the first reporting under the Governance Regulation and Reportnet 3. While most reporting items remained the same, this seemed to have had an impact on the quality of reporting. This could be temporary as for next reporting, Member States can update the information that is already prefilled in the webform. Timeliness was not affected due to the efforts made by Member States and EEA.
- For some of the new PaMs reported in 2021, completeness of information is lower because key details are still not defined yet.

Recommendations for future reporting:

- The webform is an important first tool to check the reporting. Automatic checks have been built into the webform, which could be made more stringent to ensure corrective actions are taken before information is released. In addition, Member States should use these automatic quality checks more actively to adjust reporting before submitting information.
- Some Member States have improved reporting of qualitative information and exchanging experiences and practices further could be useful for other Member States.
- For some new reporting items, e.g. non-greenhouse gas benefits, reporting has been very incomplete and some further guidance would be needed for reporters.
- Next mandatory reporting is in 2023, together with the first reporting of the biennial NECP progress reports. It will be important for reporters to ensure that information on policies and measures is consistent across dimensions.

List of abbreviations

EEA	European Environment Agency
ESD	Effort Sharing Decision
ESR	Effort Sharing Regulation
ETC/CME	European topic centre on climate change mitigation and energy
ETS	Emission Trading System
LULUCF	Land use, land use change and forestry
NECP	National Energy and Climate Plan
NIP	Not Included in Projections
PaMs	policies and measures
QA	Quality assurance
QC	Quality control
UNFCCC	United National Framework Convention on Climate Change
WAM	With additional measures
WEM	With existing measures
WOM	Without measures

Annex 1: Reporting template policies and measures (Tables 1 to 3)

	PaM number	
	Name of policy or measure	
	Single or grouped policy or measure	
	In case of a grouped policy or measure, which single policies or measures does it cover	
	Geographical coverage (n)	
	Sector(s) affected (o)	
	GHG(s) affected (r)	
	Objective (q)	
	Quantified objective (s)	
	Short description	
	Assessment of the contribution of the policy or Measure to the achievement of the long-term strategy referred to in Article 15 Regulation (EU) 2018/1999	
	Type of policy instrument (t)	
Union policies which resulted in the implementation of the PaM	Union policy (u)	
	Other	
	Status of implementation (v)	
Implementation period	Start	
	Finish	
	Projections scenario in which the PaM is included	
Entities responsible for implementing the policy (y)	Type	
	Name	
Indicators used to monitor and evaluate progress over time (z)	Description	
	Year	
	Value	
	Reference to assessments and underpinning technical reports	
	General comments	

PAM number	
Projected costs and benefits	Year(s) for which cost has been calculated
	Gross costs in EUR per tonne CO_2-equivalent reduced/sequestered
	Absolute gross costs per year in EUR
	Benefits ([a]) in EUR per tonne CO_2-equivalent reduced/ sequestered
	Absolute benefit ([a]) per year in EUR
	Net costs in EUR per tonne CO_2-equivalent reduced/ sequestered
	Absolute net cost per year in EUR
	Price year
	Description of cost estimates (basis for cost estimate, what type of costs are included in the estimate, methodology) ([c])
	Documentation / Source of cost estimation (provide a weblink of the report where the figure is referenced from)
	Description of non-GHG mitigation benefits
Realized costs and benefits	Year(s) for which cost has been calculated
	Gross costs in EUR per tonne CO_2-equivalent reduced/sequestered
	Absolute gross costs per year in EUR
	Benefits ([a]) in EUR per tonne CO_2-equivalent reduced/ sequestered
	Absolute benefit ([a]) per year in EUR
	Net costs in EUR per tonne CO_2-equivalent reduced/ sequestered
	Absolute net cost per year in EUR
	Price year
	Description of cost estimates (basis for cost estimate, what type of costs are included in the estimate, methodology) ([c])
	Documentation / Source of cost estimation (provide a weblink of the report where the figure is referenced from)
	Description of non-GHG mitigation benefits.

PAM number		
Policy impacting EU ETS, LULUCF and/or ESD/ESR / emission		
Ex-ante assessment	GHG emissions reductions in year t ([a]) CO_2-equivalent per year)	EU ETS
		ESR
		LULUCF ([c])
		Total ([d])
	GHG emissions reductions in t + 5 ([a]) CO_2-equivalent per year)	EU ETS
		ESR
		LULUCF ([c])
		Total ([d])
	GHG emissions reductions in t + 10 ([a]) CO_2-equivalent per year)	EU ETS
		ESR
		LULUCF ([c])
		Total ([d])
	GHG emissions reductions in t + 15 ([a]) CO_2-equivalent per year)	EU ETS
		ESR
		LULUCF ([c])
		Total ([d])
	Explanation of the basis for the mitigation estimates	
	Factors affected by the PAM	
	Documentation / Source of estimation if available (provide a weblink of the report where the figure is referenced from)	
Ex-post assessment ([e])	GHG emissions reduction ([a] CO_2-equivalent per year) ([b])	Year for which reduction applies
		EU ETS
		ESD/ESR
		LULUCF ([c])
		Total ([d])
	Explanation of the basis for the mitigation estimates	
	Factors affected by the PAM	
	Documentation/ Source of estimation if available (provide a weblink of the report where the figure is referenced from)	

Annex 2: Reporting template national systems

Reporting obligation	Fields for textual information	Examples of details that could be reported under this specific reporting obligation
Name and contact information for the entities with overall responsibility for the National Systems for policies and measures and projections		— *List the responsible entity or entities, and their specific roles and responsibilities. Identify the lead entity.* — *If such a description has already been provided, report changes to the name and contact information.*
Institutional arrangements in place for preparation of reports on policies and measures and of projections as well as for reporting on them, including an organogram		— *Define the overall structure/set-up of your national system. List all organisations involved in the preparation of the report on policies and measures and projections and in the archiving of information, their responsibilities, and their interactions.* — *Provide a description of the organogram to show the organisational structure of the National System for policies and measures and projections, including the functional and hierarchical inter-relationships between organisations.* — *If such a description of the national system has already been provided, report and explain changes to institutional arrangements.*
Legal arrangements in place for preparation of reports on policies and measures and of projections		— *Are there any legal arrangements in place to ensure reporting is completed, and/or data provided? Report the legislation and its scope.* — *If such a description has already been provided, report the changes to legal arrangements in place for the preparation of the report on policies and measures and projections.*
Procedural and administrative arrangements and timescales in place for the preparation of reports on policies and measures and of projections, to ensure the timeliness, transparency, accuracy, consistency, comparability and completeness of the information reported.		— *Report the cycle for preparation of report on policies and measures and of projections.* — *Summarise the methodologies and mechanisms how timeliness, transparency, accuracy, consistency, comparability and completeness of the information reported are ensured.* — *Report on assurance of consistency with preparation of reports on policies and measures, where relevant, and of projections under Directive (EU)2016/2284.* — *Optionally, provide diagrams that show the processes involved in the national system. These diagrams could include the information flows through the system, and at which points QC and QA measures are applied.* — *If such a description has already been provided, report the changes to procedural and administrative arrangements.*
Description of the information collection process		— *Provide a summary of the process for collecting information for developing policies and measures, evaluating policies and measures and for developing projections. Explain if and how consistent processes are used for collecting and using information for policies and measures and projections.* — *If such a description has already been provided. report the changes to the data collection process.*

Reporting obligation	Fields for textual information	Examples of details that could be reported under this specific reporting obligation
Description of the alignment with the national inventory system		— *Provide information on the alignment with the national system for the GHG inventory, such as processes to ensure consistency of the data used.* — *Option to provide details of links to other climate reporting systems if relevant.* — *If such a description has already been provided, report changes to the links to the national system for greenhouse gas inventories.*
Description of the links to arrangements on integrated national energy and climate-reports pursuant to Art. 17 of Regulation (EU) 2018/1999		— *Provide a summary of the linkages between the processes used to collect data related to policies and measures and projections, and relevant processes to report on progress other dimensions of the Energy Union, e.g. processes to foster consistent use of energy-related data for the development of policies and measures and projections and for integrated progress reporting.* — *If such a description has already been provided, report changes to the links to energy-related reporting systems.*
Description of the quality assurance and quality control activities for reporting of policies and measures and projections		— *Provide a summary of the Quality Control activities applied to help ensure accuracy and completeness in the policies and measures and Projections reports. Report the Quality Assurance activities in place.* — *If such a description has already been provided, report the changes to the quality control and quality assurance activities.*
Description of the process for selecting assumptions, methodologies and models for making projections of anthropogenic greenhouse gas emissions		— *Describe the process behind the selection of assumptions, methodologies and models used. Member States may also report the reasons for their choices, or cross reference to other reports providing this information.* — *If such a description has already been provided, report the changes to these processes.*
Description of procedures for the official consideration and approval of the Member States national system for policies and measures and projections		— *Describe the process for officially approving the national system or changes to the national system.* — *If such a description has already been provided, report the changes to this process.*
Information on relevant institutional administrative and procedural arrangements for domestic implementation of the EU's nationally determined contribution, or changes to such arrangements		— *Refer to the arrangements for implementing policies and measures as means of domestic implementation and to the arrangements for national projections of anthropogenic greenhouse gas emissions by sources and removals by sinks as means to track domestic progress.* — *If such a description has already been provided, report the changes to such arrangements.*
Description of the stakeholder engagement undertaken in relation to the preparation of policies and measures and projections		— *Report a description of the stakeholder engagement undertaken in relation to the preparation of policies and measures and projections. Indicate which stakeholders were consulted, and any changes or improvements made.*

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