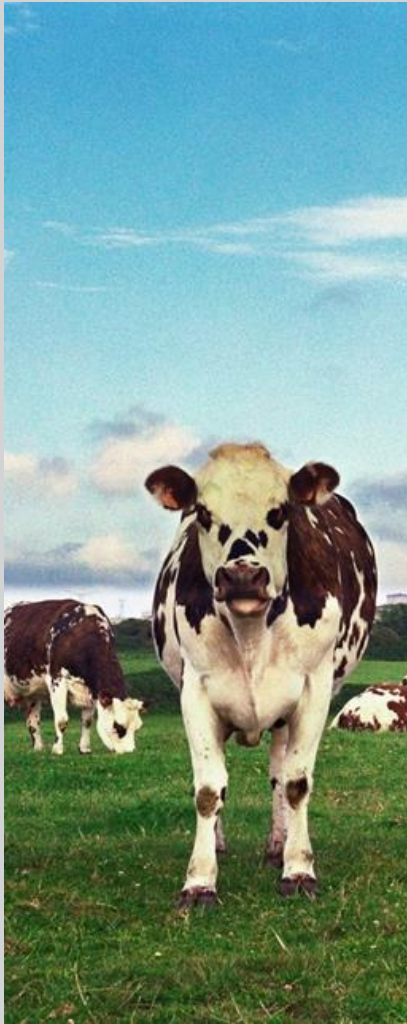


# Overview of reported national policies and measures on climate change mitigation in Europe in 2019



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## Executive summary

### Background

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 2019, EU Member States reported that they had already adopted or were planning to adopt 1 925 national policies and measures to reduce greenhouse gas emissions and achieve climate targets. Many of these measures also help achieving energy efficiency and renewable energy targets. 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 2019 by Member States to the European Environment Agency (EEA) under the EU Monitoring Mechanism Regulation. 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](#).

### Key messages

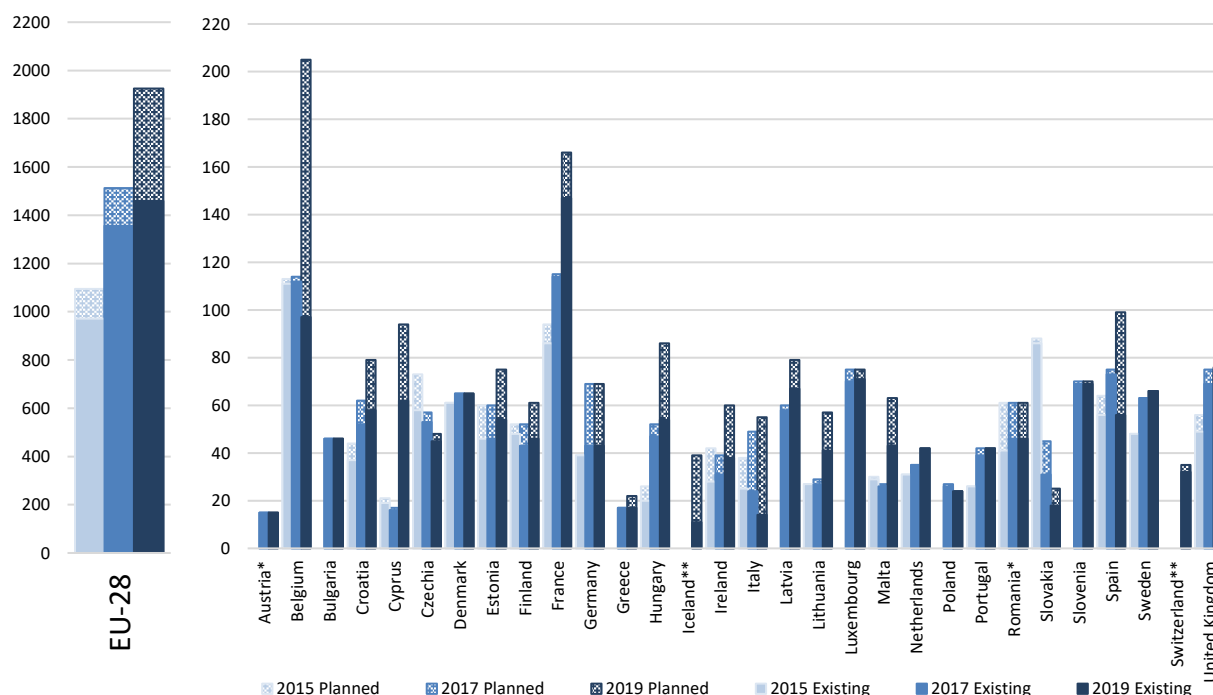
- The number of reported national policies and measures to reduce greenhouse gas emissions increased by around 27% between 2017 and 2019. Most of the new policies and measures are at planning stage.
- This increase is consistent with the reported increase in emission savings expected by 2030. It could reflect 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.
- There is more and better information on national policies and measures in comparison with previous years, in particular on the expected (ex ante) effects of these measures on greenhouse gas emissions. However, quantitative information on the realised (ex post) greenhouse gas emission savings from implemented measures remains insufficiently reported.
- In 2019, 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.
- More than 10 % are agricultural policies having effects on GHG emissions. However they are rarely quantified (18 % of single PaMs affecting the agricultural sector have at least one quantitative estimate on expected emission savings).

### Many planned policies reported across Europe

In 2017, EU Member States had reduced their emissions by more than 22 % below 1990 levels. According to their own projections, Member States expect that current policies and measures can deliver a 30 % reduction by 2030, comparing to 1990, while planned additional policies and measures could deliver a 36 % reduction by 2030.

In 2019, Member States reported more existing measures and a significantly larger number of planned policies and measures than they did in 2017 (Figure 1). This increase in the number of reported policies and measures reflects 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 yet and they are still to be implemented as reported.

**Figure ES.1 Total number of existing and planned policies and measures reported in the EU-28 (left) and by countries (right).**



**Notes:** \*2017 reporting, \*\* non-EU countries

**Source:** ETC/CME, 2019.

### Most often reported measures are economic and regulatory instruments targeting energy emissions in response to EU legislation

Of the 1925 climate change mitigation policies or measures reported by Member States in 2019:

- Most primarily target energy-related greenhouse gas emissions (which represent 80 % of all greenhouse gases emitted in the EU). Reported measures commonly address energy efficiency in buildings (18%), renewable energy deployment (16%), switching to low carbon fuels or electric vehicles (8%) and the energy efficiency of vehicles (7%).
- Most correspond to economic policy instruments (e.g. subsidies or feed-in tariffs, 44%) or regulatory instruments (e.g. energy efficiency standards, 43%).
- Many (25 %) were implemented in the 5 years following the adoption of the 2009 climate and energy package (between 2010 and 2014).
- The number of agricultural policies and measures showed a relatively larger increase between 2017 and 2019 compared to the other sectors. In 2019, Member States reported 212 agricultural policies having effects on GHG emissions. Most (72 %) were implemented in response to the EU's Common Agricultural Policy. The most reported objectives are reduction of fertilizer/manure use on cropland

(38% of all agricultural policies and measures) and improved animal waste management systems (30% of all agricultural policies and measures).

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 2009 Renewable Energy Directive, the 2012 Energy Efficiency Directive, the Effort Sharing Decision (setting national targets for emissions from the sectors not covered by the EU Emissions Trading System), the 2006 Energy End-use Efficiency and Energy Services Directive, and the 2010 recast of the Energy Performance of Buildings Directive. 27 % of reported national actions are not directly related to a specific European Union policy. Information on the individual policies and measures is available in an [online data viewer](#).

### Information on policy effectiveness improved but remains insufficient, 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.

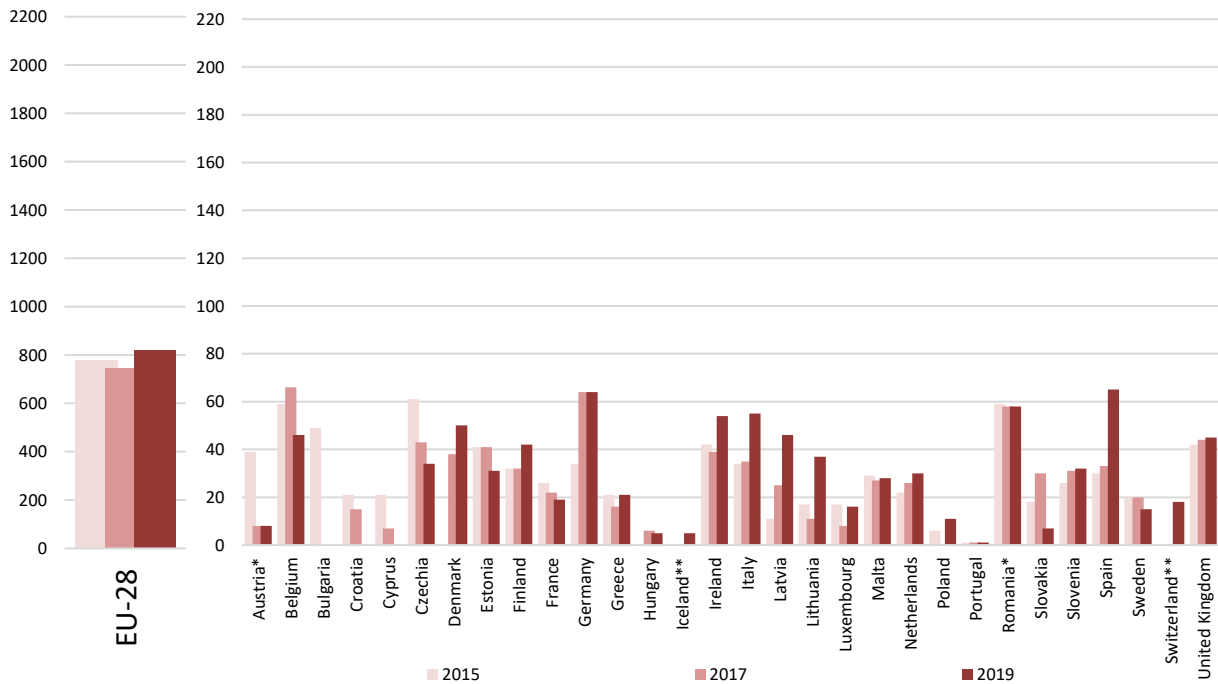
The quality of the information reported in 2019 improved in terms of its completeness, consistency, accuracy and transparency, compared with the reporting in 2017. However, quantitative information on achieved, ex post policy evaluations, costs and benefits, and indicators remains underreported.

### Reporting of expected effects from new policies

The reporting of expected, ex ante effects of policies improved in 2019 compared with 2017, but remains insufficient. 23 Member States reported some information on expected emission savings. The amount of policies with such effects differs significantly from one PaM in Portugal to more than 60 single PaMs in Germany and Spain. In total Member States reported ex ante savings in the year 2030 for 500 national policies (Figure 2).

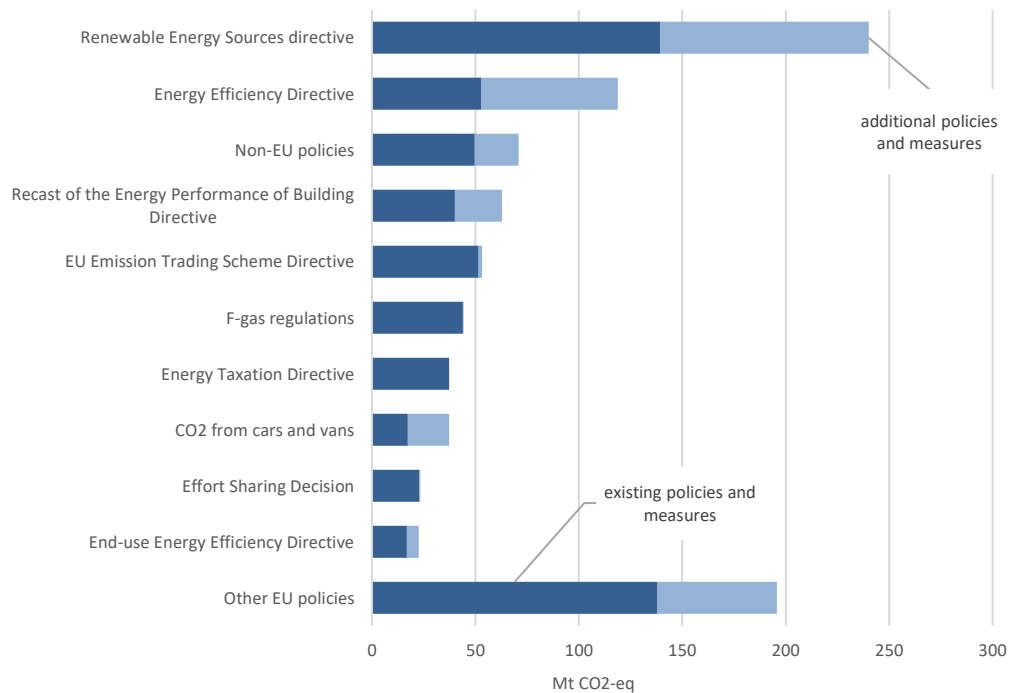
While the quantitative data of reported ex ante emission savings from national policies might not be fully complete, combining reported data does give an indication of important overarching trends. National policies linked to EU policies on the promotion of renewable energy and legislation related to improvements in energy efficiency are expected to deliver the largest emission savings by 2030 (Figure 3). Of all Union policies, these were also reported most often as the principal reason for the implementation of national policies and measures. However, there are exceptions to this proportionality. The F-gas regulations have not been linked to many national policies, yet the impact these policies have on emission savings is relatively high. On the other hand, there are many national policies that have been implemented as a result of the Common Agricultural Policy, yet the reported impact of these PaMs was relatively small (4,7 Mton CO<sub>2</sub>-eq. in 2030). Agricultural policies are rarely quantified (only 18 % of single PaMs affecting the agricultural sector have at least one quantitative estimate on expected emission savings).

**Figure ES.2 Total number of policies and measures with ex ante savings reported in the EU-28 (left) by countries (right).**



**Note:** \*2017 reporting, \*\* non-EU countries.  
**Source:** ETC/CME, 2019.

**Figure ES.3 Reported expected savings from national policies linked to key EU policies 2030.**

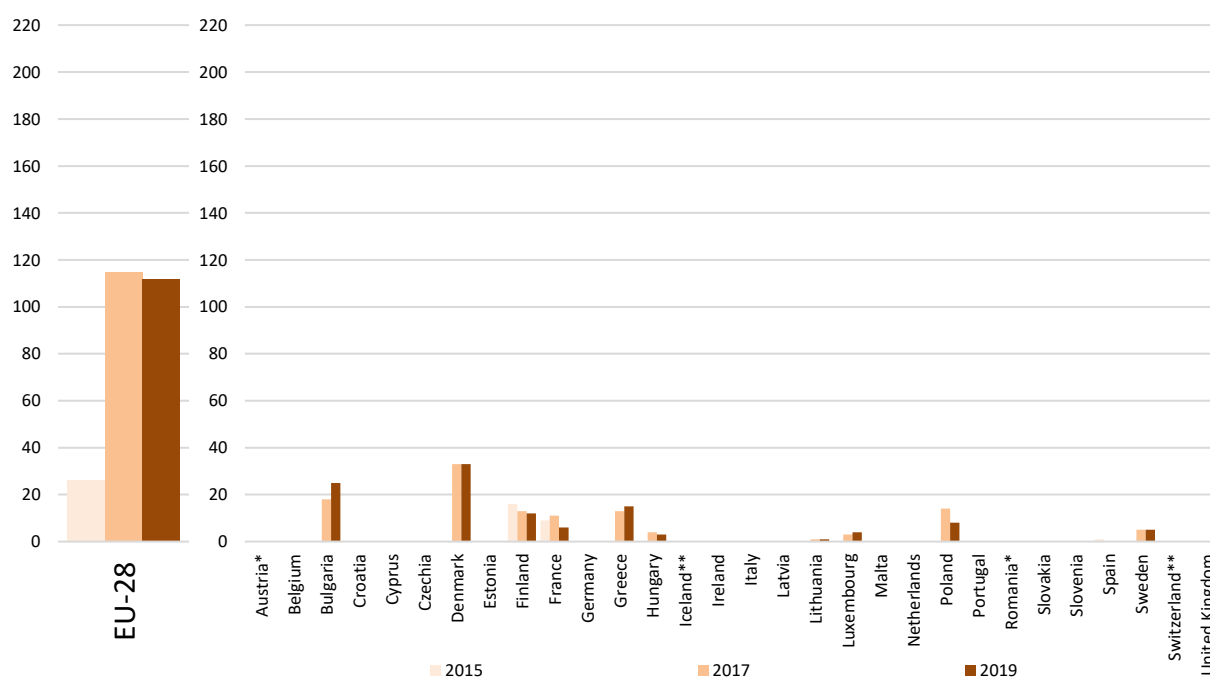


**Note:** Only EU28 countries included, for Austria and Romania reported information of 2017 was used.  
**Source:** ETC/CME, 2019.

## Reporting of ex post evaluation results

In 2019, ten Member States (Bulgaria, Denmark, Finland, France, Greece, Hungary, Lithuania, Luxembourg and Poland) reported information on the ex post emission reductions achieved, and for only 112 single policies and measures (8% of all policies reported) (Figure 4). 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.

**Figure ES.4 Total number of policies and measures with ex post savings reported in the EU-28 (left) and by countries (right).**



**Note:** \*2017 reporting, \*\* non-EU countries.

**Source:** ETC/CME, 2019.

It also highlights the further need for Member States to increase their efforts to assess the effects of their 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.



# 1 Introduction

This report presents a synthesis of the information on national climate change mitigation policies and measures (PaMs) reported by EU Member States under the EU MMR<sup>1</sup> and its Implementing Regulation<sup>2</sup>. In the MMR PaMs are defined as “all instruments which aim to implement commitments under [...] the UNFCCC, which may include those that do not have the limitation and reduction of greenhouse gas emissions as a primary objective” (EU, 2013).

Information was reported by the Member States for the first time under the MMR in 2015<sup>3</sup> (EEA, 2015). In 2016, three Member States (i.e. Cyprus, Hungary, and Denmark) submitted a questionnaire on a voluntary basis. 2017 was the second reporting year under the MMR. The information reported then was summarized in an [EEA report](#) and an [EEA briefing](#). In 2018, three Member States updated their PaM reporting, Luxembourg, Sweden and Cyprus. This report covers the information reported by Member States in the third mandatory reporting year, 2019. The reporting requirements for the MMR were elaborated in Article 22 and Annex XI of Implementing Regulation No 749/2014 on the structure, format, submission processes and review of information reported by Member States pursuant to the MMR (EU, 2014).

To facilitate reporting by Member States, the EEA developed an online reporting questionnaire starting from the 2015 reporting cycle that followed the template of the implementing act. This questionnaire was available via ReportNet and included automatic quality checks to ensure completeness of the reported information. To improve the reporting process and quality of the reported information, the EEA organized a workshop for Member States in 2016 and prepared detailed reporting guidelines to assist the Member States through all steps of the reporting process. These guidelines have been updated and further improved in subsequent years (EEA, 2019).

The data are 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 (<https://www.eea.europa.eu/themes/climate/national-policies-and-measures>). The search engine gives access to detailed information for each of the PaMs (or groups of PaMs). The EEA continues to work on improving and refreshing the display interface so that it reflects the changes in the reported information under the MMR.

## 1.1 Scope of the analysis

The analysis was based on information reported by Member States as part of their submissions under the MMR. Information requested for each measure that falls under Article 13 of the MMR and its implementing acts includes:

- name, objective (quantified if available) and description of each PaM or group of PaMs;
- type of instrument used;
- gases and sectors targeted;
- EU policy responsible for implementation of PaM;
- current status and period of implementation (start and end year);
- indicators used to monitor and evaluate progress;
- projected emissions savings (in years 2020, 2025, 2030 and 2035), divided between ETS and ESD, when available;
- entities responsible for implementing the policy;

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(<sup>1</sup>) Article 13 concerning PaMs. Other articles of Regulation No 525/2013 relate to reporting requirements concerning national GHG emissions, projections, adaptation to climate change, etc.

(<sup>2</sup>) Article 22(1) of Commission Implementing Regulation (No 749/2014).

(<sup>3</sup>) Member States have a mandatory reporting requirement on their national PaMs every two years, and can update information also annually if important changes have been implemented.

- *ex post* and *ex ante* effects on GHG emissions;
- 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 2017 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 at the link between reporting on policies and measures under the MMR and the NECD.

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 policies and measures.

## 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 (2017) and the current (2019) reporting cycle was a period with further important policy developments at international and EU level. At the International stage, the Paris Agreement requires further operationalisation and implementation, as addressed during the UNFCCC meetings in Marrakesh and Katowice. In a number of EU countries, the adoption of the Paris Agreement has already resulted in an increase of the ambition level for 2030 and 2050 (e.g. the Netherlands<sup>4</sup>, Finland and the United Kingdom<sup>5</sup>). Countries are still in the process of translating this higher ambition level into concrete policies and measures.

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<sup>6</sup>, renewable energy<sup>7</sup>, GHG emission targets not covered by the EU Emission Trading System<sup>8</sup>, LULUCF<sup>9</sup>, and on the Governance of the Energy Union and Climate Action<sup>10</sup>.

One important first action from the Energy Union and Climate Action Governance was that Member States had to submit a draft Integrated National Energy and Climate Plan by the end of 2018. These plans had to specify all Member States' national objectives and contributions to EU targets across the five dimensions of the Energy Union, including decarbonisation. The plans also had to define the policies and measures to achieve these targets. While a large majority of Member States are on track to achieve their 2020 targets on non-ETS greenhouse gas emission reductions, renewable energy and energy efficiency (EEA, 2018) with existing PaMs, analysis shows that these policies will not deliver on the 2030 objectives. Additional actions will be needed and, for many Member States, these policies and measures will have to be implemented in the short term to be able to close the gap between the projected emissions and the emission reduction target.

### 2.2 New national climate PaMs

The total number of PaMs reported increased from 1 513 in 2017 to 1 925 in 2019<sup>11</sup>. There are on average 69 single PaMs per Member State. This is a 27% increase compared to 2017. In most countries, the number of reported single PaMs increases over time, with the highest number of single measures reported in 2019. This is the case for example for France, Spain, Hungary, and Sweden. There are only a few clear exceptions to this rule, such as Czechia and Slovakia. 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

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<sup>(4)</sup> <https://www.government.nl/topics/climate-change/climate-policy>

<sup>(5)</sup> <http://www.legislation.gov.uk/ukxi/2019/1056/made>

<sup>(6)</sup> DIRECTIVE (EU) 2018/2002 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 11 December 2018 amending Directive 2012/27/EU on energy efficiency

<sup>(7)</sup> DIRECTIVE (EU) 2018/2001 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 11 December 2018 on the promotion of the use of energy from renewable sources

<sup>(8)</sup> REGULATION (EU) 2018/842 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 30 May 2018 on binding annual greenhouse gas emission reductions by Member States from 2021 to 2030 contributing to climate action to meet commitments under the Paris Agreement and amending Regulation (EU) No 525/2013.

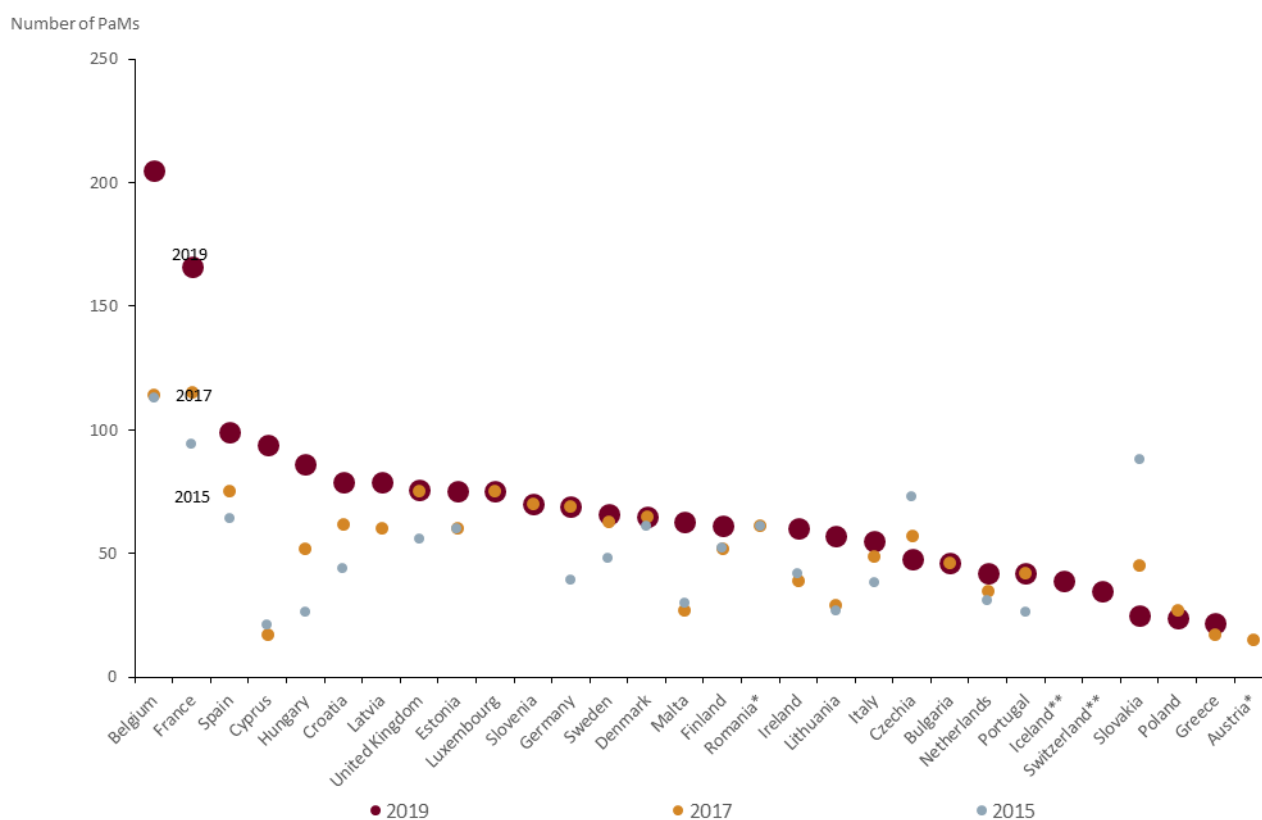
<sup>(9)</sup> REGULATION (EU) 2018/841 of the European Parliament and of the Council of 30 May 2018 on the inclusion of greenhouse gas emissions and removals from land use, land use change and forestry in the 2030 climate and energy framework

<sup>(10)</sup> 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.

<sup>(11)</sup> For countries that did not report in 2019, the most recent available reporting was used.

reported PaMs even larger. Belgium and France still report the most individual measures and Austria (2017 report), Greece, and Poland 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 MMR reporting. In addition, Belgium, Cyprus and other countries reported many new planned PaMs that were also included in their NECP. The number of single PaMs is therefore not a good indicator of the past, current and future ambition level of Member States. Completeness of reporting on the impact of PaMs ex post or ex ante is shown in Figure 2.2 and shows the lack of especially quantitative ex post data.

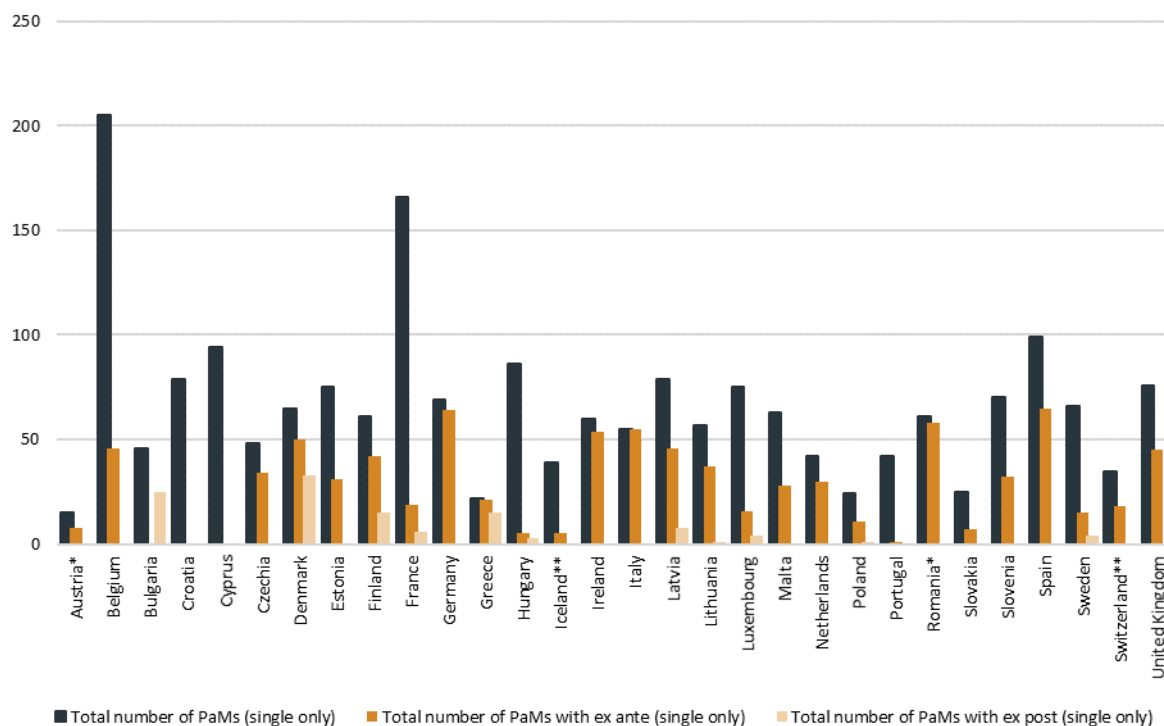
**Figure 2.1** Number of single policies and measures reported by Member States in different reporting years.



**Note:** \*\* denotes non-EU countries, \* denotes 2017 reported information was used.

**Source:** ETC/CME, 2019.

**Figure 2.2** Number of policies and measures with ex post and ex ante impact reported by Member States in 2019.



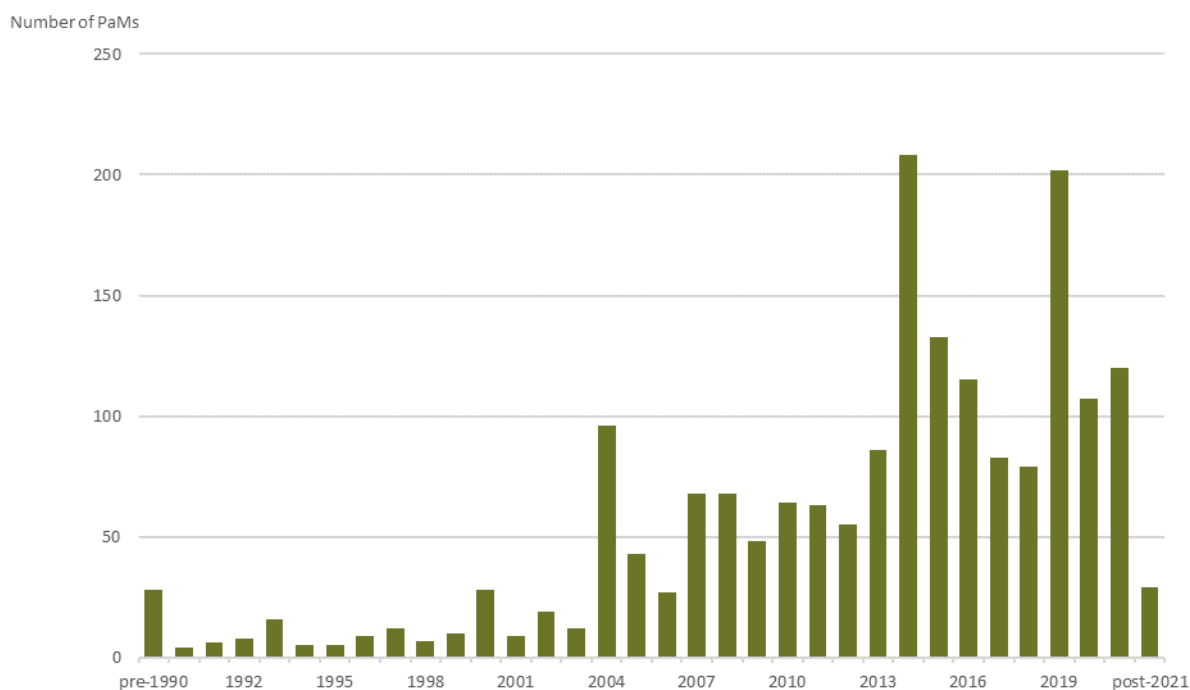
**Note:** \*\* denotes non-EU countries, \* denotes 2017 reported information was used.  
**Source:** ETC/CME, 2019.

Looking at the starting year of these reported PaMs (Figure 2.3), there appear to be three periods of acceleration of policy development. In 2004 there are markedly more policies and measures implemented than before. This is mainly caused by one Member State, Belgium, reporting several PaMs starting in 2004. The most single PaMs started in 2014 and the number of new PaMs implemented in subsequent years starts to decline. This pattern is very consistent with the observed pattern in the report of 2017.

Interestingly, from 2018 onwards the number of new PaMs expected to start per year, starts increasing again with a peak in 2021<sup>12</sup>. This seems to reflect that many Member States 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 MMR. While this is certainly not applicable to all countries, 20 countries reported PaMs starting in 2020 or later. Germany, Estonia, Spain, Croatia, Ireland, Italy, Lithuania, Latvia, and Malta each reported more than 10 single PaMs starting in 2020 or later.

<sup>(12)</sup> The peak in number of PaMs in 2019 is caused almost exclusively by Belgium who used this as a default starting year for planned PaMs.

**Figure 2.3** Number of single policies and measures reported by EU Member States per start year.



**Note:** Only EU-28 countries, data from Austria and Romania from 2017.

**Source:** ETC/CME, 2019.

Out of the 1 925 single PaMs, there were 537 from EU Member States that were implemented after 2017, which can be considered 'new' PaMs.

The status of implementation of the reported PaMs can be classified as follows:

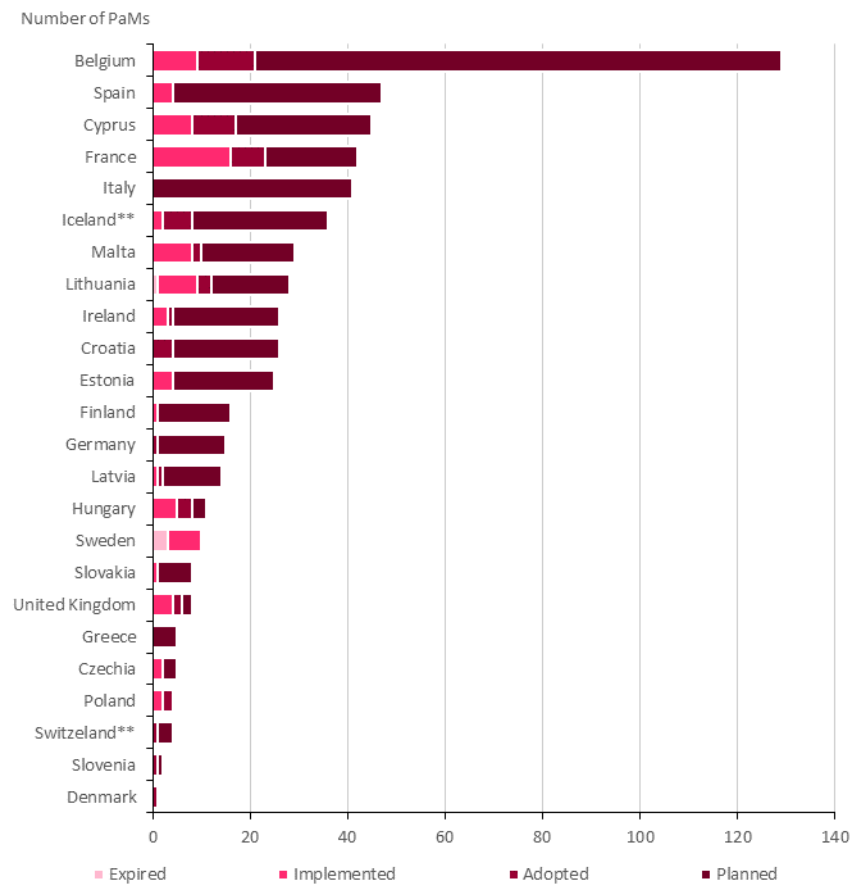
- *planned*: planned PaMs are options under discussion that have a realistic chance of being adopted and implemented in the future;
- *adopted*: adopted PaMs are those for which an official government decision has been made and for which a clear commitment to proceed with implementation exists;
- *implemented*: 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 GHG emissions savings.

Most of the single PaMs starting after 2017 are planned (75%), but there is still a significant number of PaMs that have already been implemented in 2018 or early 2019 (15%) or adopted (9%). Nevertheless, there is a higher overall rate of reporting planned PaMs in 2019 than in previous years (Figure 2.4). In 2017 reporting, 10% of single PaMs were planned, while in 2019 this has increased to 25% of all PaMs. Again, one explanation why Member States have reported considerably more planned PaMs could be the preparation 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 GHG 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 2.4** Number of expired, implemented, adopted, and expired single policies and measures with start year after 2017.



**Note:** \*\* denotes non-EU countries.

**Source:** ETC/CME, 2019.

**Table 2.1 New National developments in reporting on policies and measures, starting after 2017**

Country	Recent policy developments
Austria*	NA (no new PaMs reported)
Belgium	Belgium reported 108 planned national and regional PaMs, also included in their draft NECP. These additional PaMs should put Belgium on track to achieve their 2030 energy and emission reduction targets. Few PaMs are planned affecting the emissions from waste sector, LULUCF or industrial processes. For the other sectors, many planned PaMs are reported using different instrument types to reduce GHG emissions.
Bulgaria	NA (no new PaMs reported)
Croatia	In Croatia the energy efficiency obligation scheme, still planned in previous reporting, is now adopted and started in 2019. Of the 25 other measures reported to start after 2017, nine target the energy sector, nine the agricultural sector, three the waste sector, with remaining PaMs in cross-cutting sectors, LULUCF and industrial processes sector.
Cyprus	Three policies starting later than 2017. Two measures to promote biogas usage from animal waste and waste sites. One measure in reaction to the F-gas regulation, supporting recovery of HFCs and SF6 from equipment. [To be updated when data is uploaded – many new policies and measures added. Mostly in energy supply, consumption and transport.]
Czechia	There are five PaMs with start year after 2017. Two relate to the implementation of economic and tax instruments in the transport sector (such as road toll). In addition, one measure to further implement the Energy Efficiency Directive in Czechia, proposed measures included in the National Forest Plan II, and the implementation of the Kigali amendment.
Denmark	Only one measure to invest in infrastructure that will reduce transport emissions.
Estonia	Estonia reported 25 PaMs starting between 2018 and 2021, which suggests that Estonia plans to expand its actions to reduce GHG emissions quite significantly in short term. Most of the PaMs are however still planned, only the road usage fees for heavy duty vehicles has been implemented. In addition to this PaM, 12 other transport PaMs are planned promoting fuel efficient and electric vehicles, improving rail infrastructure to promote modal shift, and fiscal measures such as road usages fees and congestion charging. Also in the agricultural sector several additional PaMs are planned. PaMs to reduce fertilizer use, recover biomethane from manure, and improved soil and cropland management.
Finland	Finland reported 17 new planned PaMs. Most of these PaMs aim to reduce GHG emissions from fossil fuel combustion by fuel switching and promotion of renewable energy sources in transport, heating and cooling and electricity. Finland submitted a bill to parliament end of 2018 to ban coal-fired power plants by 2029.  With respect to energy efficiency, Finland plans new regulations to promote near-zero energy buildings. In the transport sector additional measures to increase vehicle efficiency and modal shift are reported. Promotion campaigns and public procurement rules in 2019 will be implemented to support the transition to non-HFC technologies and reduce F-gas emissions.
France	The 2019 reporting has 42 PaMs starting in 2018 or later. Thirteen PaMs relate to the implementation of the multi-annual programme on energy 2019-2028, which foresees strengthening existing measures to promote renewable energy sources for electricity, heating and cooling, and transport. In addition, the programme foresees the closure of coal-fired power plants by 2022. Additional PaMs are foreseen to improve energy efficiency of buildings, promote the modal shift in the transport sector, increase the use of non-HFC refrigerants, improve forest management and reduce emissions from the agricultural sector. Only five PaMs will start later than 2019.
Germany	Germany implemented several additional measures to strengthen the EU F-gas regulation, supporting the shift towards non-HFC refrigerants. Several measures starting 2018 and later are extensions, prolongations, further developments and reforms of existing PaMs, such as the renewable energy act, funding for electricity from combined heat and power, and KfW programmes to financially support ambitious energy standards for new buildings and renovations. With respect to energy efficiency improvements, Germany reported planned energy efficiency obligation scheme as of 2021 for fuel and electricity consumption in residential buildings.
Greece	Five planned PaMs were reported to continue policy developments in the areas of promoting natural gas and energy efficiency in industry, the tertiary and residential sector, increasing the share of renewable energy in electricity generation to 62.5% in 2030, and increasing the share of biofuels and electric passenger vehicles in the transport sector.



Country	Recent policy developments
Hungary	Hungary added 32 planned PaMs to the questionnaire, many of which are still not very concrete and information on e.g. start year is missing. For the new PaMs that are most concrete, an important overarching cross-cutting policy is Hungary's Second National Climate Change Strategy 2018-2030, with an outlook to 2050. This strategy will be implemented by the Climate Change Action Plan. Three PaMs are targeting emissions from agriculture and LULUCF, promoting afforestation and agroforestry on agricultural land.
Ireland	Ireland is examining a coal phase-out by 2026 and has reported a replacement of coal-fired electricity generation with natural gas as planned PaM. Most of the 26 PaMs starting after 2017 are aimed at improving energy efficiency in industry, SMEs and households. While some PaMs are technology neutral, specific instruments to support heat pumps, smart meters, and combined heat and power are also implemented and planned. In the transport sector, PaMs increasing the share of biofuels and grants for electric vehicles are planned.
Italy	Italy reported 41 PaMs starting between 2019 and 2020. These PaMs only target energy supply, energy consumption and transport. No waste, agriculture, or LULUCF PaMs are reported with a starting year beyond 2017. Italy reports the phase-out of coal that will start in 2020 and should result in a complete decommissioning of coal-fired power plants by 2025. In addition, new PaMs supporting renewable energy sources from large and small plants is reported.
Latvia	Most of the 14 PaMs from 2018 onwards are affecting emissions from agriculture. These measures are expected to in 2021 and include specific measures to reduce fertilizer use, promote biogas, and very specific measure to increase the carbon stock in soils. District heating is important in Latvia and a regulation defining minimum energy efficiency requirements of district heating technologies was implemented in 2018.
Lithuania	Lithuania reported 28 new PaMs, most of these expected to start from 2021. Most PaMs affect emissions in three sectors: transport, agriculture, and energy consumption in buildings. In the transport sector new PaMs mostly aim to reduce emission intensity of transport via electrification of rail transport, promoting LNG in transport, and support eco-driving. To reduce emissions from energy consumption, Lithuania planned additional PaMs to promote near-zero energy buildings and invest in energy efficiency improvements of public buildings. Most agricultural new PaMs start in 2021 and aim to increase awareness and knowledge on advanced agro technologies and farming solutions to reduce GHG emissions.
Luxembourg	NA (no new PaMs reported)
Malta	Malta has reported 32 single new PaMs in three main sectors. In the transport sectors, 16 new PaMs provide incentives for public transport, non-motorized transport, and measures to increase energy efficiency of passenger cars (e.g. car sharing, low emission zone). Four new measures further implement the F-gas regulation in Malta. In the energy sector, the Malta-Italy Gas Pipeline Project to be operational in 2024, will mean a shift from oil to natural gas. Further policy developments to support, mostly solar, renewable energy sources is also foreseen. The only new PaM in the waste sector, aims he development of a Waste to Energy facility.
Netherlands	NA (no new PaMs reported)
Poland	The most important new PaM in Poland is the further development of Polish Nuclear Power Program. While this PaM was reported in previous reporting cycle, it is expected that construction will start in 2033.
Portugal	NA (no new PaMs reported)
Romania*	NA (no new PaMs reported)
Slovakia	The new PaMs reported by Slovakia focus mostly on decarbonizing the energy system. In 2023 and 2025 two coal-fired power plants will be decommissioned and replaced by increased shares of renewables and nuclear power in the energy mix.  Slovakia adopted the Waste Prevention Programme 2019-2025. This programme aims to reduce waste and improve waste treatment.
Slovenia	Slovenia plans to implement two measures in 2020 to increase the share of renewable energy in district heating systems and to increase energy efficiency of public buildings.
Spain	Spain reported 47PaMs starting 2018 or later. Policies and measures cover all sectors but most policies and measures are linked to energy; energy supply, energy consumption and transport. Most policies and measures are expected to start in 2021 and are part of the draft National Energy and Climate Plan of Spain.

Country	Recent policy developments
Sweden	Sweden reported ten single PaMs starting in 2018. Six of these PaMs affect emissions from the transport sector. Electric cars are supported via grants for installing charging infrastructure at home. A premium to purchase electrical bicycles and scooters was also implemented to enhance modal shift. Sweden also implemented a tax on air travel in 2018. Finally, a tax exemption for environmentally friendly vehicles was replaced by a bonus-malus system for new light vehicles.
United Kingdom	Eight PaMs reported to start after 2017. Three focusing on improving energy efficiency and renewable energy for heating and cooling. In the transport sector, the UK reported a PaM to increase the share of biofuels by 2032. The most important planned PaM is the continuation of the Contract for Difference, the United Kingdom's main instrument to promote renewable electricity generation.

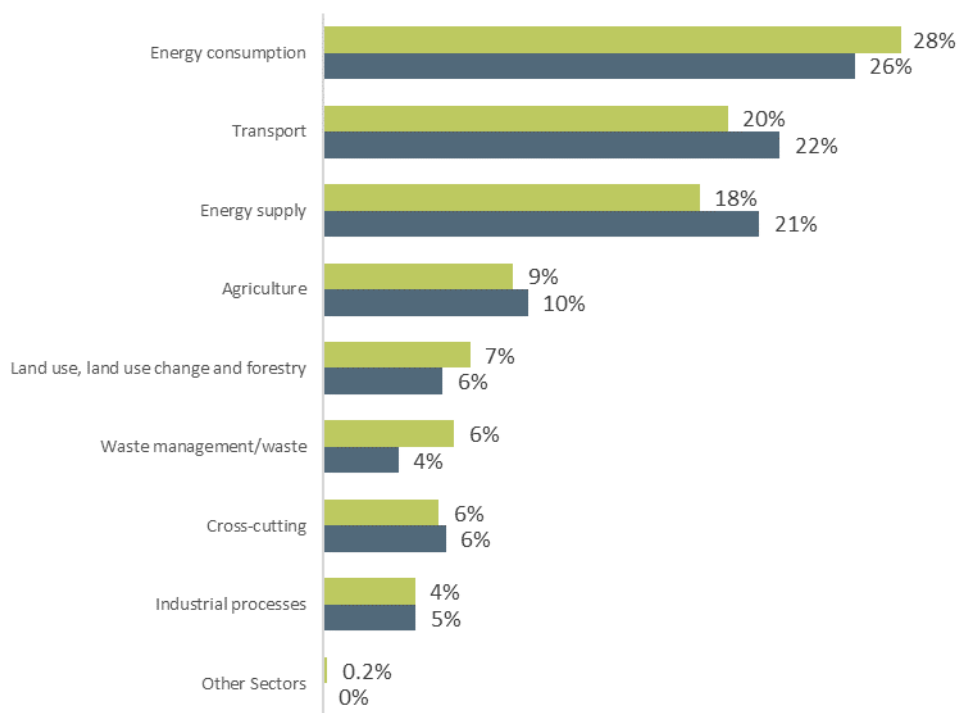
**Note:** \*data from Austria and Romania of 2017. Austria did not provide information in the correct format so the data could not be further processed.

**Source:** ETC/CME, 2019.

The characteristics of these new PaMs with start year later than 2017 are somewhat different from the group of all PaMs. Looking at the targeted sectors, there are relatively less new PaMs targeting the waste and LULUCF sector than the group of all reported PaMs (Figure 2.5). On the other hand, there are relatively more new PaMs targeting the energy supply and transport sector.

With respect to the instrument type, new PaMs with start year later than 2017 are similar to all other PaMs. Economic and regulatory instrument types are predominantly used in both cases, respectively 44% and 43% for all PaMs and 44% and 39% for new PaMs, while the other instrument types have a much smaller but also similar share. The most important difference between all and new PaMs is that new policy instruments are more frequently planning instruments (23% versus 15%).

**Figure 2.5** Share of single policies and measures per sector with start year after 2017 (blue) and all single policies and measures (green).



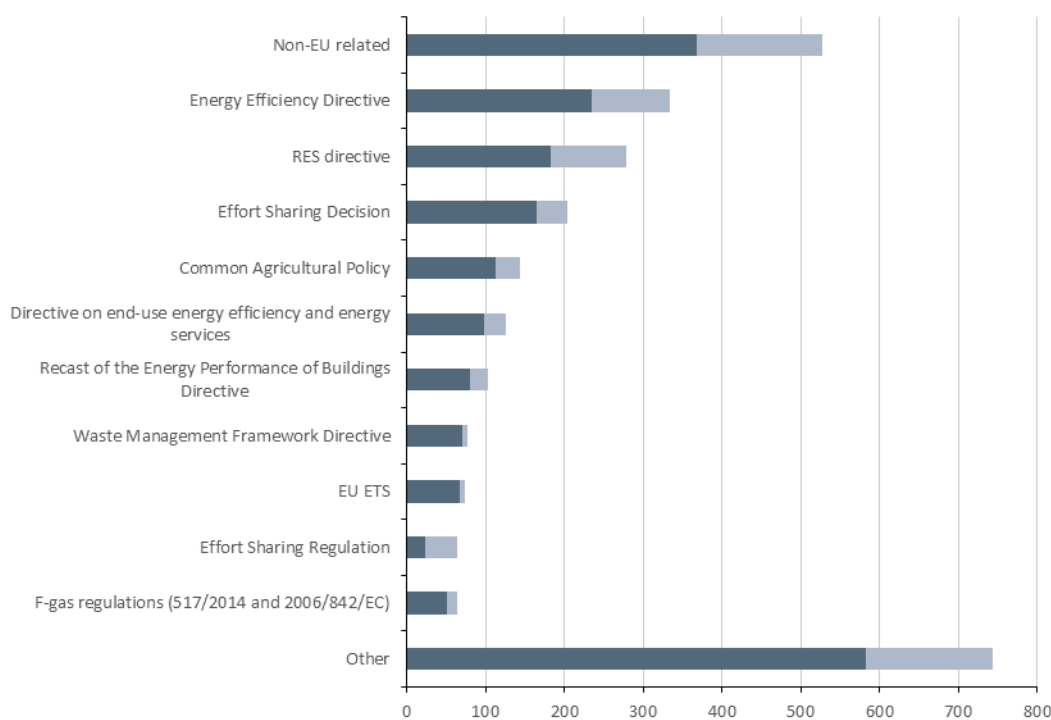
**Note:** Only EU-28 countries, data from Austria and Romania from 2017.

**Source:** ETC/CME, 2019.

Most single national policies and measures are implemented in response to one or more Union policies (Figure 2.6). The Union policies that were selected most were related to Union energy efficiency and renewable energy policy the Energy Efficiency Directive (2012/27/EU), the Renewable Energy Directive (2018/2001), the Directive on end-use energy efficiency (2006/32/EC), and the recast of the Energy Performance of Buildings Directive (2018/844). The Effort Sharing Decision (406/2009/EC) and its successor the Effort Sharing Regulation (2018/842) is also an important driver for the implementation of national 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. The category other refers to more than 30 other Union policy covering all sectors.

There are differences between older (start date up to 2017) and newer (start date after 2017) policies and measures with respect to the selected Union policies that drive implementation of national policies and measures. In newer policies and measures, the Renewable Energy Directive, is the Union policy that is selected most frequently. Also the Effort Sharing Regulation is linked to many new national policies and measures, which reflects that Member States are already planning or taking actions in order to meet 2030 emission reduction targets in sectors not-covered by the EU ETS.

**Figure 2.6** Number of single policies and measures reported to be implemented in response to Union policies with start year up to 2017 (dark) and after 2017 (light).



**Note:** Only EU-28 countries, data from Austria and Romania from 2017.

**Source:** ETC/CME, 2019.

### 2.3 Link with the draft integrated National Energy and Climate plans.

End of 2018, Member States had to submit their draft first Integrated National Energy and Climate Plan (NECP). These plans should detail the country’s objectives and targets across all five dimensions of the Energy Union and describe the existing and additional policies and measures to ensure that these targets will be achieved. By covering the five dimensions of the energy union, Member States should ensure that the plans are consistent and coherent across dimensions. The plans also help to identify whether the

combined efforts across EU Member States are sufficient to achieve EU wide targets, for example on renewable energy and energy efficiency. The EU wide assessment of the European Commission showed that the level of ambition with respect to renewable energy and energy efficiency is not sufficient, while emission reduction targets are in line with the EU-wide objective of a 40% emission reduction.

The assessment of the European Commission (and also other assessments of the draft NECPs such as Duwe et al., 2019), found that the planned national policies and measures in the draft NECPs are not sufficient to achieve the emission reductions needed to meet the target under the Effort Sharing Regulation, although that gap between projected emissions with planned measures and the target is considerable smaller than previously reported. Information provided by Member States on their existing and especially planned policies and measures to achieve 2030 targets and objectives in their NECPs is however not always transparently reported.

There was an overlap in timing between preparation and finalization of the Integrated National Energy and Climate Plans (respectively end of 2018 and end of 2019) and the preparation and submission of information on greenhouse gas emission policies and measures under the MMR. An overview per Member State is provided in the table below (Table 2.2.).

**Table 2.2 Link between reporting on climate mitigation policies and measures in the National Energy and Climate Plans and under the Monitoring Mechanism Regulation.**

Member State	Link between NECP and MMR reporting
Austria*	Austria did not provide information in the correct format in 2019 and therefore information was used from 2017. This does not include additional measures in line with the NECPs.
Belgium	Belgium included many new planned policies and measures in the MMR reporting, also included in their NECP. The link to the NECP is included in the MMR reporting, but the planned policies and measures are not always very concretely described. These additional measures correspond with significant emission reductions in the 2019 WAM projections, especially in the sectors transport and buildings.
Bulgaria	The 2019 submission does not reflect planned policies and measures included in the NECP. Only implemented policies and measures reported by Bulgaria.
Croatia	Planned policies and measures included in the draft NECP are also reported in the MMR reporting. Resulting in additional emission reductions in the WAM projections in mainly the sectors waste, industrial processes and manufacturing industries. Croatia reported in their NECP that the 2030 Effort Sharing target can be achieved with existing measures.
Cyprus	Planned policies and measures included in the draft NECP also reported in the MMR reporting.
Czechia	The MMR reporting does not include many planned policies and measures (only three). These are not linked (e.g. via a reference) to the NECP.
Denmark	Denmark did not include planned policies and measures of the NECP in the MMR reporting because these can still change considerably.
Greece	Greece reported in their NECP that the 2030 Effort Sharing target can be achieved with existing measures. The 2019 MMR reporting includes 5 planned policies and measures in the transport sector and promotion of renewable energy and natural gas in industry and buildings. .
Estonia	Estonia reported 21 planned policies and measure, 8 of which were reported for the first time in 2019. The latter were all planned agricultural policies and measures. None of these policies and measures have been linked to the draft NECP.
Finland	Finland reported 11 new policies and measures compared to 2017 reporting, but none was explicitly linked to the draft NECP, e.g. in the description of the PaM or an added reference to the NECP.

Member State	Link between NECP and MMR reporting
France	France reported 19 planned policies and measures, mostly affecting emissions from the sector energy supply. None of these have been explicitly linked to the draft NECP, but to the Multi-annual Energy Programme (2019-2028).
Germany	Reporting largely the same as in 2017.
Hungary	Planned policies and measures included in the draft NECP also reported in the MMR reporting. The policies and measures are not very defined and some information on key characteristics could not yet be provided.
Ireland	22 planned policies and measures were reported by Ireland in 2019, almost exclusively policies and measures reducing emissions from fossil fuels (energy supply, consumption and transport). These measures have not explicitly been linked to the draft NECP, e.g. in the description of the PaM or an added reference to the NECP. However MMR reporting and NECP seems coherent, e.g. Carbon tax included in both.
Italy	Italy reported 41 planned policies and measures. With the exception of three policies and measures, all are expected to start in 2020. Sectors affected by these policies and measures are energy supply, energy consumption and transport. The link with the NECP is not explicitly made, but policies and measures were often implemented in response to the Effort Sharing Regulation, the RES directive and the Energy Efficiency Directive.
Latvia	Latvia reported 12 planned policies and measures, 9 of which affecting LULUCF emissions.
Lithuania	Lithuania reported 16 planned policies and measures. Most affect emissions from agriculture, but policies and measures affecting transport sector are also important. No reference is made to the NECP.
Luxembourg	Reporting largely the same as in 2017.
Malta	The number of policies and measures increased with 41 compared to 2017 reporting. Most of these are in the planning phase. While none of these are explicitly linked to the draft NECP in the MMR reporting, this seems to be the case.
Netherlands	Eight policies and measures were added to the reporting, but all were already implemented and therefore do not seem to be related to the draft NECP.
Poland	Reporting largely the same as in 2017.
Portugal	Reporting largely the same as in 2017.
Romania*	Romania did not report in 2019.
Slovakia	Changed reporting significantly reporting on existing policies and measures. Also planned policies and measures reported, but these do not make a reference to the draft NECP.
Slovenia	Reporting largely the same as in 2017.
Spain	Spain included over 40 policies and measures that are linked to the draft NECP in the MMR reporting (either mentioned in description or reference is made to the draft NECP). This included policies and measures to promote renewable energy, increase energy efficiency and reduce emissions from the transport sector. Agricultural, land use and waste policies and measures of the draft NECP were also included, but to a lesser extent (4 policies and measures).
Sweden	Reporting largely the same as in 2017. No impact of the draft NECP on reporting.
United Kingdom	The United Kingdom reported eight new policies and measures compared to the 2017 reporting. None of these appear to be linked to the draft NECP.

## 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 to achieve other goals as well as those relating to climate change mitigation, interactions between instruments as well as external changes make the distinction of effects of one instrument very difficult. Moreover, there are different methodological approaches possible and assumptions needed, which have a significant impact on the results. This complicates comparing and adding up *ex post* emission savings.

The reporting on *ex post* emission savings should be considered as very incomplete. In 2019, 10 countries reported quantitative data on *ex post* emission savings: Bulgaria, Denmark, Finland, France, Greece, Hungary, Lithuania, Luxembourg, Poland and Sweden. This is a further improvement compared to 2017 and 2015, when only nine and three countries reported *ex post* results respectively.

Not only did more countries report *ex post* data, also quantitative data was provided for more single or grouped PaMs. Compared to 2017, there are 3 PaMs less for which *ex post* data is available although the number of entries increased from 101 to 110:

- Bulgaria: Increased completeness from 18 in 2017 to 25 different PaMs in 2019 (38 different entries<sup>13</sup>). Emission savings for 2014 and 2016 reported most.
- Denmark: Reported *ex post* data for two grouped PaMs in 2017 and 2019 (all renewable energy and all energy efficiency PaMs, comprising 33 single PaMs). Both cover the emission savings in the year 2014.
- Finland: Decreased completeness from 13 in 2017 to 12 different PaMs in 2019 (for all PaMs on one year). *Ex post* impact was mostly assessed for the year 2015.
- France: Decreased completeness from 11 in 2017 to 6 different PaMs in 2019 (13 different entries). *Ex post* impact was mostly assessed for the year 2014, 2015, and 2016.
- Greece: Increased completeness from 13 in 2017 to 15 different PaMs in 2019 (28 different entries). *Ex post* impact was mostly assessed for the year 2015.
- Hungary: Decreased completeness from four in 2017 to three different PaMs in 2019 (for one PaM data for two different years). *Ex post* impact was mostly assessed for the year 2015.
- Lithuania: Reported data for one PaM in 2019 and 2017 (one entry on the impact in 2015).
- Luxembourg: Increased reporting from three in 2017 to four different PaMs in 2019 (4 entries). *Ex post* impact was only assessed for the year 2015.
- Poland: Decreased reporting from 14 in 2017 to 8 different PaMs (for all PaMs on one year). *Ex post* impact was mostly assessed for the year 2018.
- Sweden: Reported data for one grouped PaM in 2019 (consisting of 5 single PaMs, one entry on the impact in 2015).

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

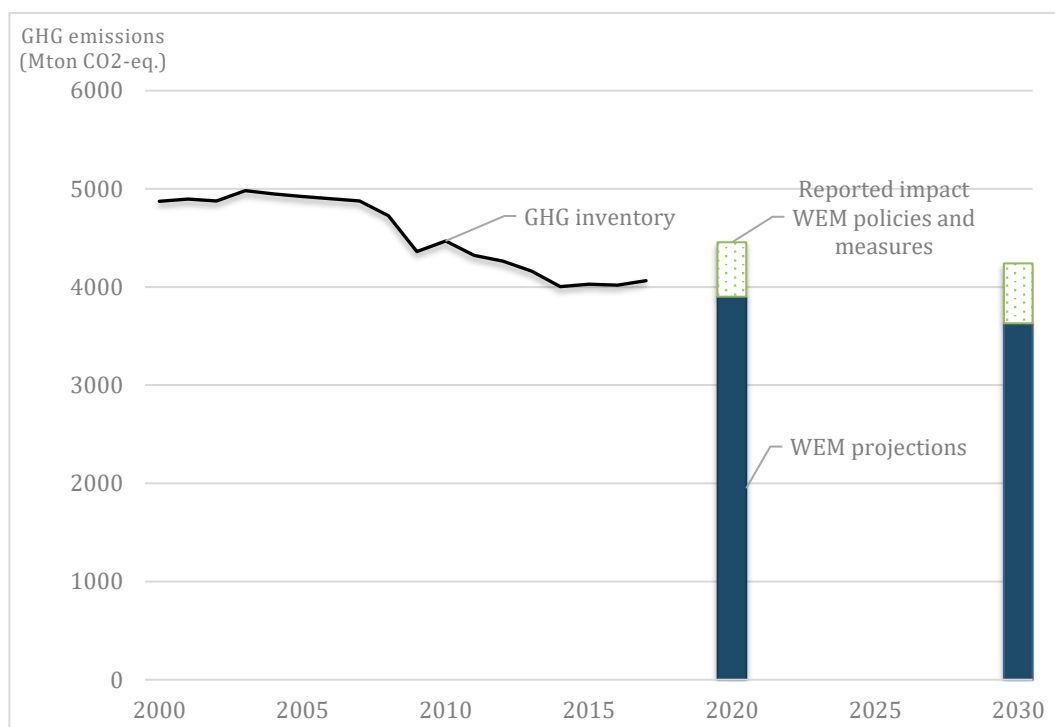
Reporting of quantitative data is only mandatory when available. *Ex ante* estimates of PaMs emissions savings have to be reported for a sequence of four years ending with 0 or 5 immediately following the reporting year (i.e. 2020, 2025, 2030 and 2035). This ensures that data for the same years and for the same period are obtained.

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<sup>(13)</sup> Different year and PaM combinations. There can be more than one entry per PaM, e.g. *ex post* impact for two different years.

Information on aggregated, *expected* emission savings in relation to historic and projected 2020 and 2030 GHG emissions for the EU-28 are presented in Figure 3.1. Expected emission savings are reported for less than 40 % of total reported PaMs.

**Figure 3.1** Aggregated reported expected emission savings of policies and measures in 2020 and 2030 in relation to historic and projected GHG emissions (including LULUCF).



**Note:** Only EU-28 countries, data from Austria and Romania from 2017. Data on greenhouse gas emission projections available here <https://www.eea.europa.eu/data-and-maps/data/greenhouse-gas-emission-projections-for-6>.

**Source:** ETC/CME, 2019.

The EU-28 historic greenhouse gas emissions decreased between 2000 and 2017. 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 GHG 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’.

Twenty five Member States reported quantitative *ex ante* savings for at least one year and at least one PaM. There is no specific guidance provided on methods for assessment of *ex ante* impacts for MMR reporting, 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 particularly difficult. During QC, the total reported emission savings resulting from the PaMs were compared with:

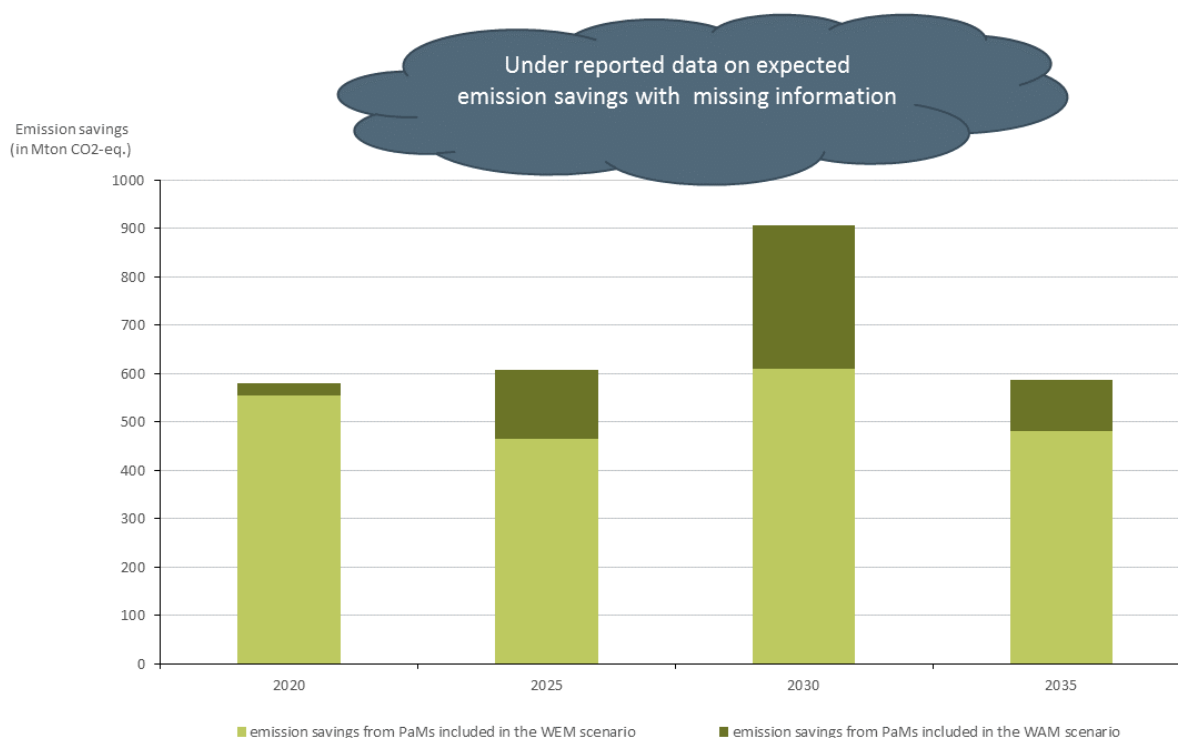
- Historic emissions and total projected emissions for 2020 in the WEM scenario, in the case of existing measures;
- The difference between WEM and WAM scenarios in the case of additional measures.

In order to identify savings related to specific policies and sectors, the savings from Member States' submissions in reporting table 2 were subdivided and allocated to individual EU policy and sector

categories. The method used for splitting PaMs by EU policy and sector divides savings equally across the EU policies and sectors linked to the PaM. For example, where three EU policies have been linked to a PaM, the saving is divided by 3 and one-third is attributed to each of the EU policies. The same process is done for sectors. Data for the years 2025 and 2035 are not considered complete. Therefore, the analysis has focused on the year 2020 and 2030. While the quantitative data of reported *ex ante* emission savings from national policies and measures might not be fully complete or consistent, combining reported data does give an indication of important overarching trends.

The savings for 2025–2035 are not consistent with expectations for increasing savings and appear to be incomplete. In numerous cases, Member States present quantified savings for 2020 but not for 2025, 2030 or 2035, even though these policies are considered to be in place and delivering at least 2020 level savings (Figure 3.2). The completeness of reporting has improved however. Of the 1 925 PaMs, 497 had *ex ante* emission savings reported for 2020 different from zero and 500 had *ex ante* savings reported for 2030<sup>14</sup>. For 2025 and 2035, reporting was less complete, with respectively 466 and 381 policies and measures.

**Figure 3.2** Reported expected emission savings of policies and measures (including LULUCF) in 2020 to 2035.



**Note:** Only EU-28 countries, data from Austria and Romania from 2017.

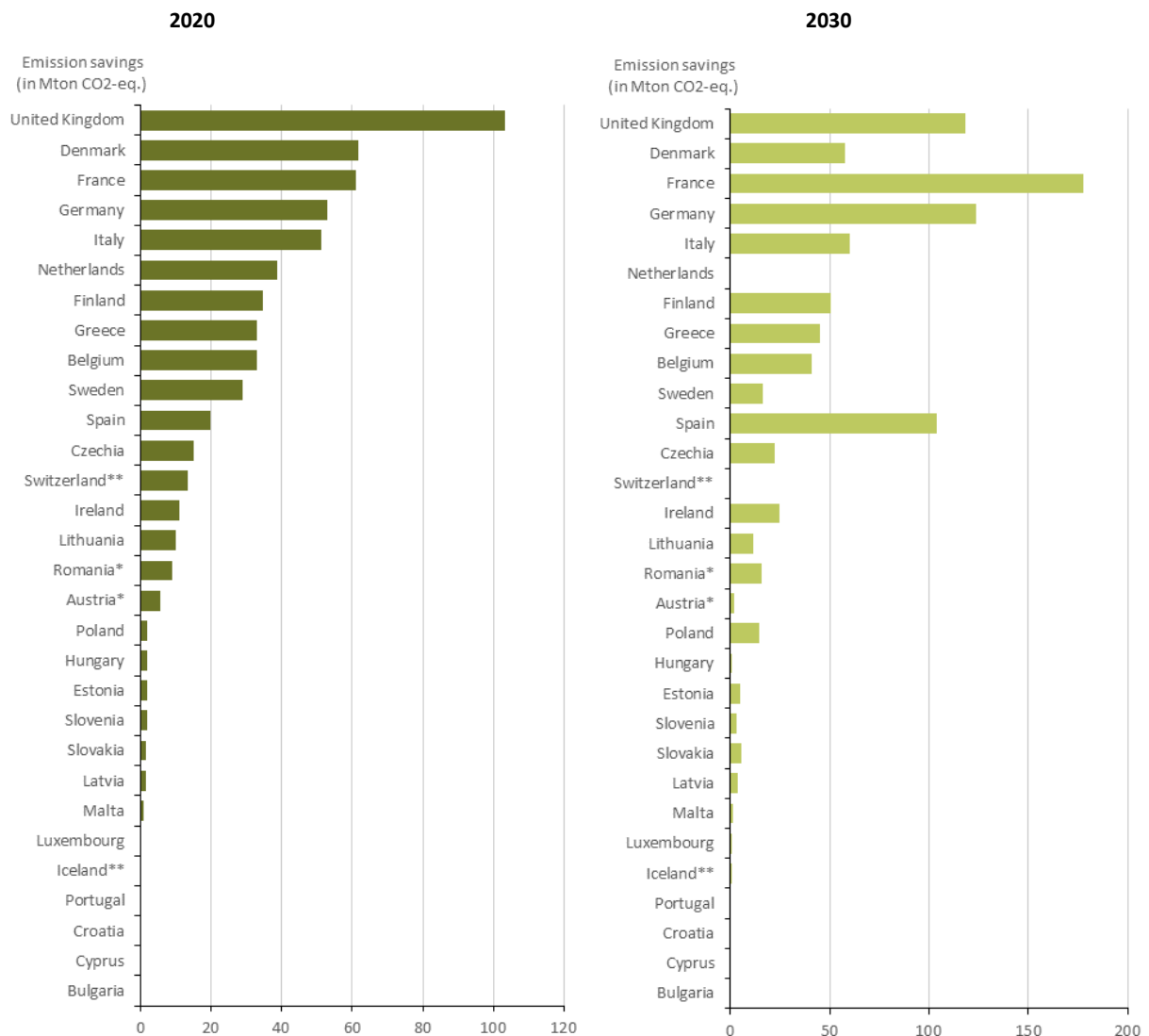
**Source:** ETC/CME, 2019.

The most significant individual Member States' contributions to overall savings from existing measures come from the United Kingdom, Denmark, France and Italy (Figure 3.3). This is different from the reporting in 2017, with Denmark and the Netherlands reporting higher emission savings than before.

<sup>(14)</sup> Planned policies and measures with start date in 2020 or later will not have an impact in 2020, explaining the higher number of quantified policies and measures in 2030.



**Figure 3.3** Reported expected emission savings from existing policies and measures by Member State in 2020 and 2030.

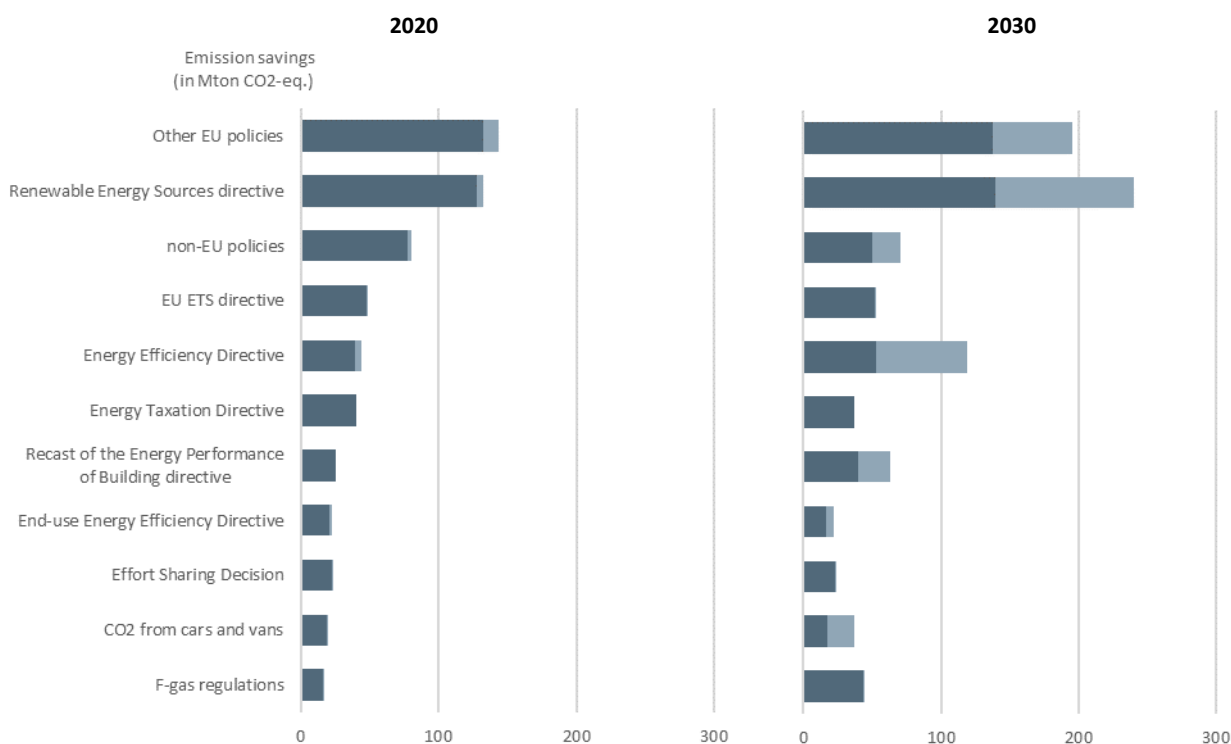


**Note:** \*\* denotes non-EU countries, \* denotes 2017 reported information was used.

**Source:** ETC/CME, 2019.

The Union policies that contributed most to emission savings in 2020 and 2030 are the renewable energy directive, the EU ETS and the Energy Efficiency Directive (Figure 3.4). National policies and measures are also often reported to have been implemented in response of these Union policies. There are however also notable exceptions. The F-gas regulations have not been linked to many national policies and measures, yet the impact they have on emission savings is relatively high. On the other hand, there are many national policies and measures that have been implemented that are linked to the Common Agricultural Policy, yet the reported impact of these PaMs was relatively small.

**Figure 3.4** Reported emission savings from policies and measures linked to Union policy in 2020 and 2030.



**Note:** Only EU-28 countries, data from Austria and Romania from 2017.

**Source:** ETC/CME, 2019.

### 3.3 Reported costs and benefits of policies and measures

The MMR also requests that Member States to report information on the projected (*ex ante*) and realised (*ex post*) costs of climate PaMs, when available. 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, although some Member States reported for the first time on costs while others did not anymore:

- Belgium: reported projected costs for four single PaMs. For three PaMs, only the net cost was reported (in EUR and EUR/tonne) and for one PaM, the gross cost was reported (in EUR and EUR/tonne) in 2017, but did not include that information in the 2019 reporting;
- Croatia: did not report costs, while they did in 2017 for 11 PaMs.
- The Czech Republic: reported costs for most of their PaMs, 25 in total (31 in 2017).
- Estonia: reported costs for 53 PaMs in 2019, in 2017 they reported projected costs for 34 PaMs and realised costs for four PaMs;
- Finland: did not report costs (1 in 2017).
- France: reported costs for 3 PaM in 2019, while they reported realised costs for one PaM and realised and projected costs for another PaM in 2017.
- Hungary: reported costs for 8 PaMs in 2019, but in 2017 this was the reported projected costs for 10 PaMs and realised costs for three PaMs.
- Lithuania: reported costs for 7 PaMs, but did not report in 2017.
- Luxembourg: reported costs for 2 PaMs, similar as in 2017.
- Latvia: reported costs for 15 PaMs in 2019 and 14 PaMs in 2017.

- Malta: reported costs for 6 PaMs for the first time in 2019.
- Slovakia: reported costs for 12 PaMs for the first time in 2019.
- Spain: did not report costs in 2019 while information on costs and benefits was reported in 2017 for 2 PaMs.

As in previous reporting, the information is very diverse and difficult to compare.

### 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 MMR ((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 No 749/2014), indicators shall be reported by providing a description and values, whereby the values can be either *ex post* or *ex ante*. It must be specified for which year the value applies.

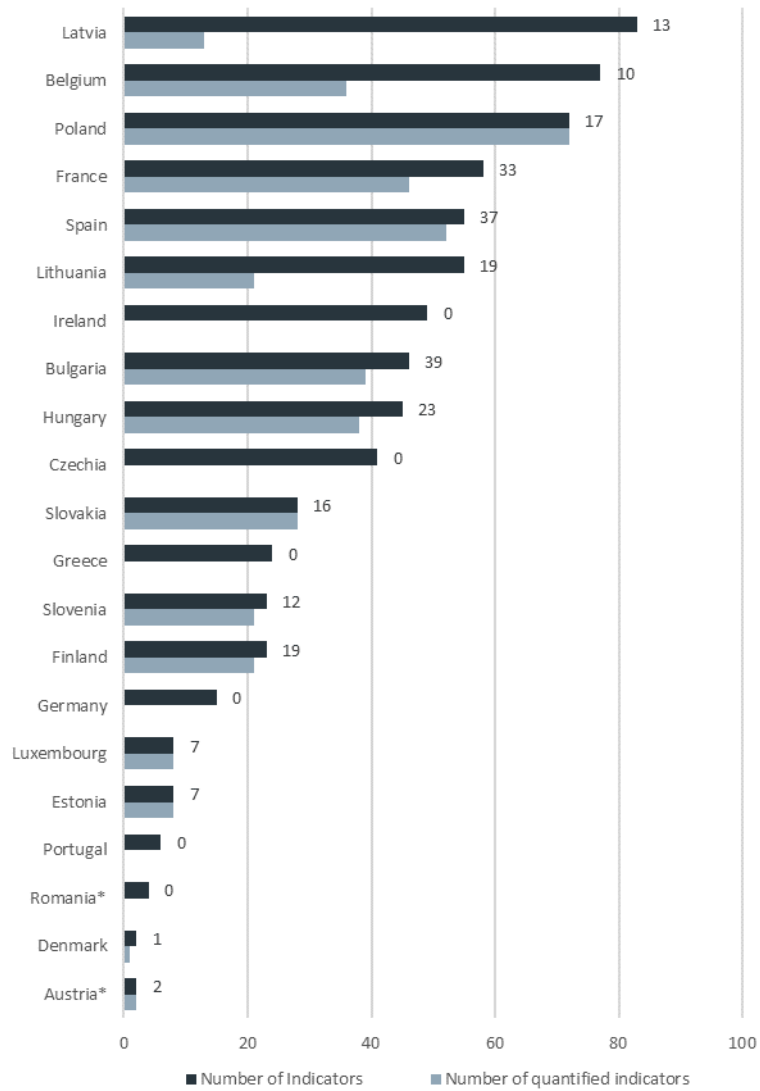
In total, 21 countries provided information on indicators for at least one PaM, as can be seen on the graph below (Figure 3.5). Ideally, the reporting of indicators should include the indicator description with a unit, the years and values. This is however not always provided and often only qualitative information is reported, i.e. the description and a unit, without quantitative data. This is the case for all Member States except Austria\*, Estonia, Luxembourg and Slovakia. In some case less than 50% of PaMs with an indicator also include quantitative data.

In total 17 Member States reported quantitative information on indicators for at least one PaM, which is the same as in 2017. One barrier for more complete reporting, as specifically mentioned by one Member State, is that there could be many indicators that are used to monitor progress of certain PaMs and that reporting on each would require significantly greater effort. Figure 3.6 shows that most Member States chose to report *ex post* data (63% of the reported values were before 2019), although when looking at single years 2020 reporting occurred most often. *Ex ante* data is often reported consistent with 5-year intervals, i.e. 2020, 2025, 2030 and 2035.

As in 2017, an assessment of the available indicators shows that the reporting is not consistent across countries, and it becomes obvious that the (reporting on) monitoring of PaMs can be improved. As the MMR states, the reporting of indicators is required only when they are used for monitoring purposes; it can be speculated that the national PaMs are either not monitored in Member States; or not reported. It is also not always clear whether *ex ante* values for indicators are indeed monitored or whether this is a target of the PaM. A quantitative assessment of indicators — namely an aggregation at EU level for similar PaMs — is not possible, owing to the limited and inconsistent information available at Member State level.

The main reason for the inconsistent approaches by the Member States is that there is no general monitoring concept or guidelines for the *ex ante* and *ex post* progress assessment of PaMs. The reporting is also flexible (regarding years, units, etc.) which leads inevitable to a heterogeneous data set.

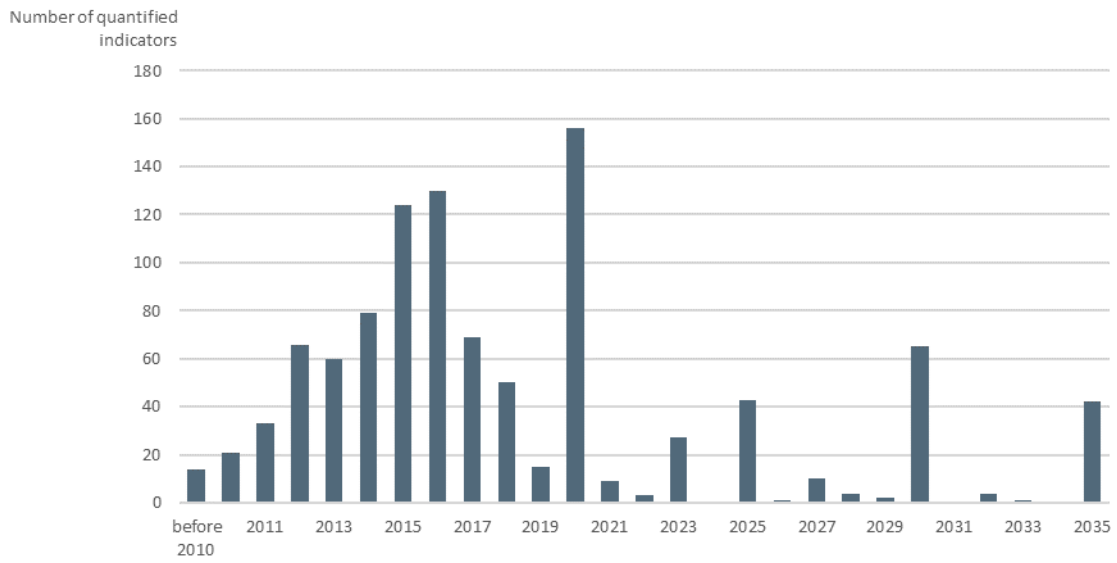
**Figure 3.5** Number of reported indicators (dark blue), quantified indicators (light blue) and single PaMs with quantified indicators (value) per Member State.



**Note:** Only EU-28 countries, data from Austria and Romania from 2017.

**Source:** ETC/CME, 2019.

**Figure 3.6** Number of quantified indicators reported per year.



**Note:** Only EU-28 countries, data from Austria and Romania from 2017.

**Source:** ETC/CME, 2019.

## 4 Link between reporting on national policies under climate change mitigation and air quality legislation

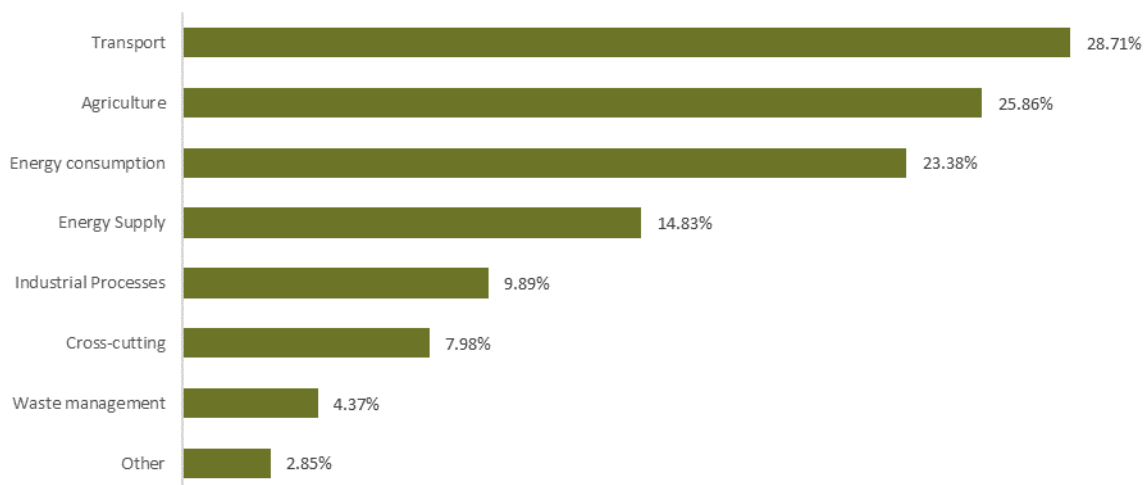
### 4.1 Overview of policies and measures reporting under the National Emission Ceiling Directive

Member States are required to report information on national air pollution policies and measures under Directive (EU) 2016/2284 of the European Parliament and of the Council on the reduction of national emission of certain atmospheric pollutants (the 'NECD') and Commission Implementing Decision (EU) 2018/1522. The NECD requires Member States to report on their additional national air pollution PaMs considered for adoption to meet emission reduction commitments. Information on these additional air pollution PaMs was reported for the first time under the NECD in 2019.

Six Member States reported their NECD PaMs by the reporting deadline of 1<sup>st</sup> April 2019. As of 11<sup>th</sup> October, seventeen Member States had reported; sixteen used the required reporting format for analysis in this report. It must be noted that if a Member State considers that they will meet their emission reduction commitments with existing PaMs then information is not required to be reported under the NECD.

526 individual PaMs were reported under the NECD in 2019. The most common sectors for were transport, energy consumption and agriculture.

**Figure 4.1** Reported PaMs under the National Emission Ceiling Directive by sector



Source: ETC/CME, 2019.

### 4.2 Links between the MMR and the NECD PaMs

In 2019, a new set of climate PaMs were reported under the MMR. This provides an opportunity to find and analyse issues which cut across the climate and air pollution policy areas, such as sectors, types of instrument, objectives, governance, and to explore whether there is coherence and synergy between air pollution measures and climate change mitigation policies.

However, there are some fundamental differences in the reporting requirements for climate and air pollution PaMs. Under the MMR, EU Member States are required to report on all PaMs which they are currently pursuing, have completed, have adopted and are planning to implement using a standard

webtool, developed and managed by the EEA<sup>15</sup>. Some of this approach has been adopted for the new NEC Directive but its application has been restricted to PaMs which have been considered (but not selected for adoption) and those which have been selected for adoption (but not yet adopted). Once an NECD PaM enters the adopted or implementation phase, the definition of which is not precise, Member States are not required to report them via the online webtool and do not need to provide explicit information within their National Air Pollution Control Programmes (NAPCPs). This means that there is likely to be a limited common dataset for the analysis and evaluation of air quality and climate PaMs, as shown in Table 4.1.

**Table 4.1 PaMs reporting requirements under the climate change mitigation and air quality legislation**

Type of policies and measures	Reporting requirement	
	Monitoring Mechanism Regulation (MMR)	National Emission Ceiling Directive (NECD)
<b>Historic (expired)</b>	Detailed information (through the webtool)	Not required
<b>Active (implemented)</b>	Detailed information (through the webtool)	Within the NAPCP (usually PDF file). No requirement to report individually or in detail
<b>Considered but not yet adopted</b>	Not required	Detailed information (through the webtool)
<b>Adopted or planned for implementation</b>	Detailed information (through the webtool)	Optional reporting (through webtool)

The data fields in both the MMR and the NECD which characterise a PaM have been mapped in Table 4.2 below, indicating whether the fields are mandatory or not.

Figure 4.2 shows a comparison of the percentages of NECD and MMR PaMs reported by sector, policy instrument type and implementing entity type. PaMs can have one or more of each element so the percentages will not sum to 100%.

Some differences and similarities between MMR and NECD PaMs can be observed from these figures. Agriculture is a much more represented sector in NECD PaMs than under the MMR. This is likely due to many Member States needing to take further action to meet their emission reduction commitments for ammonia under the NECD, of which agriculture is the key source.

Regulatory and economic PaMs are the most common across both MMR and NECD PaMs. For MMR PaMs, national government is the dominating type of implementing entity. It is the most common for NECD PaMs too, but there is a more even distribution of implementing entity types.

With just over half of Member States reporting on NECD PaMs by 11<sup>th</sup> October, data is not sufficient to be able to draw key messages at this point. However, there are clear links between climate change mitigation and air pollution reduction actions, and further integration of reporting is important. The implementation of the Governance Regulation (EU 2018/1999) will increase synergies between climate and energy policy reporting and has the potential to include air pollution. There are many interactions between climate, energy and air pollution PaMs, and the integration of national systems and reporting of these can increase policy coherence and effectiveness.

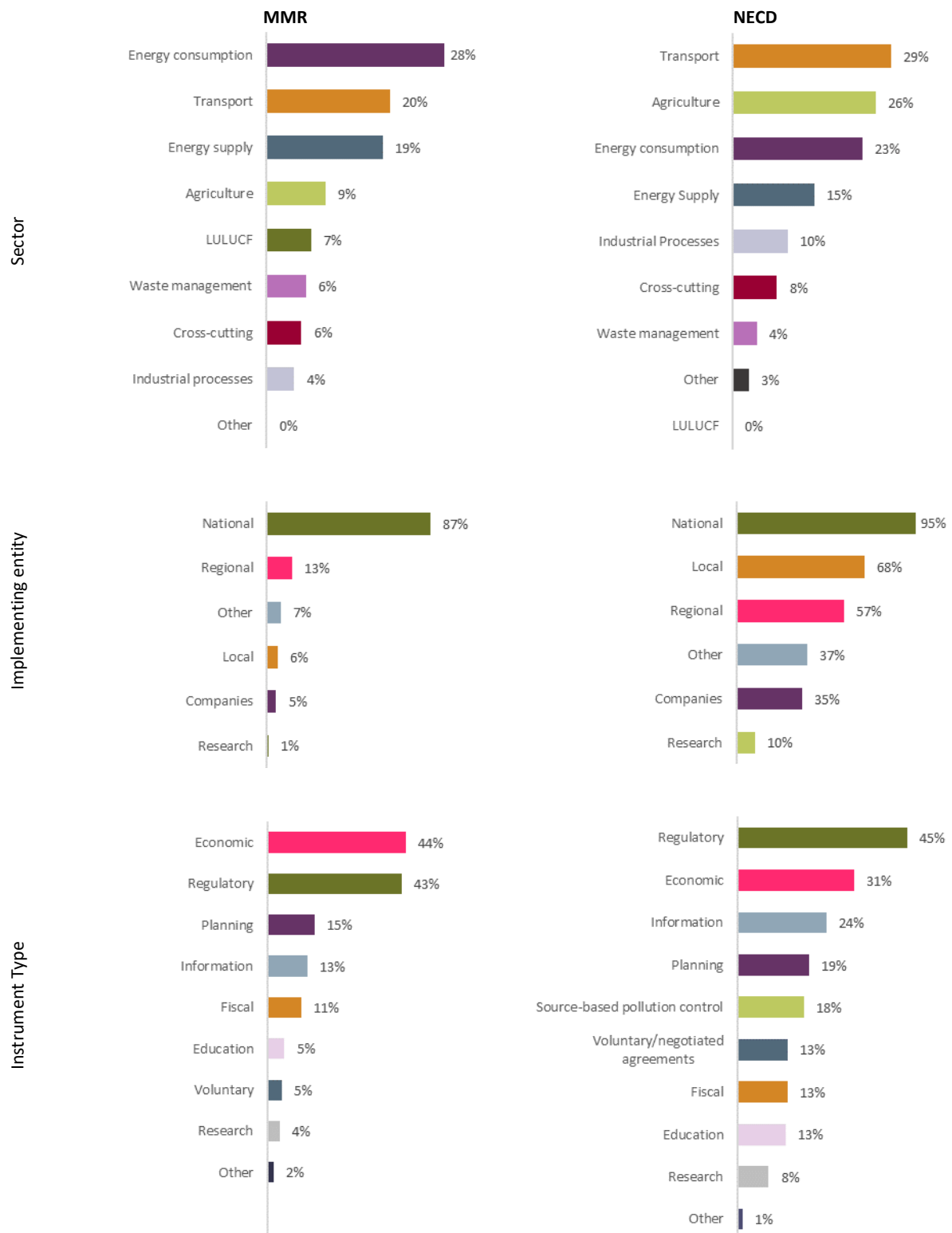
<sup>(15)</sup> Available at: <https://webforms.eionet.europa.eu/>

**Table 4.2 Common data fields of MMR and NECD**

<b>MMR</b>	<b>NECD</b>	<b>MMR mandatory</b>	<b>NECD mandatory</b>
Name of PAM	PaM Name	Yes	Yes
PaM ID	PaM ID	Yes	Yes
	Related to AQ/MMR?		No
Short description	Short description	Yes	Yes
Sector affected	Sector	Yes	Yes
GHG(s) affected	NECD pollutant	Yes	Yes
Objective	Objective	Yes	Yes
Quantified objective		No	
Type of policy instrument	Type of policy instrument	Yes	Yes
Implementation Start	Implementation Start	Yes	Yes
Implementation Finish	Implementation Finish	No	Yes
Implementation Status		Yes	
Beyond ESD?		Yes	
Union policy related	Union policy related	Yes	No
Which Union policies	Which Union policies	Yes	No
Projections Scenario	Projections Scenario	Yes	No
	Uncertainties		No
Implementing entity type	Implementing entity type	Yes	Yes
Implementing entity names	Implementing entity names	Yes	Yes



**Figure 4.2** Reported PaMs under the Monitoring Mechanism Regulation and the National Emission Ceiling Directive by sector, implementing entity and instrument type



**Note:** Sum of percentages can be more than 100%, because more than one sector, implementing entity or instrument type can be selected per PaM.

**Source:** ETC/CME, 2019.

## 5 Quality of the reported information on climate policies and measures in 2019

### 5.1 Quality control process

After submission of the questionnaire, the ETC/CME subjected the reported information to quality checks. This QC process is set up to improve Member States' submissions and to enable direct communication with Member States. The QC process is also presented in the guidelines to Member States on reporting PaM information (EEA, 2019). The core of the QC checks are: the timeliness, transparency, accuracy, completeness, consistency and comparability (TTACCC) criteria, which build the framework for the QC procedure:

- **Timeliness:** nine Member States met the reporting deadline of 15 March 2019. One Member State did not submit a report.
- **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 GHG(s) corresponded with the description and name of the PaM).
- **Coherence:** looked at whether reported projections were coherent with PaMs. 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.

### 5.2 Incremental improvements in reporting on policies and measures

Reporting information on PaMs is essential for monitoring the actions taken at national level to reduce GHG emissions and evaluating their effects. Detailed and transparent information on PaMs provides an essential piece of the knowledge base to understand and analyze GHG emission trends at national and EU level.

Although the information reported in 2019 shows modest improvements in quality compared to the 2017 reporting exercise, further improvements remain necessary to make this information more timely, complete, consistent, comparable, accurate, and transparent.

#### 5.2.1 Timeliness

Timeliness did not improve in 2019 compared to 2017. An equal number of Member States reported before or on the reporting deadline; nine in both 2019<sup>16</sup> and 2017. In 2017, All Member States reported between 13 May and 19 June, while in 2019 only 27 Member States reported and the last only reported on AA. Romania did not report new information in 2019.

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<sup>(16)</sup> Austria submitted information on their national PaMs before the reporting deadline, but did not use the reporting template and were not included in this assessment.

All reporting countries used the online reporting form, except one. The information was already filled in with information from 2017 so countries could add new policies and measures or update existing ones.

One explanation for delayed reporting, remains a preference to link reporting of both GHG projections and PaMs. In addition, 2019 was also a period where Member States had to prepare their draft and final NECP and this might have had an effect on timely reporting as well. Resubmitting information after QC still required time for some Member States.

### 5.2.2 Completeness

Completeness improved compared to previous reporting, not only related to qualitative information but also quantitative information. See Figure 5.1 to 5.3 for the trend per Member States on the number of PaMs and the number of PaMs with quantitative ex ante and ex post information on emission savings in reporting years 2015, 2017 and 2019. The continued use of the questionnaire and improvements in reporting by the Member States together with automatic and manual checks to point out missing information clearly contributed to this.

Reporting should include all climate PaMs, including instruments not specifically intended to reduce GHG emissions. The number of single PaMs increased with 16%, from 1513 in 2017 to 1716 in this reporting cycle. Some Member States clearly managed to report more completely on their climate PaMs. However, some Member States expanded the number of planned PaMs (in response to the NECP). As there is a larger amount of uncertainty for these PaMs, e.g. on starting year, reporting was in some cases less complete for these PaMs.

Information on each PaM should be reported as complete as possible, including quantitative information. While qualitative information is in general reported complete for all Member States, information on indicators, costs and benefits and emission savings could be further expanded. This applies in particular for *ex post* emission savings and costs. There are several barriers for more complete reporting by Member States in this respect. In cases where information is missing, guidelines to further support Member States in evaluating the effectiveness and cost efficiency of climate PaMs could be beneficial. Additional workshops with Member States to exchange experiences in policy evaluation and reporting this information could also increase completeness in longer term. LINK study Com. In cases where quantitative data is reported, Member States are requested to provide all relevant information (including links to external sources) as complete and transparent as possible.

### 5.2.3 Consistency – Comparability

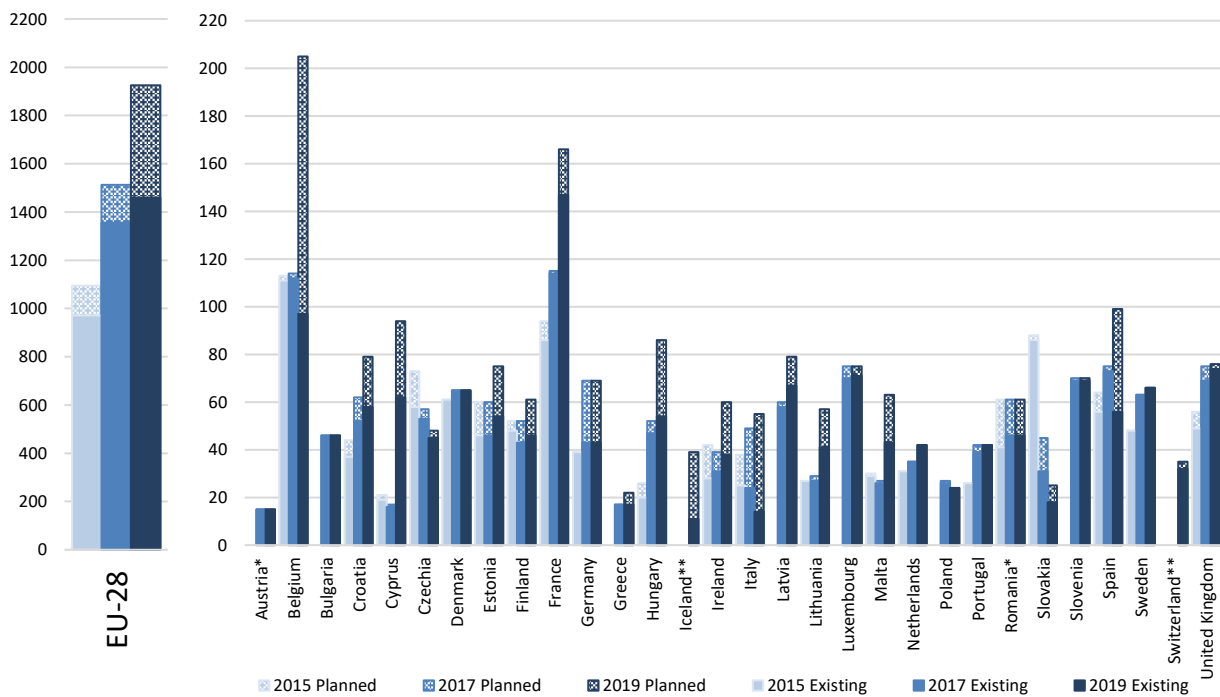
Overall, consistency of reporting has improved compared to 2017 as most Member States started reporting from their existing questionnaire. There are still some issues with consistency and comparability, these relate to:

- 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. Poland) 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 level of detail in the description of the PaMs.
- 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.

- 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. This is exacerbated in 2019 because there was an interference with the NECP reporting.

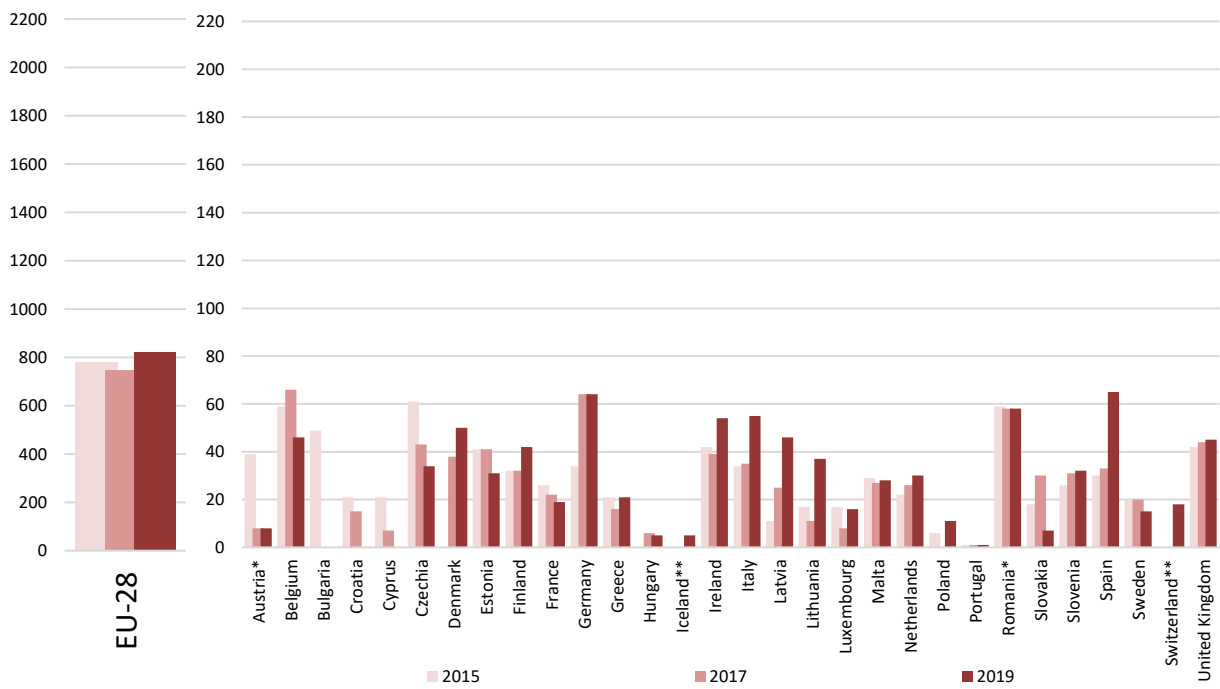
Some of these issues were identified and corrected by the Member States during the QC process. However, on some issues, such as what is a single PaM, Member States were more reluctant to adjust their reporting.

**Figure 5.1** Number of PaMs reported per Member State and EU-28 in reporting years 2015, 2017 and 2019.



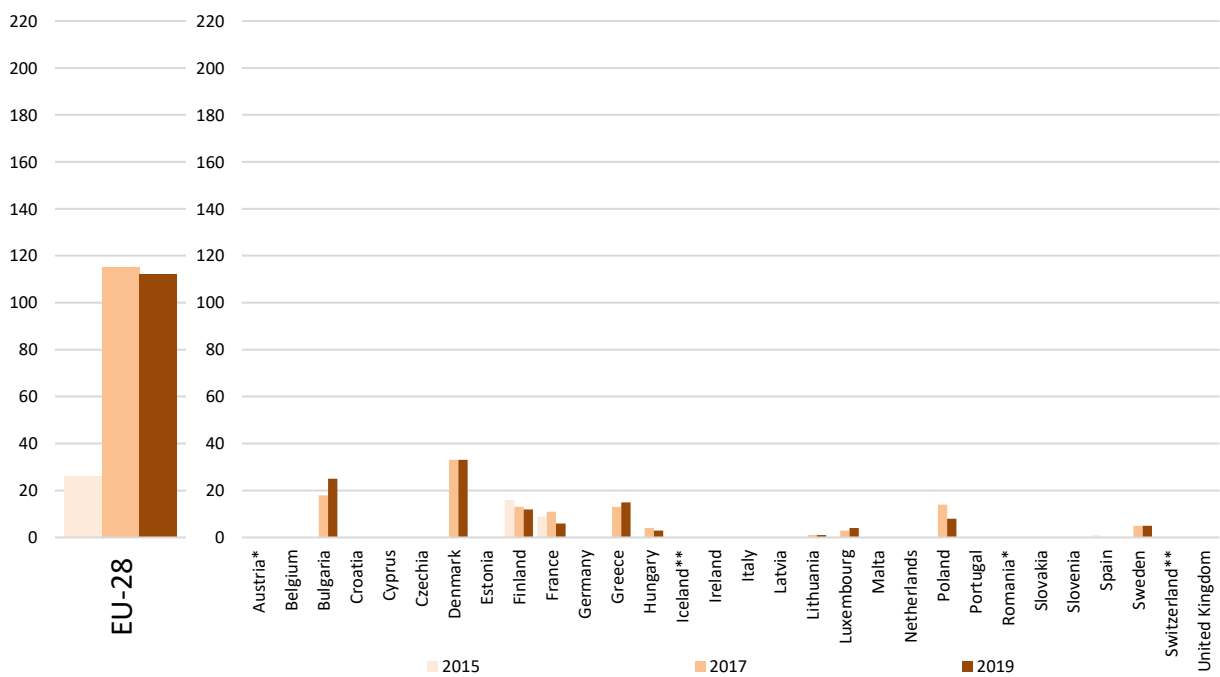
Source: ETC/CME, 2019.

**Figure 5.2** Number PaMs with ex ante emission savings reported per Member State and EU-28 in reporting years 2015, 2017 and 2019.



Source: ETC/CME, 2019.

**Figure 5.3** Number PaMs with ex post emission savings reported per Member State and EU-28 in reporting years 2015, 2017 and 2019.



Source: ETC/CME, 2019.

#### 5.2.4 Accuracy

It is difficult to assess accuracy without analysis of the used methodologies and assumptions. The accuracy check was mainly to avoid double counting and reporting in the incorrect unit.

What is evident is that Member States use different approaches in assessing the impact on GHG reductions of PaMs and this makes comparison between Member States difficult and could even complicate comparison of impacts between PaMs from the same Member State.

#### 5.2.5 Coherence

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.

#### 5.2.6 Transparency

Where quantitative data is reported, inclusion of references to technical reports and documents increases transparency and enables checking underlying methods and assumptions. Most Member States (20) accompany the online questionnaire with a technical report. Descriptions, references or links to technical reports supporting quantitative data however is missing for *ex post* (64%) and *ex ante* (66%). For costs and benefits transparency is better (for 96% of reported projected costs a description and/or reference is reported, in the cases where only realized costs are reported for each a description and/or reference is reported). The description of cost estimates is however often very short. Transparency in this respect could be further improved.

## 6 Conclusions

Following conclusions can be drawn from the 2019 reporting. On the reported information by Member States:

- There was a marked increase in the number of single PaMs reported by some Member States. Many of these new policies and measures are planned policies and measures included in the with additional measures scenario.
- The increase in the number of single policies and measures could be an effect of the preparation of the draft NECPs by Member States. This also appears to have an impact on the reported expected emission savings in 2030, which has also increased compared to previous reporting period. These emission savings are to a significant extent achieved by additional policies and measures.
- 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 2030 climate targets, additional action by Member States is needed. This requires further strengthening of existing and implementing new policies and measures.
- It also remains to be seen to what extent these planned PaMs will effectively be implemented.
- Reporting on quantitative information remains incomplete, especially for ex post emissions savings, cost and benefits, and indicators to monitor progress. The amount of qualitative information reported on national PaMs does increase slightly from 2015-2017-2019. Almost all Member States report some information on expected greenhouse gas savings (*ex ante*).
- 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 Sources Directive or Effort Sharing Decision.

On the quality of reported information:

- The quality of reporting is increasing incrementally, because most Member States update the information that is already prefilled in the questionnaire. One Member State did not submit information in 2019 and one did not use the online questionnaire.
- However, the preparation of the draft and final NECPs in 2018 and 2019 interfered with the timeliness of reporting under the MMR.
- For some of the new PaMs reported in 2019, completeness of information is lower because key details are still not defined yet.
- More integrated QA/QC of projections and PaMs was first tested in 2019, which could be further extended in future reporting years.

## 7 References

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