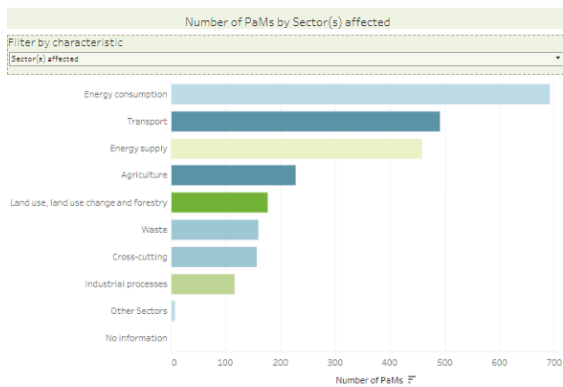# Navigation through the EEA outputs related to climate policies and measures reported in Europe

Number of PaMs by Sector(s) affected

Filter by characteristic

Sector(s) affected

- Energy consumption
- Transport
- Energy supply
- Agriculture
- Land use, land use change and forestry
- Waste
- Cross-cutting
- Industrial processes
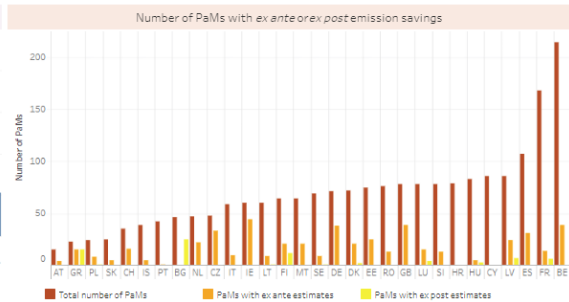- Other Sectors
- No information

Number of PaMs

Note: each PaM can have more than one of each characteristic assigned to it, hence why the total number of PaMs represented in these graphs may be greater than the number of PaMs reported by the Member State(s).

Number of PaMs by Member State

BE (215)
HU (86)
SI (78)
EE (76)
RO (76)
DK (72)
LV (86)
DE (71)
IT (62)
LT (61)
IE (60)
FR (168)
HR (79)
SE (69)
CZ (48)
PT (42)
IS (39)
ES (107)
GB (78)
FI (64)
NL (47)
CH (36)
GR (23)
CY (94)
LU (78)
MT (64)
BG (46)
(25)
AT (15)
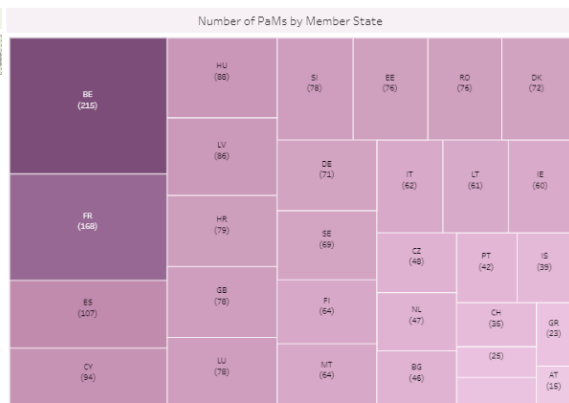
Note: national reports submitted by Member States under the MMR can be viewed by clicking the links in the heatmap.

Implementation of PaMs by Sector(s) affected

Number of PaMs

Not possible to symbolize
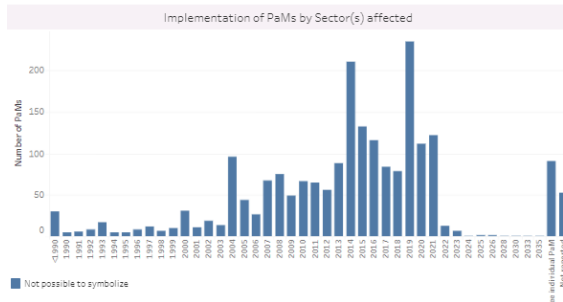
Note: due to the structure of the reported data, it is not always possible to display the start date of PaMs by every characteristic.

Number of PaMs with *ex ante* or *ex post* emission savings

Number of PaMs

AT GR PL SK CH IS PT BG NL CZ IT IE LT FI MT SE DE DK EE RO GB LU SI HR HU CY LV ES FR BE

Total number of PaMs | PaMs with ex ante estimates | PaMs with ex post estimates

2019

Contents

1   Introduction

Under Article 13 "Reporting on policies and measures" of Regulation (EU) 525/2013, the Monitoring Mechanism Regulation (MMR), EU Member States are required to submit information on national climate policies and measures to the European Commission (EC) every two years.

The Commission Implementing Regulation (EU) 749/2014 specifies that Member States shall use the ReportNet tools of the EEA for the submission of this information.

To that effect, the EEA provides:

▪ A Central Data Repository (CDR), which is part of the ReportNet architecture. The CDR is like a bookshelf, with data reports on the environment submitted under various reporting requirements or processes – including the MMR.

▪ A specific online questionnaire, consistent with the tabular formats set out in Annex XI to Regulation (EU) 749/2014. It is a form to be filled-in by the MS in order to produce a final xml file.

▪ A dedicated MMR help folder, where national experts can find different tools supporting reporting process (such as: Reporting Guidelines or overview of the available policy evaluations)

The submitted information undergoes quality checks performed by the EEA and its European Topic Centre for Air Pollution and Climate change Mitigation and Energy (ETC/CME)[1] before it is aggregated in a database.

There is a dedicated subpage on the EEA website for polices and measures at https://www.eea.europa.eu/themes/climate/national-policies-and-measures. As well as the database, some of the quantitative data is visualised in an interactive data viewer. The reported data is analysed in an EEA report and related EEA briefing after every biennial reporting cycle.

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[1] ETC/CME is a consortium of European institutes assisting the EEA in its support to European Union (EU).

Ultimately, the goal is to improve the quality of the information reported by Member States and disseminated through the EEA web site, by making it more timely, transparent, complete, consistent, comparable and accurate.

2 Frequently asked questions (FAQs)

What is a policy or measure?

In the context of the climate policies reported under the MMR, "policies and measures" (PaMs) covers all actions with the aim to reduce GHG emissions.

Why do Member States report their climate PaMs?

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.

Information reported by Member States on their climate policies is used to monitor climate action at a national level. It can also serve to assess and evaluate existing policies and to help inform decisions about new policies. EU Member States are required to report on their PaMs that mitigate GHG emissions under the Monitoring Mechanism Regulation (MMR) (EU 525/2013).

How often do Member States have to report on their national climate policies?

Under the MMR, every 2 years since 2015. Member States are encouraged to submit information on their PaMs in-between the required reporting years if there have been large updates.

How much do these PaMs contribute to reducing emissions?

Reporting quantified emissions savings is "mandatory where available", so not all PaMs have associated emissions reductions reported as studies are not always available. Quantification of emissions savings is not straightforward for all PaMs, and Member States use different methods and approaches. The "reported expected effects" and "reported achieved effects" dashboards of the PaMs data viewer allow you to explore the reported quantified emissions savings for the past and future of reported PaMs.

How reliable is the data reported?

The data quality of the information reported is the responsibility of Member States. However, the ETC/CME provide a quality check on new submissions and communicate with Member States where potential errors are found.

Which greenhouse gases do the PaMs cover?

Member States can report on PaMs related to seven main greenhouse gases (GHG) required for reporting under the Kyoto Protocol. These seven GHGs directly contribute to climate change:

- Methane (CH_4)
- Carbon dioxide (CO_2)
- Nitrous oxide (N_2O)
- Hydrofluorocarbons (HFCs)
- Perfluorocarbons (PFCs)
- Sulphur hexafluoride (SF6)
- Nitrogen trifluoride (NF_3)

HFCs, PFCs, SF6 and NF_3 are commonly referred to as 'F-gases'.

How do the different GHGs contribute to climate change?

Greenhouse gases absorb energy and slow the rate at which the energy can escape into space, causing global temperatures to increase. Different greenhouse gases absorb energy at different rates and therefore have different 'global warming potentials' (GWP). GWPs allow you to compare the impacts of each gas on global warming.

Carbon dioxide has a global warming potential of 1 because it is used as the reference gas. The global warming potential of other gases is therefore a measure of how much energy will be absorbed by 1 tonne of the gas, relative to the amount of energy absorbed by 1 tonne of CO_2 over a given period of time (usually 100 years). Table 1 shows the GWPs for key greenhouse gases.

Example: The global warming potential of methane is 28. Therefore, 1 metric tonnes of methane (CH_4) emitted would result in the same warming equivalent to 28 metric tonnes of carbon dioxide (CO_2).

Emissions savings are reported in in carbon dioxide equivalent (CO_2-eq) units, as this allows the emissions to be added together to calculate a total. These are calculated by multiplying the emissions of a gas by the gas' global warming potential. This metric of measurements allows for emissions from various GHGs to be compared.

Table 1 - Global Warming Potentials (GWPs) for 100-year time horizon from IPCC Fourth Assessment Report (AR4)[2]

Greenhouse gas (GHG)	Global Warming Potential (tonnes of CO_2 equivalent per tonne of gas)
Carbon dioxide (CO_2)	1
Methane (CH_4)	25
Nitrous oxide (N_2O)	298
Hydrofluorocarbons (HFCs)	Between 124 and 14,800
Perfluorinated compounds (PFCs)	Between 7,390 and 12,200
Sulphur hexafluoride (SF$_6$)	22,800

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[2] The IPCC Fifth Assessment Report (AR5) contains revised GWPs but is not required to be implemented by Parties to the UNFCCC until 2024 (https://unfccc.int/sites/default/files/resource/CMA2018_03a02E.pdf)

Nitrogen trifluoride (NF$_3$)	17,200

What sectors do the policies cover?

The sectors selected for a PaM are those which the PaM has the largest impact on GHG emissions or removals. Alternatively, it is the sectors that the PaM is supposed to solve a problem. Member States can choose from one or more of:

- Energy supply (comprising extraction, transmission, distribution and storage of fuels as well as energy and electricity production);
- Energy consumption (comprising consumption of fuels and electricity by end users such as households, services, industry and agriculture);
- Transport;
- Industrial processes (comprising industrial activities that chemically or physically transform materials leading to greenhouse gas emissions, use of greenhouse gases in products and non-energy uses of fossil fuel carbon);
- Agriculture;
- Forestry/LULUCF;
- Waste management/waste;
- Cross-cutting.

What are the types of policy instruments?

The type of policy instrument facilitates understanding of how the measure is being implemented. Member States can choose one or more from:

- Economic: a PaM that provides an economic incentive to reduce GHG emissions. This includes measures such as infrastructure programmes, subsidies, investment programmes, feed-in tariffs, loans/grants and trading schemes (e.g. ETS), charges and fees for non-beneficial actions (e.g. waste fees or congestion charges etc).
- Fiscal: a PaM that provides a financial incentive via taxes. This includes both increases and decreases in taxes.
- Voluntary/negotiated agreements: a binding or voluntary standard/regulation as in regulatory and information measures, but agreed between regulators and the sector targeted.
- Regulatory: measures that set binding standards and regulations or permitting system. This includes for instance building regulations, eco-design standards, establishment of permit and inspection procedures.
- Information: measures such as labelling, awareness rising, voluntary standards. The objective is to disseminate information to the general public or specific target groups.
- Education: measures such as training programmes, capacity building.
- Research: research programmes and demonstration projects.
- Planning: measures such as waste management plan, transport plan, urban planning.
- Other: measures that do not fit in any of the above.

What are Union policies?

Some Member States' policies are the result of implementation of EU legislation ("Union policies"), but some are national policies. Examples of Union policies that may be relevant to

national climate policies include the EU Emissions Trading System (ETS) Directive, the Renewable Energy Sources Directive, and the Landfill Directive. If Member States acknowledge that a PaM is related to an EU policy they then select which EU legislation specifically.

The three most common scenarios for when a Member State policy would be related to a Union policy are when:

• A national PaM that is the translation of Union policy into national legislation (e.g. Eco-design).
• A national PaM that is implemented in direct response to a Union policy (e.g. implementation of the EU ETS).
• A national PaM that was implemented specifically to achieve an EU target (e.g. an energy efficiency subsidy to achieve the EE target).

What are the different implementation statuses?

The status reflects at which stage of implementation the policy is. Member States select from: planned, adopted, implemented, expired. PaMs are considered as being implemented when financial resources have been allocated or national legislation is in force. A clear commitment from government to proceed with the implementation of a PaM means the PaM can be considered adopted – this is somewhat subjective to interpretation by Member States on what a 'clear commitment' requires. PaMs that have a realistic chance of being adopted and implemented can be considered planned.

What types of entities can implement policies?

For each policy or measure one or more entities are responsible for the implementation, who is responsible e.g. for setting the regulations needed, providing the funding, implementation, planning, monitoring, evaluation. They type of entity can vary:

• National government;
• Regional entities;
• Local government;
• Companies/ businesses/industrial associations;
• Research institutions;
• Others not listed.

These are the entities responsible for the actual implementation of the PaM not those who will be affected by the PaM.

What do the different projection scenarios mean?

There are four options for Member States to choose from for each PaM:

• With existing measures (WEM): shall encompass currently implemented and adopted policies and measures. In that case the status must be implemented or adopted. The start of the implementation period should be in the past.
• With additional measures (WAM): covers WEM PaMs but also encompass planned policies and measures. In that case the status must be planned and the implementation period must be in the future.
• Without measures scenario: excludes all policies and measures implemented, adopted or planned after the year chosen as the starting point for this projection. This is a voluntary reported scenario, which contains only measures which have been implemented before the chosen reference year.
• Not included in a projection scenario (NIP): For some measures it might not be possible to allocate them to a specific scenario, e.g. projections have already been

finalised, and a specific policy has not been considered in the projections due to time constraints. If possible, the use of this option should be avoided, and if yes, it is encouraged to provide a reason for it.

What does the impact of PaMs mean?

The GHG emissions reduced through the implementation of the PaM can be allocated to one of three broad sectors:

- • EU ETS (Emission Trading System)
- • ESD (Effort Sharing Decision)
- • LULUCF (Land Use, Land Use Change and Forestry)

In general, the EU Emission Trading System covers emissions from fuel combustion and industrial processes and product use, and is therefore relevant for all measures targeting power plants and industrial installations covered in the EU ETS. Note that policies affecting electricity consumption by end users, affect EU ETS emissions.

All other sectors (Transport (except domestic aviation), agriculture, emissions from households, waste) are covered under the Effort Sharing Decision (EC 406/2009/EC).

Why are some policies reported as groups?

The MMR allows the reporting of single PaMs or groups of PaMs. A single policy or measure corresponds to a unique policy intervention, pursuing a well identified and specific objective. A group of policies and measures corresponds to a coherent set of individual measures having a common objective, usually within the same sector.

A group of PaMs can only be reported based on single PaMs already reported. Member States may have quantitative information (such as ex post/ex ante emission savings or costs) only available for a group of measures, while the impacts of the individual measures included in the package are not available (due for example to strong interactions between these measures).

What does the start and finish date of a PaM mean?

The start of the implementation period is the year the policy is implemented at national level. It could be possible that the policy consists of several instruments with a different starting date (e.g. if a national policy needs to be implemented in different regions). In this case the start year of the overarching policy should be considered. Existing PaMs (expired and implemented) have a start year in the past, and adopted or planned PaMs have a start year in the future.

The finish year is the date the policy is currently planned to run until, and not the year when the impacts of the policy are projected to persist until (which may be longer than the implementation period). For policies that have already expired this is the date the policy ended or was replaced. Some policies may not have a specific end date, in which case the value is left open.

3 EEA PaMs Database

The database of quality-checked aggregated data reported by European countries. It is made available by the EEA on its web site as the "EEA database on climate change mitigation policies and measures in Europe" at http://pam.apps.eea.europa.eu/.

This database contains PaMs implemented, adopted or planned by European countries to reduce greenhouse gas (GHG) emissions. These PaMs have been reported under the EU MMR in 2017 and 2019. The search engine gives access to detailed information for each of the PaMs (or groups of PaMs). Member States report main characteristics of the PaMs, such as their description, objective, type, status, sectors affected, related Union Policy, entities responsible for their implementation, implementation period, etc. Where available, Member States also reported quantitative information on the GHG emissions savings achieved by PaMs (or groups of PaMs), both ex post (retrospectively) and ex ante (anticipated savings), as well as the projected and realised costs and benefits of the reported PaMs.

Clicking on the 'Name of policy or measure' opens the PaM national report.

The data shown can be filtered by different parameters using the right-hand drop-down options.

The database can be downloaded as a TSV or CSV file.

4 PaMs data viewer

When Member States submit their PaMs data under the MMR through the EEA ReportNet system, their data is stored in an SQL database on the EEA server. A data viewer built in Tableau has data connections to the SQL database, visualising the reported data. This is available at https://www.eea.europa.eu/themes/climate/national-policies-and-measures/national-policies-and-measures-on-1.

Tableau is a flexible, user-friendly software to visualise data. Visualised data can be filtered by drop-down selections or sometimes by clicking on another figure. This filter can always be reversed if you click on your selection on the figure again. When hovering over data, further information can be displayed in the 'tooltip' that appears.

At the bottom right-hand side of every dashboard are three options – share, download and full screen. You can download the figures (with your selected filters applied) as an image file or as a PDF.
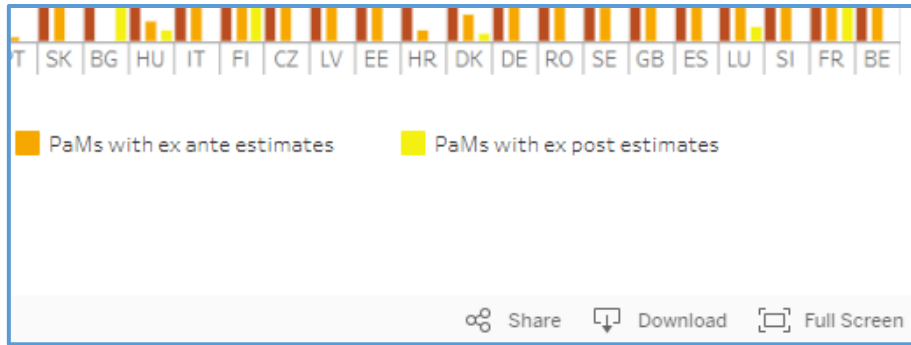
At the bottom left of every dashboard are three options – undo, redo and revert. Revert will reload the whole Tableau to the original default settings. Undo will just undo the previous selection/filter etc.

If data in a figure is selected, extra options appear in the tooltip as displayed below. Selecting 'Keep Only' will filter all non-selected data from the figure. Selecting 'Exclude' will remove all selected data from the figure. Select 'Undo' or 'Revert' at the bottom of the dashboard to undo the filter or reset the viewer. Selecting 'View Data' will open a new window with the data selected available to download as a CSV file.
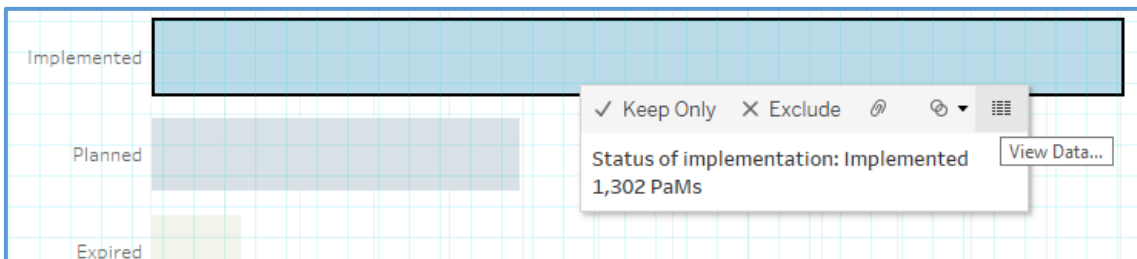
If multiple groups of data in a figure are selected (by clicking and dragging the cursor over the area), extra options appear in the tooltip as displayed below. If the data is ordered, such as in a bar graph, you can sort the data. The tooltip will also show a summary of the selected data – in the example below, 3 items are selected which sum to 1,909 PaMs.
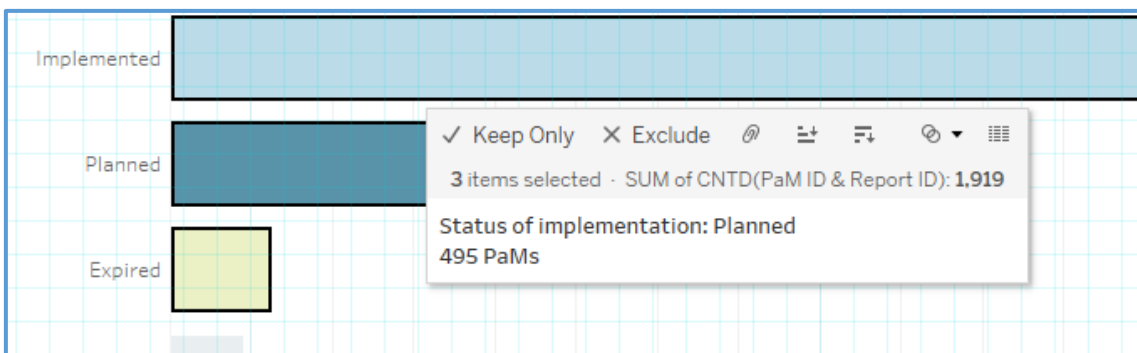
The viewer has three dashboards:
1. Overview
2. Reported expected effects
3. Reported achieved effects

4.1 Overview

This dashboard presents four figures related to the number of PaMs reported, their implementation start date, and the number of PaMs with quantified ex ante or ex post emission savings. Figures 1 and 3 can be filtered using the 'Choose characteristic to view data by' filter. For some characteristics PaMs can have more than one value (for example, PaMs can affect more than one greenhouse gas) therefore the total number of PaMs represented in figures may be greater than the number of actual PaMs reported by Member States.

Figure 1: Number of PaMs by [characteristic]

Counts the number of PaMs grouped by the characteristic chosen. The size of the bubble/length of the bar represents the number of PaMs. The colour of the bubble/bar represents the characteristic. The number of PaMs and the characteristic are shown in the tooltip. Clicking on a characteristic will filter Figure 2.

Figure 2: Number of PaMs by Member State

Counts the number of PaMs reported by each Member State. The number of PaMs and the Member State are shown as labels and in the tooltips. The size of the squares and the colour scale represent the number of PaMs (darker purple = more PaMs). The national reports submitted by Member States under the MMR can be viewed by clicking the URL in the tooltip.

Clicking a Member State on the heatmap will filter the three other figures in the Overview dashboard to show just the PaMs of that Member State.

Figure 3: Implementation of PaMs by [characteristic]

Counts the number of PaMs reported with a start date for each year. Groups of PaMs don't have a start year associated with them so are represented in a separate bar. The bars are coloured by characteristic chosen, but only when the relationship between PaM and characteristic is one-to-one.

Figure 4: Number of PaMs with ex ante or ex post emission savings

Counts the number of PaMs by Member State in ascending order, as well as the number of PaMs with at least one ex ante GHG emission reduction estimate, and the number of PaMs with at least one ex post GHG emission reduction estimate.

4.2 Reported expected effects

The dashboard presents three figures related to reported ex ante GHG emission reductions of PaMs by Member States. Ex ante GHG savings are estimated savings in the future due to the effect of the PaM. There is no methodology specified for assessment of ex ante impacts, which means that there could be considerable differences across Member States in their approach and their assumptions used to calculate the emission savings of PaMs. As such, the data visualised are subject to caveats of the data quality provided by Member States.

Figures 1 and 2 can be filtered by Member State and projection scenario.

The grouping of data in Figure 1 can be changed by the 'View by' drop-down selection.

The y axis of Figure 2 can be changed by the 'Choose axis' drop-down selection.

Figure 1: Total ex ante GHG reductions by [View by]

Sums the total ex ante GHG emission reduction estimates (kt CO_2eq) for 2020, 2025, 2030, 2035. The GHG savings per year can be grouped by the selection in the 'View by' list, such as Status of implementation.

Figure 2: Total ex ante GHG reductions in 2020 by [Choose axis]

Sums the total ex ante GHG emission reduction estimates (kt CO_2eq) for 2020. The GHG savings are grouped (coloured) by the sectoral allocation – in the Effort Sharing Decision (ESD) sector, the EU Emissions Trading System (ETS) sector, or no allocation was specified by Member States. The y-axis can be selected from the 'Choose axis' list to disaggregate the savings further.

Figure 3: % PaMs with an ex ante GHG reduction for 2020, by Member State

Shows the PaMs reported by each Member State which had at least one ex ante GHG saving estimated for 2020 as a proportion of total number of PaMs reported by each Member State.

4.3   Reported achieved effects

The dashboard presents two figures and a table related to reported ex post GHG emission reductions of PaMs by Member States. Ex post GHG savings are estimated historic savings due to the effect of the PaM. There is no methodology specified for assessment of ex post impacts, which means that there could be considerable differences across Member States in their approach and their assumptions used to calculate the emission savings of PaMs. As such, the data visualised are subject to caveats of the data quality provided by Member States.

Figure 1 and Table 1 can be filtered by Member State.

Table 1 can be filtered by selecting data in Figure 1.

Figure 1: Ex post emission reductions of PaMs

Sums the total ex post GHG savings (ktCO_2eq) for each year that an estimated was reported. Savings are split into savings related to the implementation of an EU policy and those unrelated to EU policy. Clicking on a bar in Figure 1 will filter Table 1 by the relevant year and EU policy relation. Click the bar again to reset the filter.

Figure 2: % PaMs with an ex post GHG reduction estimated, by Member State

Shows the PaMs reported by each Member State which had at least one ex post GHG saving estimated as a proportion of total number of PaMs reported by each Member State.

Table 1: Table of ex post GHG reductions estimated

Shows the ex post GHG emission reductions estimated for each PaM by Member State, and year of savings. Coloured by size of GHG savings (darker blue represents a large saving).

5 Abbreviations

EC	European Commission
EEA	European Environment Agency

EIONET	European Environment Information and Observation Network
ESD	Effort Sharing Decision
ETC/CME	European Topic Centre on Climate change Mitigation and Energy
ETS	Emissions Trading System
EU	European Union
GHG	Greenhouse gas
Kt	Kilotonne
LULUCF	Land Use, Land Use Change and Forestry
MMR	Monitoring Mechanism Regulation
MS	Member State
PaM	Policies and measures
UNFCCC	United Nations Framework Convention on Climate Change
WAM	With Additional Measures
WEM	With Existing Measures
WOM	Without Measures