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Two years after Paris – Progress towards meeting the EU's climate commitments

(required under Article 21 of Regulation (EU) No 525/2013 of the European Parliament and of the Council of 21 May 2013 on a mechanism for monitoring and reporting greenhouse gas emissions and for reporting other information at national and Union level relevant to climate change and repealing Decision No 280/2004/EC)

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1. GENERAL OVERVIEW

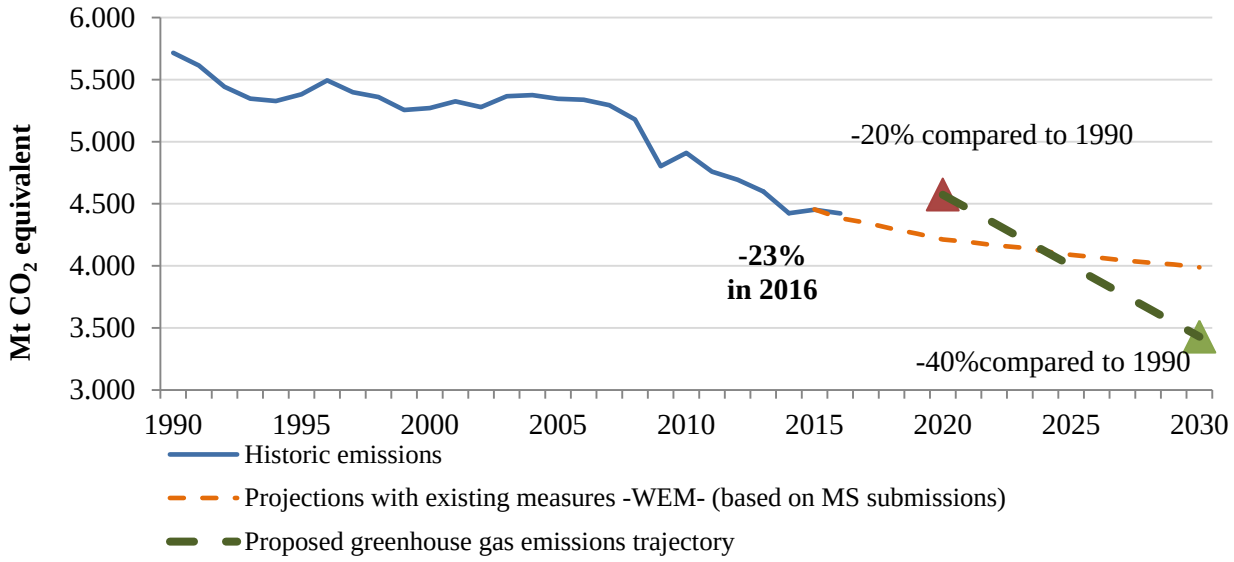
1.1. Progress towards the 2030 target of at least a 40 % cut in emissions

The EU and its Member States remain fully committed to the Paris Agreement and to climate action, both as a scientifically proven necessity and as an economic opportunity. The EU and its 28 Member States have deposited their instruments of ratification and will meet their commitment to reduce their domestic emissions by at least 40 % between 1990 and 2030.

In 2016, the EU greenhouse gas emissions were already 23 % below the 1990 level based on preliminary 2016 data, excluding land use, land use change and forestry (LULUCF) and including international aviation (see Figure 1).

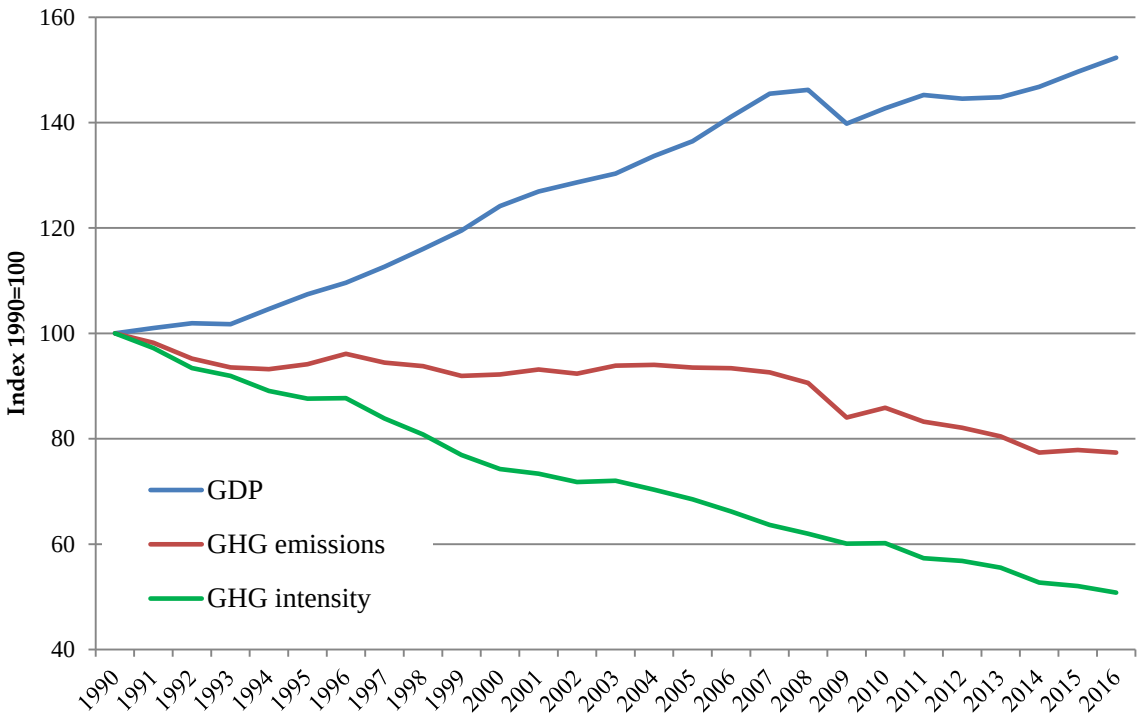
According to most recent Member States' projections based on existing measures, the 20 % target for 2020 will be met. In 2030, emissions are expected to be 30 % lower than in 1990 if no additional policies are implemented. The EU is therefore currently negotiating new legislation to ensure that it will meet its objective of reducing emissions by at least 40 % between 1990 and 2030 (see section 3).

Figure 1: Progress towards meeting Europe 2020 and 2030 targets (total EU GHG emissions)



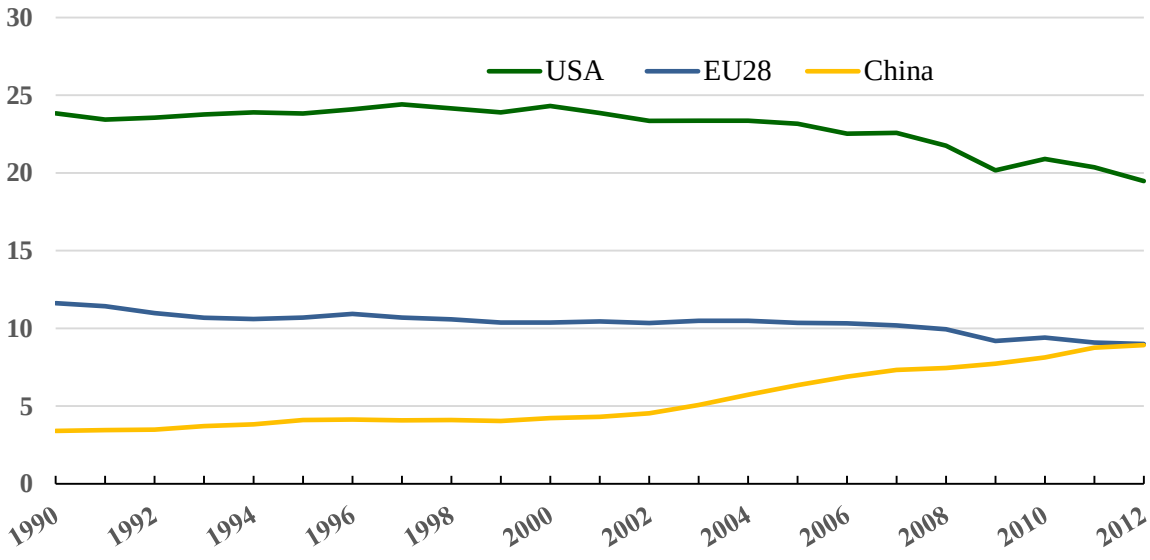
The EU continues to successfully decouple its economic growth from its emissions (see Figure 2). From 1990 to 2016, the EU's GDP grew by 53 %, while total emissions fell by 23 %. The EU economy's greenhouse gas emission intensity, defined as the ratio between emissions and GDP, halved in that period.

Figure 2: Change in real GDP, GHG emissions and GHG emission intensity in the EU, 1990-2016



Ex post evaluation of climate policies shows that lower emission intensity of the economy is mainly driven by innovation. Innovation includes not only using low-carbon technologies such as renewable energy but also raising productivity, for instance through more efficient power plants and cars. The relative shift between economic sectors, e.g. from industry to services, has had a marginal effect across the EU.

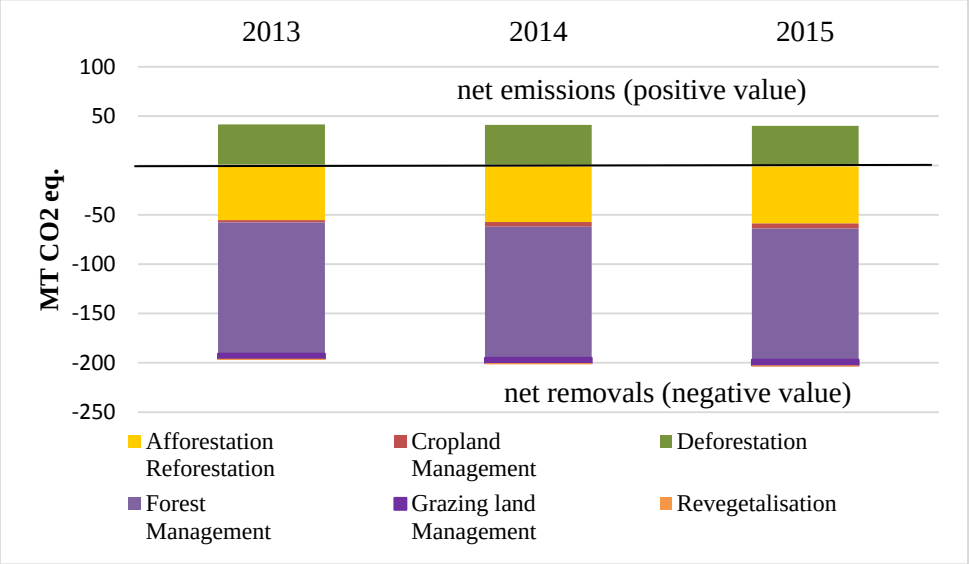
Figure 3: Development of per capita emissions of the largest economies, 1990-2012



It is estimated that the EU's share of global greenhouse gas emissions fell from 17.3 % in 1990 to 9.9 % in 2012. Its share of CO_2 emissions alone fell from 19.7 % in 1990 to 9.6 % in 2015. A comparison of per capita emissions of the three major greenhouse gases (CO_2, CH_4 and N_2O) for the three largest economies shows that the EU and China had significantly lower per capita emissions than the US (see Figure 3).

In 2015, the LULUCF sector in the EU provided a reported carbon sink absorbing 305 Mt CO_2 eq (including cropland and grassland). The accounted credit, representing the difference between the reported value and a reference baseline, increased from 115 to 122 Mt CO_2 eq. between 2013 and 2015. Forest management accounts for most of this credit (see Figure 4). The EU therefore remains on track to have no debit from the LULUCF sector and is very likely meeting its commitment under the Kyoto Protocol.

Figure 4: Accounted emissions and removals from the LULUCF sector per activity, 2013-2015



1.2. Progress towards the 2020 targets

According to Member States' latest projections based on existing measures, emissions are expected to be 26 % lower in 2020 than in 1990. The EU therefore remains on track to meet its domestic emissions reduction target of 20 % by 2020 and consequently its obligations under the second commitment period of the Kyoto Protocol.

Between 2005 and 2016, stationary emissions, e.g. from power plants or refineries, covered by the EU emissions trading system (ETS) fell by 26 %. This is markedly more than the 23 % reduction set as the 2020 target. Such emissions accounted for around 40 % of total EU greenhouse gas emissions in 2016. Total EU emissions fell by 0.7 % from 2015 to 2016, while overall GDP rose by 1.9 %, confirming that emissions and GDP are being decoupled.

Greenhouse gas emissions from fixed installations covered by the EU ETS fell by 2.9 % compared to 2015, according to preliminary data. This marks a decreasing trend in emissions since the start of Phase 3 of the EU ETS. Moreover, the surplus of emission allowances that had built up since 2009 fell significantly, to around 1.69 billion allowances, as fewer allowances were auctioned. The surplus is at its lowest level since 2013.

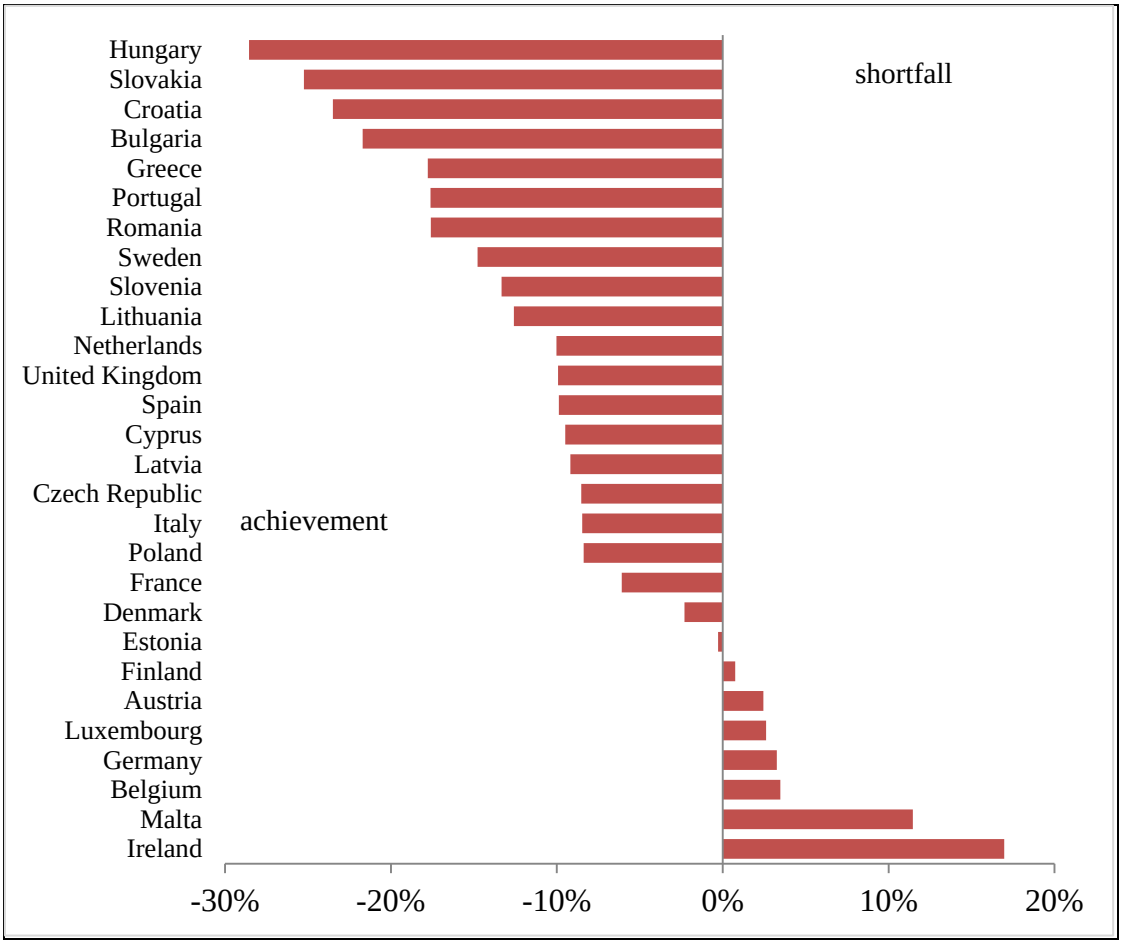
Emissions not covered by the EU ETS were 11 % lower in 2016 than in 2005, exceeding the 2020 target of a 10 % reduction. However, in 2016 they increased for the second year in a row, by 0.9 %. This is at least partly explained by the lower oil prices and higher demand for heating because of weather conditions in both 2015 and 2016. Under the Effort Sharing Decision (ESD), Member States must meet binding annual greenhouse gas emission targets for 2013-2020 in sectors not covered by the ETS, including buildings, transport, waste and agriculture. Malta has failed to meet its ESD target for each of the three years 2013-2015 and has used the flexibility mechanism to comply with its legal obligations. Preliminary estimates for 2016 show that Malta, Belgium, Finland and Ireland will likely fail to meet their non-ETS targets.

According to national projections based on policies already implemented, most Member States are expected to reach their 2020 targets (see Figure 5). Only a few will need to take additional measures or make use of flexibilities such as buying allocations from other Member States that have overcomplied or use own surpluses from the first years of the period.

Some Member States are in a special situation with regard to 2020.

- In Ireland, emissions are expected to increase by 6 percentage points between 2015 and 2020 and to remain above the annual ESD allocations, with transport emissions expected to increase by 12 %. In June 2017, as part of the EU's annual cycle of economic coordination (the European Semester), it was recommended that Ireland further increases investment in public transport.
- Malta's emissions are expected to remain above the annual ESD allocations. Emissions from hydrofluorocarbons and in the transport sector rose.

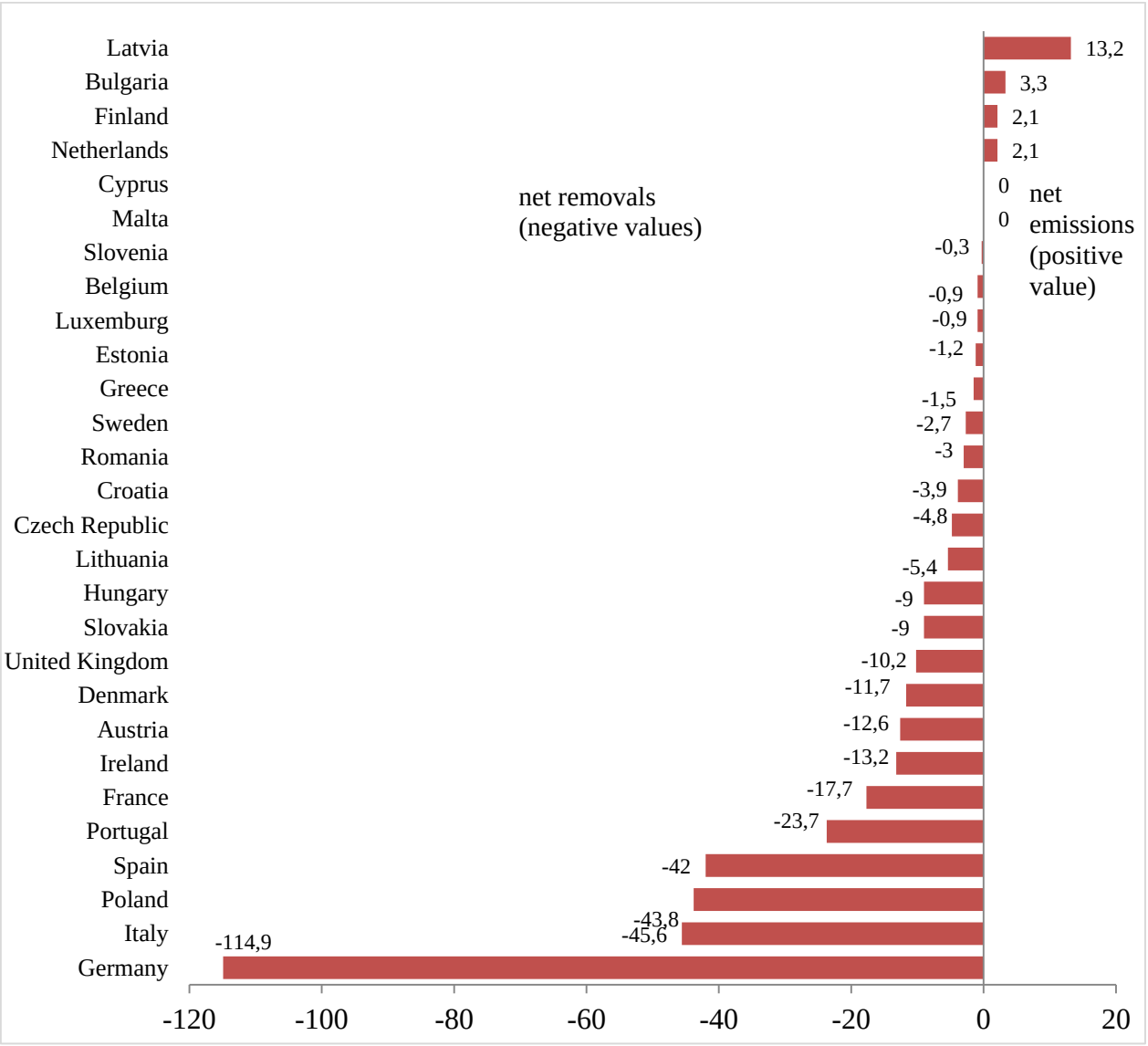
Figure 5: Relative gap between projected 2020 emissions outside ETS and 2020 targets (in % of 2005 emissions).



- Belgium is expected to miss its 2020 target by 3.5 percentage points. As indicated in the European Semester, the composition of public spending must be improved in order to create room for infrastructure investment, including transport infrastructure. Continuing favourable tax treatment of company cars contributes to pollution, congestion and greenhouse gas emissions.
- According to the most recent national projections, Germany is expected to miss its target by 3.3 percentage points by 2020. Based on preliminary data, in 2016, Germany's non-ETS emissions reductions were only slightly below the target.
- Austria and Luxembourg are expected to miss their 2020 targets by a margin of less than 3 percentage points.
- According to its own projection, Finland could miss its 2020 emissions target, by a margin of less than 1 percentage point. However, for 2016, preliminary data indicate that Finland's non-ETS emissions were already 3 percentage points higher than the allocation for that year.

As regards LULUCF, under the Kyoto Protocol most Member States have a cumulative accounted net removal from 2013 to 2015. Only Latvia, Bulgaria, Finland and the Netherlands have a provisional net emission. It should be noted that LULUCF accounts will be cumulated over the period 2013 to 2020, and therefore full accounting results cannot yet be determined and are therefore provisional. Nevertheless, as mentioned above, as yet there is no significant compliance risk at EU level.

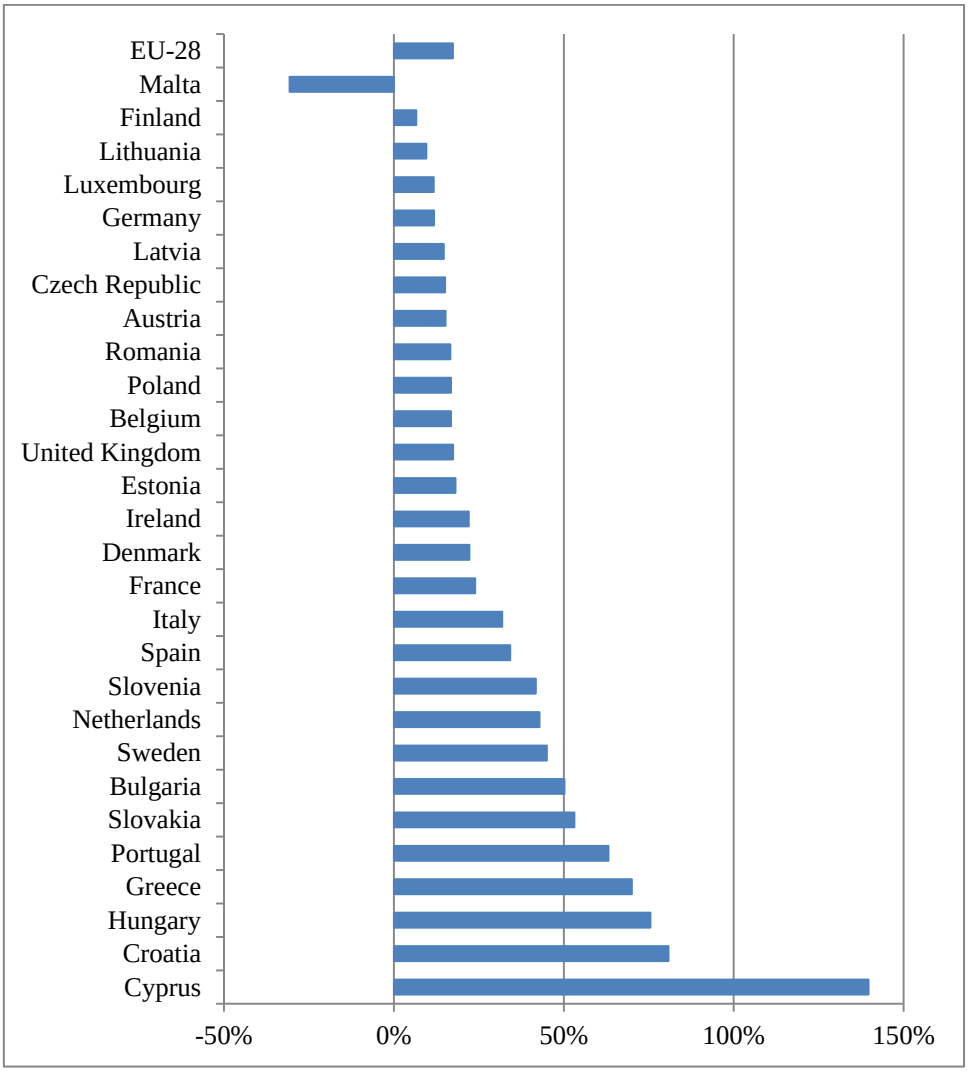
Figure 6: Provisional accounted cumulative LULUCF net emissions and removals per Member State (2013-2015)



1.3. Member States' compliance with the Effort Sharing Decision

All 28 Member States complied with their ESD obligations for the years 2013-2015. Malta emitted more than its annual emission allocations (AEA), but covered its surplus emissions by purchases of units from Bulgaria. Sweden emitted less than its allocation and cancelled its spare units to enhance the environmental integrity of the system. As yet, no international credits from the clean development mechanism (CDM) or joint implementation (JI) have been used to comply with ESD obligations. The expected cumulative surplus of annual emission allocations per Member State for the three years 2013-2015 is shown in Figure 7.

Figure 7: Cumulative surplus of AEA as percentage of 2005 emissions, 2013-2015



2. CLIMATE FINANCE

2.1. Revenue from auctioning EU ETS allowances

Member States earned nearly EUR 15.8 billion from the auctioning of EU ETS allowances over the period 2013-2016. Approximately 80 % has been used or is planned to be used for climate and energy purposes. Member States stated that most of these revenues would be used domestically (see Figure 8).

Figure 8: Change in the use of ETS revenues, 2013-2016 (in million €)

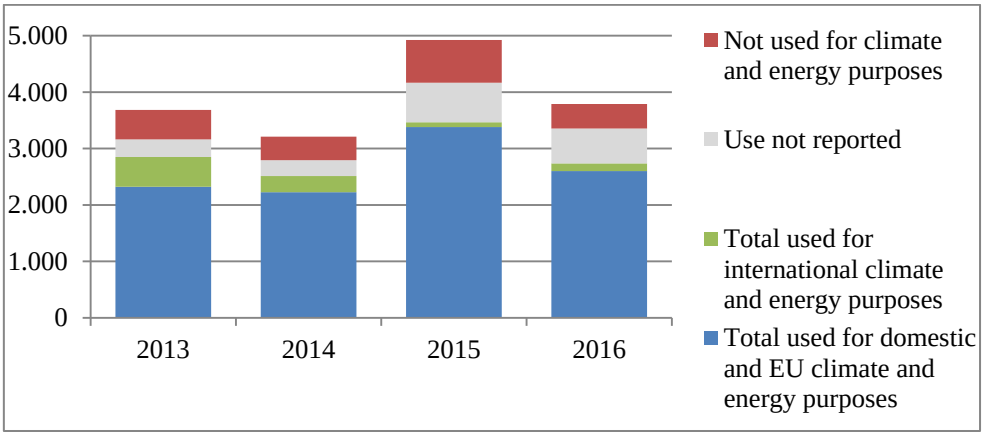
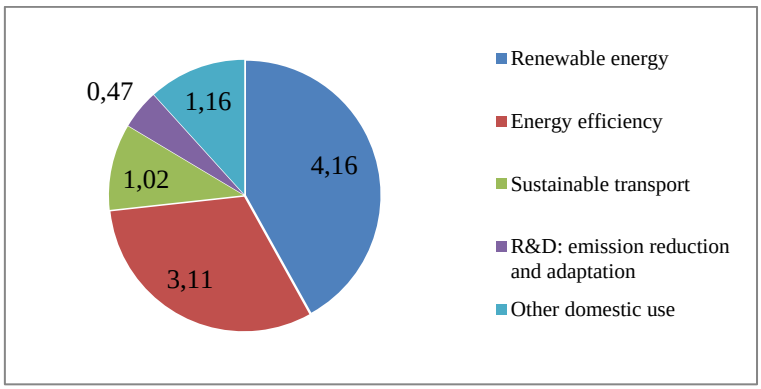


Figure 9 breaks down domestic use of revenues for energy and climate purposes by category. The largest category is renewable energy, followed by energy efficiency and sustainable transport.

Figure 9: Domestic use of auction revenues, 2013-2016 (in billion €)



For instance, in Greece, Malta, Portugal and Spain the largest share of these revenues is invested in renewable energy. In the Czech Republic, France, Hungary and Slovakia, by contrast, the largest share of auctioning revenues is invested in energy efficiency, e.g. in renovating apartment buildings. In Cyprus, 30 % of auctioning revenues is spent on forest management, while 33 % of revenues in Italy go towards adapting to climate change.

NER 300

NER 300 is one of the world's largest funding programmes for innovative low-carbon energy demonstration projects. Thirty-nine innovative demonstration projects in renewable energy and carbon capture and storage covering 20 EU Member States were awarded EUR 2.1 billion in funding from the auction of 300 million ETS allowances. Four of the projects are now operational and 16 have reached their final investment decision.

Approximately EUR 2.2 billion in additional private investment has been attracted. Thus, in total, about EUR 4.3 billion has been raised, paving the way for further market replication and falling costs. However, these first-of-a-kind projects are risky and, so far, four project proponents have not been able to raise sufficient funding; the projects have had to be cancelled. In early 2017, Member States decided to re-invest these unspent funds, totalling at least EUR 436 million, in relevant low-carbon projects through two existing financial instruments managed by the European Investment Bank, namely the InnovFin Energy Demo Projects and the Connecting Europe Facility.

The Swedish Windpark Blaiken project is one of four already operational NER 300 projects. It developed a 225 MW wind farm in an arctic climate with turbines equipped with innovative anti-icing systems. The NER 300 programme only finances the additional costs incurred by this innovative system.

2.2. Mainstreaming climate policies into the EU budget

Between 2014 and 2020 at least 20 % of the EU budget is expected to be allocated to climate-relevant expenditure, amounting to approximately EUR 200 billion. The state of implementation is as follows.

- Five European structural and investments funds (ESIFs), namely the European regional development fund, the cohesion fund, the european social fund, the European agricultural fund for rural development and the European maritime and fisheries fund. They account for more than 43 % of the EU budget. Twenty-eight partnership agreements and more than 530 fund-specific programmes contribute to financing climate policies. A common methodology has been set up to determine the level of support for climate change objectives. More than EUR 115 billion will support climate action objectives, corresponding to about 25 % of the total funds.

The MYRTE and PAGLIA ORBA platforms in Corsica, France have been co-financed by the European regional development fund. These platforms produce and store energy through a hydrogen chain. This consists of an electrolysis apparatus which, during hours of low consumption, produces hydrogen and oxygen from water molecules. This energy is then distributed via a fuel cell producing electricity during hours of high consumption, for example in the evening, while the photovoltaic panels are inactive.

- The common agricultural policy (CAP) covers the European agricultural guarantee fund (EAGF) and the European agricultural fund for rural development (EAFRD), which together account for 39 % of the EU budget. Since 1990, agriculture-related non-CO_2 emissions have fallen by 24 % in the EU. CAP support for climate-friendly agriculture has contributed to this

decoupling. Environmental legislation such as the nitrate directive also contributed to reducing emissions.

The CAP requires farmers receiving direct payments to respect certain farming practices which are beneficial for the climate and the environment. Farmers also have to comply with a number of statutory requirement relating to climate change and the environment. In addition, the CAP rural development policy, for instance, seeks to reduce emissions by supporting farm modernisation in order to cut energy consumption, produce renewable energy, improve livestock and land management and improve input efficiency. Support for afforestation, forest protection and sustainable forest management also contribute to reducing emissions. In 2016, EUR 18.7 billion of the CAP's budget was estimated to be climate-related. Moreover, the use of innovation strategies are stimulated by the Rural Development Programmes, which help to decrease emissions and to increase the capacity to sequester carbon and organic matter in agricultural soils.

- Horizon 2020, the main EU funding programme for research and innovation (R&I), has a budget of EUR 79 billion for 2014-2020. Of this, 35 % is expected to support climate-related R&I. This support includes targeted, societal challenge-driven R&I actions and bottom-up, demand-driven funding.

  In the first three years of Horizon 2020, approximately EUR 4 billion has been committed to societal challenges such as climate change, low-carbon energy and industrial processes, clean transport and a sustainable bio-economy. On the top of this, around EUR 2 billion has been provided to support bottom-up scientific initiatives and innovative ideas through the 'excellent science' and 'industrial leadership' pillars of the programme.

  Following the adoption of the Paris Agreement at COP21, efforts and resources will be further concentrated on fighting climate change and decarbonising the economy. A new EU focus area, 'Building a low-carbon, climate-resilient future', will specifically support the implementation of the Paris Agreement with a budget of about EUR 3 billion for 2018-2020. Actions will accelerate clean energy and transport innovation, support the design of cost-effective mitigation pathways and adaptation planning, and produce new scientific knowledge for national mid-century strategies, the IPCC's sixth assessment cycle and the UNFCCC global stocktake in 2023.

  Horizon 2020 is open to the world, and many of these projects and activities will be realised through international cooperation advancing the global effort to meet the climate challenge.

- The European fund for strategic investments (EFSI) is an initiative backed by a EUR 16 billion guarantee from the EU budget, complemented by a EUR 5 billion allocation from the European Investment Bank's (EIB) own resources. This fund supports strategic investment in key areas such as infrastructure, education, research, environment and resource efficiency, as well as innovation and risk finance for small businesses. Based on the total guarantee of € 21 billion, the EFSI is expected to mobilse EUR 315 billion of investment by mid-2018. The EFSI has already financed several renewable energy investments, including transport, industry and energy storage projects. For 2018-2020, an extension of the fund, EFSI 2.0, is under preparation. It will have a particular focus on innovative, low-carbon projects that will

contribute to achieving the Union's climate targets. Under EFSI 2.0 the EU guarantee shall increase to EUR 26 billion, complemented by a EUR 7.5 billion EIB allocation. In the new configuration, EFSI 2.0 is expected to mobilise a total of at least half a trillion euro of investment by the end of 2020.

- The LIFE sub-programme for climate action contributes to the implementation and development of climate policy and legislation through action grants and financial instruments. In 2016, EUR 54.5 million has been awarded to twenty nine projects with EU added value for mitigation, adaptation, and governance and information. Two LIFE pilot financial instruments are also under implementation: the Private Finance for Energy Efficiency (PF4EE), which aims to increase private financing for investment in energy efficiency-enhancing projects, and the Natural Capital Financing Facility (NCFF), which supports investment in natural capital that helps to achieve biodiversity and/or climate change adaptation objectives. So far, six local banks have created innovative lending facilities for energy efficiency investments, particularly for small and medium-sized enterprises in the Czech Republic, Spain, Belgium, France, Italy and Portugal. For NCFF, one project in Netherlands has been signed. The EUR 6 million NCFF loan to Rewilding Europe Capital will be able to support over 30 conservation and rewilding businesses across Europe, including wildlife tourism operators, sustainable fisheries and producers of natural products such as honey.

LIFE METHAmorphosis is a Spanish project co-financed under LIFE 2014. It aims to improve waste management, reduce energy consumption and produce high-quality bio-methane by demonstrating, at industrial scale, two innovative waste treatment systems: one for urban waste plants and the other for agri-industrial and other organic waste treatment plants.

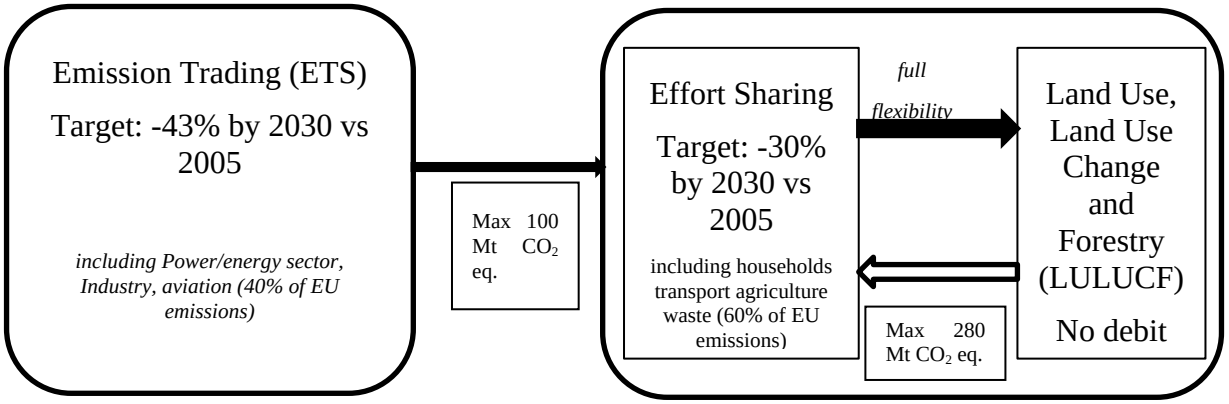
3. MITIGATING EU EMISSIONS

Under the Paris Agreement, the EU and its Member States collectively committed to decreasing their emissions by at least 40 % by 2030 from 1990 levels. This commitment is linked to a raft of proposed legislation in the area of climate action, energy and transport. The proposals are currently being negotiated with the European Parliament and the Council. Figure 10 below shows how the three main pillars of the EU's proposed 2030 climate policy framework, covering all greenhouse gas emissions, are inter-related. Implementation is proposed to be closely monitored through the governance of the EU's Energy Union. Member States' public and private stakeholders will also be aided in meeting the overarching 2030 greenhouse gas targets by:

i. the provision of climate finance (see previous section) without prejudging financial allocations for the climate financing in the next Multiannual Financial Framework, and

ii. complementary new EU-wide legislation, especially on energy efficiency, renewable energy, emissions standards for cars, vans and heavy duty vehicles, carbon capture and storage, and fluorinated gases.

Figure 10: The three proposed legal bases for the EU's 2030 climate policy framework



3.1. Revision of the EU ETS — phase 4 (2021-2030)

The Commission's legislative proposal of July 2015 on revising the EU ETS for phase 4 aims to reduce the emissions from energy production plants and industry by 43 % by 2030 from their 2005 levels. The European Parliament and Council are currently involved in trilogue negotiations, having adopted positions on the revision of the Directive in February 2017.

The proposal would increase the annual reduction in the number of allowances from the current 1.74 % to 2.2 % in order to provide the emissions reductions and thus deliver the underlying environmental objective. In their positions, both Parliament and the Council propose further strengthening the EU ETS by temporarily doubling the rate at which allowances are placed in the Market Stability Reserve (MSR) from 2019. This change would allow the MSR to reduce the existing market oversupply of allowances faster.

Since European leaders have agreed to continue free allocation after 2021, the necessary changes to update the relevant rules are also proposed. This includes updated benchmarks to reflect technological progress where necessary, criteria for the future composition of the carbon leakage list and procedures to reflect changes in production.

Several low carbon funding mechanisms are proposed, in particular an Innovation Fund (to support demonstration of innovative renewable energy and low-carbon innovation in industry, as well as carbon capture, use and storage) and a Modernisation Fund (modernising the energy systems of EU Member States with lower GDP).

3.2. Proposals for regulations on effort sharing and on land use for 2021-2030

Two proposals tabled in July 2016 set out how exactly the EU's Member States should implement their commitment to reduce its non-ETS emissions by 30 % by 2030 compared to 2005. The European Parliament and Council are currently involved in trilogue negotiations, having adopted positions on the two proposals between June and October 2017.

First, for sectors outside the ETS and LULUCF each Member State would have binding annual greenhouse gas emission limits for 2021-2030. Member States have agreed to share efforts on the basis of fairness, solidarity, cost-effectiveness and environmental integrity. Thus, the proposal recognises Member States' varying capacity to take action by setting them different 2030 targets, primarily based on 2013 GDP per capita. The proposed 2030 targets range from 0 % to 40 % reductions compared to 2005 levels. Two new limited flexibilitiess are given: allowing eligible Member States to use EU ETS allowances, and allowing all Member States to use greater action in land use sectors in order to meet part of their binding effort-sharing targets.

Second, Member States would be required to balance greenhouse gas emissions and removals from land use, land use change and forestry under the 'no debits rule'. It is proposed that greenhouse gas emissions from land use would have to be entirely compensated by equivalent removal of CO_2 from the atmosphere through action in that sector or in the effort-sharing sectors. For example, if a Member State cuts down forests, it must compensate for the resulting emissions by planting new forest, by managing its existing forests, croplands and grasslands more sustainably, or by further reducing emissions in its effort-sharing sectors. In addition, Member States would also have the option of trading LULUCF credits. If implemented, this accounting system would help Member States to incentivise farmers and foresters to move towards climate-smart agriculture and forest management.

3.3. Low emission mobility strategy

The EU's mobility sector is a major employer and an indispensable driver of the EU economy's global competitiveness. A modern mobility system is needed for the transition to a low-carbon economy. Measures include developing clean technologies through improved emissions standards, and making use of low-carbon fuels. In July 2016 the Commission adopted an EU Strategy for low emission mobility which is based on three pillars: higher efficiency of the transport system, low-emission alternative energy for transport, and low- and zero emission vehicles.

The Commission is working towards the deployment of cooperative, connected and automated vehicles, which will help reduce emissions and congestion. Furthermore, the Commission proposes adjustments to the regulatory frameworks for road charging, electronic tolling and combined transport.

As regards clean technologies, EU-wide carbon dioxide emissions standards are driving innovation and efficiency. The Commission is proposing new post-2020 standards for cars and vans. It has proposed a monitoring and reporting system for emissions from heavy duty vehicles that paves the way for standards for this type of vehicles in 2018. The proposed review of public procurement of clean vehicles will consequently help create markets for innovative and low-emission products.

As regards the use of low-carbon and renewable fuels, in November 2016 the Commission proposed a recast of the Renewable Energy Directive with a strong advanced biofuels component, by means of an EU-wide obligation on transport fuel suppliers. The proposed revision of the Energy Performance of Buildings Directive (see section 3.4) and the electricity market design will contribute to the provision of charging points in buildings and an energy grid/system which is fit for purpose, and support the transition towards zero-emission mobility. The Alternative Fuels Infrastructure Directive provides a strong framework to ensure the availability of infrastructure, common standards and consumer information for alternative energy. The Commission is issuing an Alternative Fuels Infrastructure Action Plan to address governance, financing and interoperability of infrastructure services.

3.4. Energy efficiency

The Commission has proposed a revision of the Energy Efficiency Directive (EED) with a binding 30 % EU target for 2030. The EED will also extend energy savings requirements to 2030 and simplify the rules for calculating such energy savings.

The review of the European Performance of Buildings Directive promotes the use of smart technology in buildings and includes key measures to further promote investment in energy efficiency and renewable energy.

3.5. Renewable energy

Under the proposed recast of the Renewable Energy Directive, renewable energy sources must account for at least 27 % of the EU's gross final energy consumption by 2030. This binding target is in line with European Council conclusions of October 2014. The recast directive also creates an innovation-friendly regulatory environment and promotes long-term investment.

3.6. Governance

The European Commission adopted in November 2016 a regulation proposal for the governance of the Energy Union. This would require Member States to draft integrated national energy and climate (NECP) plans covering a 10-year period, starting from 2021 to 2030. The plans will set out their national energy and climate objectives and will represent their contribution to the Energy Union's objectives, including the EU's joint energy efficiency and renewable energy targets. The plans should also be aligned with the long-term low emissions strategies submitted every 10 years with a proposed 50-year outlook.

The proposal establishes a calendar for drafting, finalisation and updating the plans closely aligned with the 5-year review cycle set out in the Paris Agreement. The plans will inform the EU's and the Member States' participation in the facilitative dialogue in 2018 and the Global Stocktake in 2023, and every 5 years thereafter.

The proposal also lays down integrated monitoring and reporting rules for tracking progress on implementing the plans. It provides for specific mechanisms to cover any gaps in achieving EU targets for energy efficiency and renewable energy. It also provides for a transparent, accurate, comprehensive, complete and consistent monitoring mechanism for greenhouse gas emissions so that the EU meets its reporting obligations under the Paris Agreement.

Member States are already drafting their national plans, with more than two thirds having set up political processes to prepare these. More than half of them engaged in public consultation in relation to national plans. Approximately half of them already have long-term strategies for climate with a perspective until at least 2030. More than one third of Member States have indicated to the Commission that they have started work on the analytical basis and on regional cooperation in preparation of their NECPs.

3.7. The monitoring, reporting and verification (MRV) system for EU shipping

The EU supports ongoing discussions at the International Maritime Organisation (IMO) to globally reduce emissions from international shipping (see section 5.3). It has already amended its own MRV laws on shipping emissions in relation to ports in the European Economic Area. As a result, companies operating ships over 5 000 gross tonnes submitted plans detailing their monitoring procedures in

August 2017. Monitoring and reporting will apply to shipping activities from 1 January 2018. An assessment of the possible alignment of the EU MRV scheme with the IMO data collection system concerning fuel consumption from ships is ongoing. Following this assessment, there could be further proposals to amend the EU's MRV legislation in 2018.

3.8. Space strategy

Services provided by Copernicus, the world's largest single earth observation programme, can already be used to track land cover and land use change, and could be used in the future to achieve the objectives of the LULUCF proposal (see section 3.2) and monitor deforestation and all forms of land use change on a global scale.

Furthermore, in line with its space strategy, the Commission is testing the feasibility of global CO_2 anthropogenic emission monitoring and verification support capacity using a collection of independent, observation-based atmospheric data which could in future complement national inventory systems and help increase their reliability and accuracy.

3.9. Carbon capture and storage

The European Union is stepping up its research efforts into carbon capture and storage (CCS) and into the commercial viability of carbon capture and use (CCU). A number of countries such as The Netherlands, the UK and France are exploring options for developing clusters of energy- and carbon-intensive industries where CO_2 could be captured for subsequent safe geological storage or use. Four proposals for cross-border CO_2 transport infrastructure were submitted for inclusion in the list of projects of common interest and are eligible for financial support.

3.10. F-gases

The new European Regulation to control emissions from fluorinated greenhouse gases (F-gases) has been in effect since 1 January 2015. It is aimed at cutting total EU emissions from F-gases by two thirds by 2030 compared to 2014 levels. It prohibits the placing of F-gases on the market in certain circumstances where alternatives are available. In 2018, quotas for legally placing HFCs on the EU market were reduced to 63 % of 2015 levels.

4. ADAPTING TO CLIMATE CHANGE

The 2013 strategy for adapting to climate change aims to prepare EU Member States for current and future impacts. In particular, it ensures that adaptation is mainstreamed across all relevant EU policies, to secure greater coordination, coherence and information sharing across Member States. The Commission is evaluating the strategy to mid-2018 and is considering revising it, partly in view of the Paris Agreement.

LIFE FRANCA is an Italian project co-financed under LIFE 2015, focusing on flood risk anticipation and communication in the Alps. The project aims to prepare the population for flood events through a participatory process involving citizens, authorities and experts. The results of this pilot project will be transferable to other regions, as well as to other natural hazards connected with climate change.

The general trends include the following:

- Twenty five Member States have adopted national adaptation strategies and the rest are being drafted. However, less than half of Member States have yet produced or started to implement action plans.
- The sectors most commonly identified as needing to adapt to the adverse effects of climate change are water management and water resources, coastal areas, forests and forestry, agriculture, biodiversity and ecosystems, human health, and tourism and recreation.
- Most Member States are just starting to monitor and evaluate the effectiveness and efficiency of adaptation actions.
- Cities have stepped up efforts to identify climate change adaptation needs and update their urban policies (see section 5.1), including implementing green infrastructure and ecosystem-based approaches to adaptation.

5. PARTICIPATING IN INTERNATIONAL CLIMATE POLICY

5.1. Global climate action agenda

In response to the Paris Agreement's call to mobilise non-state actors including business, cities, citizens and international civil society, the EU is supporting a number of flagship initiatives such as Mission Innovation, the Covenant of Mayors, the NDC Partnership, Renewable Energy for Africa, 4/1000 for Climate Smart Agriculture and InsuResilience. All of these initiatives are meeting the specific targets they have set themselves. Systematic tracking tools to measure their impact on emissions reductions and resilience are currently being devised.

By way of example, the Global Covenant of Mayors for Climate & Energy brings together more than 7 300 cities and towns in more than 56 countries. It informs, mobilises and supports cities taking action on mitigation and adaptation to climate change, and on access to clean and affordable energy. Cities voluntarily draft local strategies and plans for mitigation and adaptation. The Covenant makes their commitments and actions visible, assists with exchanges of experience and provides technical support. It has a strong, bottom-up approach based on three points:

i. a new target of at least a 40 % reduction in CO_2 emissions (and possibly other greenhouse gases) by 2030;

ii. both mitigation and adaptation through the Mayors Adapt initiative;

iii. global scope, opening up participation to local authorities worldwide.

5.2. Aviation

The EU has supported the development of a global measure to address CO_2 emissions from international aviation. A Resolution on a Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA) was adopted at the 39th ICAO Assembly in early October 2016. CORSIA is conceived as a carbon offsetting scheme with the objective of stabilising international aviation emissions at 2020 levels. It will be introduced from 2021.

ICAO member countries are free to participate in the first two phases, which run until 2027. Currently, according to Member State's statements on their participation in the scheme, emission coverage could be around 80 % of what is needed to make aviation carbon-neutral from 2020. To ensure CORSIA's effectiveness and integrity, key elements need to be in place, such as:

- rules on monitoring, reporting and verification of emissions (including biofuels);
- eligibility criteria for emission units;
- a registry that provides an appropriate level of transparency and accountability.

Once final agreement on these is reached, ICAO members will have to introduce them in each country.

At the same time, the EU is addressing aviation emissions through the EU Emissions Trading System. After the 2016 ICAO Assembly the Commission approved a legislative proposal to extend the current intra-European scope of the EU ETS for aviation (flights between airports in the European Economic Area) beyond 2017, and provide for a new review once there is more clarity on CORSIA's rules and implementation by non-EU countries. The proposal on ETS aviation is expected to be adopted by the Council and by the European Parliament by the end of 2017.

Horizon 2020 contributes to the achievement of ICAO's carbon neutrality growth objective with research and development on aircraft technologies, operational improvements as well as on the development of alternative fuels.

5.3. Maritime policy

In October 2016, the IMO agreed on a roadmap for drafting a comprehensive IMO strategy for reducing GHG emissions from ships. Two key meetings on this IMO strategy were held in June and July 2017. At these meetings, a number of non-EU partners (e.g. small island developing states and Canada) and the EU Member States argued in favour of including an adequate emissions reduction objective in the strategy.

The IMO is expected to adopt an initial strategy setting out the level of ambition and suggesting measures and timelines in Spring 2018. If that happens, the international shipping sector and the IMO would be in a position to provide information on its initial 'contribution' to international efforts to cut CO_2 emissions for the 2018 stock-taking process (the 'facilitative dialogue') under the Paris Agreement. Adoption of the final IMO strategy, including short-, medium- and long-term measures, is expected in Spring 2023.

5.4. ETS linking with Switzerland

The emergence of a global carbon market, notably through the linking of emissions trading systems, is a longstanding goal of the EU. It would offer opportunities for greater emissions reductions while cutting the cost of climate change mitigation. Negotiations with Switzerland on linking emissions trading systems started in 2010 and were concluded in 2015. The Linking Agreement was initialled in January 2016 and proposals for signing and concluding it are now with the Council and Parliament.

5.5. International carbon markets

Beyond this, and even more so following COP 21 and the entry into force of the Paris Agreement, the EU continues to play an active role in supporting the development of carbon pricing and, in particular, of emissions trading systems in other parts of the world. It does this both through multilateral initiatives such as the Partnership for Market Readiness, run by the World Bank, and involvement in International Carbon Action Partnership (ICAP) activities and training. It also conducts bilateral activities, in particular by stepping up cooperation with China, which is preparing a nationwide system. As in the EU, emissions trading and carbon pricing in general have an important role to play in the rest of the world's transition to a low-carbon, energy-efficient economy.

5.6. Ratification of the Kigali Amendment

In July 2017, the EU and its Member States committed to ratifying the Kigali Amendment to the Montreal Protocol quickly, so that it comes into force on 1 January 2019. This amendment, adopted in October 2016, is a significant step forward in implementing the Paris Agreement by limiting the global production and use of hydrofluorocarbons (HFCs). Science suggests that an ambitious phase-down of HFCs alone could prevent up to 0.5 °C of global warming by the end of the century.

5.7. Supporting developing countries

The EU and its Member States are the world's biggest providers of official development assistance to developing countries, delivering EUR 75.4 billion in 2016. In particular, the EU, EIB and Member States provided EUR 20.2 billion to help developing countries tackle climate change that year.

Furthermore, the EU and the African Union intend to put in place an Africa Research and Innovation Partnership on Climate Change and Sustainable Energy. This partnership, which needs to be approved formally by both sides, will be jointly funded and owned.

The EU also supports developing countries in their efforts toward implementing the Reducing Emissions from Deforestation and Forest Degradation (REDD+) programme. Support is provided through international initiatives such as the REDD+ Partnership, the Forest Carbon Partnership Facility (FCPF), the EU REDD Facility, and the UN-REDD programme. In order to support developing countries in limiting and reducing GHG emissions from their shipping sectors, in 2015 the Commission signed a contract with the International Maritime Organization (IMO) providing EUR 10 million to implement a four-year project entitled 'Capacity Building for Climate Change Mitigation in the Maritime Shipping Industry'. For this purpose, five Maritime Technology Cooperation Centres (MTCC) are being established in the different eligible world regions, namely Africa, Asia, Small Islands Developing States in the Pacific, Caribbean and Latin America. These MTCCs will act as centers of excellence to promote the uptake of low carbon technologies and operations in maritime transport.

In the shipping sector, the Commission has signed in 2015 a contract with the International Maritime Organization (IMO) providing EUR 10 million to implement a four-year project entitled "Capacity Building for Climate Change Mitigation in the Maritime Shipping Industry" to promote the uptake of low carbon technologies and operations in maritime transport.