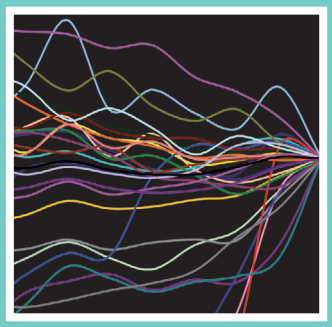
EEA Report | No 10/2013

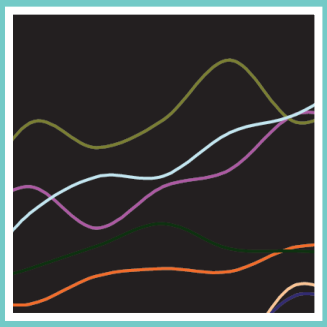
Trends and projections in Europe 2013

Tracking progress towards Europe's climate and energy targets until 2020

Executive summary

ISSN 1725-9177





European Environment Agency

Executive summary

This 2013 edition of the annual EEA 'Trends and projections' report aims to provide an assessment of the progress of the European Union (EU) and European countries towards achieving their climate mitigation and energy policy objectives. These targets include international commitments under the Kyoto Protocol (KP) and the EU's own commitment to reduce its greenhouse gas (GHG) emissions by 20 % during the 2013–2020 period.

The report also broadens its scope to include a new assessment of progress towards energy policy objectives adopted by the EU for 2020, which aim to increase the share of renewable energy sources (RES) to 20 % of EU's final energy consumption and to increase energy efficiency by 20 %. Taken together, these three climate and energy targets for 2020 constitute the 20/20/20 objectives which form part of the 'Europe 2020 — Europe's growth strategy'.

The report supports and complements the annual report of the European Commission to the European Parliament and the Council on the progress of the EU and its Member States towards set targets, as required by Article 21 of the EU Monitoring Mechanism Regulation (MMR) (EU, 2013a).

The first section of the report, Part A, looks at progress towards Europe's objectives under the Kyoto Protocol's first commitment period (2008–2012).

With the recent release by the EEA and 18 EU Member States of approximated estimates of 2012 GHG emissions, complete data on annual GHG emissions during the KP's first commitment period 2008–2012 is available for the first time. These data allow for a more accurate assessment of progress than in previous years as well as a full analysis of the EU Emissions Trading Scheme (ETS) and non-EU ETS sectors for the 2008–2012 period ([1]).

The Kyoto targets in Europe for 2008–2012

The EU-15 has a common target to be achieved collectively under the 'burden-sharing agreement'. This agreement sets differentiated emission limitation and reduction targets for each EU-15 Member State. Eleven other Member States (all except Cyprus and Malta), Iceland, Liechtenstein, Norway and Switzerland have individual GHG reduction and limitation targets under the KP. Each of these Kyoto targets corresponds to an emission budget (corresponding to a quantity of 'Kyoto units') for the first commitment period (2008–2012) of the KP.

To achieve their Kyoto targets, countries must balance their emissions with the amount of Kyoto units they are holding. Such a balance can be achieved by limiting or reducing their domestic emissions and by increasing their emission budget through the contribution of Land Use, Land-Use Change and Forestry (LULUCF) activities, such as forest management, as well as the use of the KP's flexible mechanisms whereby they can acquire Kyoto units from other countries.

Creation of the EU ETS to achieve Kyoto targets

The EU ETS was introduced to help Member States achieve their Kyoto targets and to achieve cost-efficient emission reductions at the sources of pollution themselves (so-called 'point sources') across the EU. Through the allocation of allowances linked to Kyoto units for the trading period 2008–2012, each national Kyoto target was split into an emission budget for the ETS sectors and another emission budget for the sectors not covered by the ETS. These non-ETS sectors include, inter alia, road transport,

([1]) See EEA Technical report No 14/2013, *Approximated EU GHG inventory: proxy GHG estimates for 2012* (EEA, 2013a).

buildings, agriculture and waste. Member States were themselves able to set the proportion of the emission budgets allocated to the EU ETS and to the non-EU ETS sectors.

Participants in the EU ETS are legally bound to match their emissions with an equivalent number of allowances. Participants with a deficit of allowances are permitted to purchase from those with a surplus operating within the ETS or make use of, to a limited extent, international credits under the KP. To achieve their Kyoto targets, governments must therefore ensure that emissions in the non-ETS sectors are limited or reduced below their own non-ETS emission budget. They can also make use of international credits under the KP as long as this supplements domestic action.

In the EU-15, the overall EU ETS cap (i.e. the maximum amount of emissions allowed) for the period 2008–2012 was 9 % below 2005 levels while the non-ETS sectors had an emission budget of 4 % below their 2005 levels. In Austria, Denmark, Italy, Luxembourg, Spain and Liechtenstein, non-ETS reduction needs were higher than 15 % compared to 2005 non-ETS emissions levels. For all these countries, the non-ETS emission targets for 2008–2012 were relatively more demanding than in the ETS sectors.

The EU ETS in 2008–2012

The EU ETS covers CO_2 emissions from installations in the energy sector as well as most industrial sectors. This includes power stations and other combustion plants, oil refineries, etc. During this second trading period under the EU ETS (coinciding with the first commitment period of the KP), the scheme covered around 11 500 installations in 30 participating countries (27 EU Member States, Iceland, Liechtenstein and Norway). Taken together, these installations emitted around 1.9 billion tonnes CO_2 on average per year, which is equivalent to approximately 41 % of EU GHG emissions. CO_2 emissions from aviation have been included in the scheme since 2012.

Emissions in the period 2008–2012 were influenced by a number of factors such as changes in the fuel mix (electricity sector), observing a shift to gas, increased use of RES and reduced production due to the economic crisis (industrial sectors). The accelerated use of offset credits between 2008 and 2012 and the effects of the economic crisis (which resulted in lower emissions than initially anticipated) resulted in the accumulation of a large surplus of around 1.8 billion allowances.

EU ETS emissions were reduced below ETS caps in most Member States during the period 2008–2012, while success in achieving emission budgets in the non-ETS sectors appeared more difficult. The crisis had a greater impact on emission trends in the ETS sectors as these sectors are more strongly linked to economic activity. The recession, unforeseen at the time ETS caps were set for the second trading period, drove down emissions in the EU ETS more than in the other sectors.

Current progress towards 2008–2012 Kyoto targets — EU-15 on track

The EU-15 is on track towards its 8 % reduction target, compared to base-year levels under the KP. Total average emissions of the EU-15 in the 2008–2012 period have declined by 12.2 % compared to base-year levels. Overall, the combined performance of all EU-15 Member States is equivalent to an overachievement of approximately 236 Mt CO_2-equivalent per year (5.5 % of the EU-15's base-year emissions).

Non-ETS emissions in the EU-15 during the period from 2008 to 2012 were lower than the relevant emission budget by 95 Mt CO_2-equivalent per year, which represents an overachievement equivalent to 2.2 % of total EU-15 base-year emissions.

So-called 'carbon sink' activities (such as when carbon is absorbed by forest growth with any net benefit then being accounted for) are expected to contribute towards an additional emission reduction of 64 Mt CO_2-equivalent per year (1.5 % of EU-15 base-year emissions), based on data for the period 2008–2011.

The use of flexible mechanisms by nine EU-15 Member States is expected to represent an increase in the overall EU emission budget by 81 Mt CO_2-equivalent per year (1.9 % of EU-15 base-year emissions). Eight of these Member States have reported information on allocated financial resources, which represent a total amount of EUR 2 351 million for the whole five-year commitment period.

European countries overall on track towards their Kyoto targets

Almost all European countries with an individual GHG limitation or reduction target under the KP (26 EU Member States, Iceland, Liechtenstein, Norway and Switzerland) are on track towards

achieving their respective targets. This compares favourably to assessments in previous years.

Six EU-15 Member States (Finland, France, Germany, Greece, Sweden and the United Kingdom), all eleven of the EU-13 (i.e. those joining after 2004) Member States with a Kyoto target as well as Iceland and Norway are on track to achieve their target through domestic reductions only. When removals from carbon sink activities are also taken into account, three additional EU-15 Member States (Ireland, Portugal and Slovenia) are also on track towards their respective targets.

Austria, Liechtenstein, Luxembourg and Spain need to acquire a large quantity of Kyoto units to achieve compliance

To reach their Kyoto targets, nine Member States and Liechtenstein originally placed more emphasis on emission reductions in the non-ETS sectors (compared to 2005 levels), where domestic emission reductions are in general more costly to achieve compared to the ETS sectors.

By the end of the first commitment period, gaps between average 2008–2012 non-ETS emissions and their respective budgets remained in Austria, Belgium, Denmark, Liechtenstein, Italy, Luxembourg, the Netherlands, Spain and Switzerland (taking into account the effects of carbon sink activities). All these Member States intend to close the gap by making use of flexible mechanisms under the KP.

The relative gaps were the largest in Austria, Liechtenstein, Luxembourg and Spain. In order to achieve their targets, these countries intend to acquire significant quantities of Kyoto units at national level. These quantities represent between 13 % and 20 % of their respective base-year emissions (not accounting for the use of credits by ETS operators), compared to an EU-15 average of 1.9 %.

In Italy, the amount of credits which would be necessary to be on track represents only 1.1 % of base-year emissions. However, Italy remains the only EU-15 Member State using flexible mechanisms that has not provided information on the amount of credits it intends to purchase, nor on the financial resources allocated for this purpose.

* * *

The 20/20/20 objectives

The second part of the report, Part B, provides a new assessment of progress towards EU climate and energy policy objectives for 2020. The 20/20/20 triple objective, endorsed by the European Council in 2007 and implemented through the EU's 2009 climate and energy package and the 2012 Energy Efficiency Directive (EED) (EU, 2012), focuses on:

- a 20 % reduction of the EU's GHG emissions compared to 1990;
- a 20 % share of renewable energy in the EU's final energy consumption; and
- a 20 % increase of the EU's energy efficiency.

Progress towards 2020 GHG targets — EU close to reaching target ahead of schedule

Total GHG emissions of the EU-28 decreased by 1 % between 2011 and 2012, based on approximated GHG inventories for the year 2012 from 18 Member States and the EEA.

When considering the scope of the EU's climate and energy package, which includes emissions from international aviation, the reduction of 2012 EU emissions is about 18 % compared to 1990 levels. The EU is therefore very close to reaching its 20 % reduction target, eight years ahead of 2020.

Aggregated projections from Member States indicate that total EU-28 emissions will further decrease between 2012 and 2020. With the current set of national domestic measures in place, EU emissions are expected to reach a level in 2020 which is 21 % below 1990 levels (including emissions from international aviation). Implementing the additional measures at planning stage in Member States is expected to achieve a reduction of 24 % below 1990 levels in 2020.

The projected reductions are to be achieved both in the sectors covered by the EU ETS (mostly energy supply and industry), where an emission cap is determined at EU level, and in the other sectors covered by national emission targets under the Effort Sharing Decision (ESD) (EU, 2009a). Beyond the EU ETS itself, the largest reductions are expected via measures supporting renewable energy to ensure that requirements under the Renewable Energy Directive (RED) (EU, 2009b) are met as well as implementation of the Industrial Emissions

Directive (IED) (EU, 2010a), which covers large combustion plants.

The majority of Member States expect that their individual emission targets for the non-trading sectors under the ESD will be met through those policy measures already in place. Thirteen EU Member States, however, will need to implement additional measures, currently in the planning stage, or use flexibility mechanisms to achieve their targets by 2020. In particular, energy efficiency measures in the residential and services sectors will deliver key contributions towards further emission reductions by 2020.

For six Member States (Austria, Belgium, Finland, Ireland, Luxembourg and Spain), the latest projections indicate that even additional measures planned at national level will not be sufficient to bring 2020 emissions below their respective 2020 target under the ESD. These Member States must therefore increase their efforts to design, adopt and implement emission-reducing policies and measures, and will need to consider the use of flexibility mechanisms.

Progress towards 2020 renewable energy targets — EU on track

RES contributed 13 % of gross final energy consumption in the EU-28 in 2011. The EU has therefore met its 10.7 % indicative target for 2011–2012 and is therefore currently on track towards its target of 20 % of renewable energy consumption in 2020.

The RED and Member States' 2010 national renewable action plans (NREAPs) outline two sets of interim targets for the share of RES in gross final energy consumption (referred to as indicative trajectories) towards final 2020 RES targets. These include in particular average target values for the two-year period 2011 to 2012.

In 2011, fourteen Member States (Bulgaria, Germany, Estonia, Finland, Greece, Hungary, Italy, Lithuania, Luxembourg, Romania, Slovakia, Slovenia, Spain and Sweden), as well as Norway, had met or exceeded their average 2011–2012 indicative trajectories from both the RED and their NREAP. Estonia had already reached its legally binding target for 2020.

Seven Member States (Austria, Cyprus, the Czech Republic, Denmark, Ireland, Poland and Portugal) had reached or exceeded their average 2011–2012 indicative trajectory from the RED but not the one from their NREAP. In six Member States (Belgium, France, Latvia, Malta, the Netherlands and the United Kingdom), the 2011 RES shares remained below both average 2011–2012 indicative trajectories.

EU Member States need to double their use of renewable energy by 2020 compared to the 2005–2011 period to reach the legally binding renewable energy target.

Progress towards 2020 energy efficiency objectives — only four EU Member States considered to be making good progress

All EU Member States except Croatia and Slovenia have set energy efficiency targets for 2020. The methodology behind these targets varies considerably.

EU Member States are moving towards the level of ambition required by the EED. Their collective primary energy consumption in 2020 is expected to be close to the level required by the EU political objective of 1 483 Mtoe but will remain insufficient to achieve the 20 % energy efficiency target.

The energy efficiency policy landscape has changed in many EU Member States in recent years but the different sectors are not addressed equally. The building sector received particular attention through the implementation of the Energy Performance of Buildings Directive (EPBD) (EU, 2010c). Measures addressing appliances and the transport sector are often limited to the minimum requirements as obliged by European legislation.

Four EU Member States (Bulgaria, Denmark, France and Germany) are making good progress in reducing energy consumption and primary energy intensity through well-balanced policy packages across relevant sectors. For most EU Member States, however, the current policies are not sufficiently developed or implemented across the relevant sectors. This is due to insufficient enforcement as well as impacts arising from the economic crisis.

Good overall progress across EU Member States towards the 20/20/20 targets but progress on energy efficiency remains slow

An assessment of EU Member States' progress at national level across the three policy areas shows that overall the EU is making relatively good progress towards its climate and energy targets set for 2020 (see Table ES.1).

Table ES.1 Progress towards 2020 climate and energy targets in the EU

Countries	EEA assessment of progress		
	National GHG targets under the ESD	National targets on RES share in final energy consumption	Improving energy efficiency
Austria	↘	→	→
Belgium	↘	↘	→
Bulgaria	→	↗	↗
Croatia	↗	n.a.	n.a.
Cyprus	↗	→	↘
Czech Republic	↗	→	→
Denmark	↗	→	↗
Estonia (a)	↘	↗	↘
Finland	↘	↗	→
France	↗	↘	↗
Germany	→	↗	↗
Greece	↗	↗	→
Hungary	↗	↗	→
Ireland	↘	→	→
Italy	→	↗	↘
Latvia	→	↘	→
Lithuania	→	↗	→
Luxembourg	↘	↗	↘
Malta	↗	↘	↘
Netherlands	→	↘	→
Poland	↗	→	→
Portugal	↗	→	→
Romania	↗	↗	↘
Slovakia	↗	↗	↘
Slovenia	→	↗	→
Spain	↘	↗	↘
Sweden	↗	↗	→
United Kingdom	↗	↘	→
EU	↗	↗	→

Note: 'National GHG targets under the ESD' (second column):
- ↗ 2012 non-ETS emissions were below the 2013 ESD targets and 2020 non-ETS emissions are projected to be lower than the 2020 ESD target with existing measures;
- → 2012 non-ETS emissions were below their 2013 ESD targets and 2020 non-ETS emissions are projected to be lower than the 2020 ESD target only if planned additional measures are implemented;
- ↘ 2012 non-ETS emissions were above the 2013 ESD targets or 2020 non-ETS emissions are projected to be higher than the 2020 ESD target even if the planned additional measures are implemented.

'National targets on RES share in final energy consumption' (third column):
- ↗ the 2011 RES share was above the average indicative 2011–2012 trajectory values defined in the RED and the NREAP;
- → the 2011 RES share was above the average indicative 2011–2012 trajectory defined in the RED but below the average indicative 2011–2012 trajectory defined in the NREAP;
- ↘ the 2011 RES share was still below the average indicative 2011–2012 trajectory values defined in the RED and the NREAP.

'Improving energy efficiency' (fourth column):
- ↗ a well-balanced policy package exists across relevant sectors and good progress is made in reducing energy consumption and primary energy intensity;
- → some progress is made in reducing energy consumption but further improvements are necessary to further develop policies or to better implement the existing ones;
- ↘ limited progress is made so far in improving energy efficiency and further efforts are needed to develop polices across the relevant sectors and to implement them.

(a) Estonia updated its energy statistics in September 2013. As this information was not received by the EEA in time for the publishing deadline of the report *Approximated EU GHG inventory: proxy GHG estimates for 2012* (EEA, 2013a), 2012 emissions in non-ETS sectors appear to have been overestimated. The EEA has therefore not been able to take these new data into account for the assessments in the present report.

See Chapters 7–9 for further details on the methodology used.

Source: EEA.

No EU Member State is on track towards meeting targets across all policy domains. Equally, no EU Member State underperforms in all three areas.

Fourteen EU Member States are overall performing positively across the three policy domains, four Member States have an overall neutral rating while nine Member States score negatively overall.

These results vary across Member States irrespective of their GDP levels, geographic location, etc. This indicates an effort to take into account individual Member State situations in the different targets set under the ESD and the RED. Room for improvement remains in all three policy domains, in particular regarding energy efficiency.

How can Europe respond to these challenges?

Energy efficiency improvements can deliver benefits across a large number of sectors, in particular through GHG emission reductions in both the EU ETS sectors and the non-ETS sectors (e.g. households and transport). Good progress towards meeting energy efficiency objectives requires that mechanisms for proper policy implementation and enforcement are in place.

Developing renewable energy results in GHG emissions savings. A first analysis by the EEA of gross avoided GHG emissions from RES deployment between 2005 and 2011 (soon to be published) shows that the development of renewable energy primarily affects emissions in the EU ETS sectors. Appropriate and long-term support instruments are essential for the development of RES. In the light of recent developments in cost reductions for renewable energy technologies, certain RES technologies could play a more important role by 2020 than anticipated when Member States drafted their NREAPs.

National policy frameworks are evolving across Europe. Debates on a national and European level are currently taking place about how to achieve the transition towards a low-carbon and energy-efficient future. Achieving optimal coherence between the various policy domains is crucial to maximise the co-benefits across sectors. This requires not only precise objectives, but also long term perspectives and equally long-term policy instruments.

European Environment Agency
Kongens Nytorv 6
1050 Copenhagen K
Denmark

Tel.: +45 33 36 71 00
Fax: +45 33 36 71 99

Web: eea.europa.eu
Enquiries: eea.europa.eu/enquiries

Publications Office

European Environment Agency