

National Emission Ceilings (NEC) Directive

NEC Directive reporting status 2019



This briefing presents progress made by the European Union (EU) and its Member States in meeting the 2010 emission ceilings that remain applicable until the end of 2019 under the Directive (EU) 2016/2284 on the reduction of national emissions of certain atmospheric pollutants (the National Emission Ceilings (NEC) Directive). In addition, it provides an assessment of the projected emissions reported by Member States for 2020 and 2030, in relation to the 2020 and 2030 reduction commitments for each country set in the Directive.

Key messages

- In 2017, the most recent year for which data were reported, the total emissions of four main air pollutants — nitrogen oxides (NO_x), non-methane volatile organic compounds (NMVOCs), sulphur dioxide (SO₂) and ammonia (NH₃) — were below the respective ceilings set for the EU as a whole.
- For the fourth consecutive year, emissions of NH₃ increased. From 2016 to 2017, emissions increased by 0.4 % across the EU. Over the period 2014-2017, the overall increase was about 2.5 %. These increases are because of the lack of emission reductions in the agriculture sector.
- Six Member States exceeded their national ceilings for at least one pollutant in 2017; all were not in compliance with their NH₃ ceiling, whereas one of them exceeded its ceiling for NMVOC.
- In 2017, the aggregated EU emissions for two pollutants (NMVOCs and SO₂) were already below the relevant EU 2020 emission reduction commitments. To meet the 2020 reduction commitments for NH₃ and fine particulate matter (PM_{2.5}), further reductions of 2.3 % and 1.3 % respectively are required. An additional reduction of 3.2 % is necessary to meet the target set for NO_x at EU level.
- Sixteen Member States do not consider themselves on track to meet their 2020 reduction commitments for one or more pollutants.
- More substantial reductions are needed for all pollutants if the EU is to achieve its emission reduction commitments for 2030. Reductions of around 15 % are required for NMVOC and NH₃, more than 30 % for PM_{2.5} and SO₂, and almost 40 % for NO_x. Twenty Member States are not on track to meet one or more 2030 emission reduction commitments on the basis of their current policies.
- Member States had the obligation to report on their National Air Pollution Control Programmes (NAPCP) by 1 April 2019. To date, seventeen Member States have submitted information via the online reporting mechanism.

Comparison of Member State emissions with NEC Directive ceilings, and 2020 and 2030 emission reduction commitments

Air pollution remains a major challenge in Europe^[1], harming human health and the environment. It contributes to respiratory problems, shortening lives and increasing medical costs. Air pollution also causes the eutrophication of ecosystems and reduces agricultural yields. In addition, certain air pollutants act as greenhouse gases, thus contributing to driving climate change.

The National Emission Ceiling Directive (NEC) Directive (EU 2016/2284; EU, 2016) ensures that the emission ceilings that were in place for 2010 (established under the 2001 NEC Directive) remain applicable until the end of 2019. After this date, new emission reduction commitments apply for 2020 to 2029, and later for 2030 onwards. Under the new Directive, Member States report annual emission inventory information from 1990 — or from 2000 in the case of PM_{2.5} — until the current year minus 2 years.

In 2019, Member States were required to report updated versions of their emission projections for SO₂, NO_x, NH₃, NMVOCs, PM_{2.5} and, if available, black carbon (BC). These projections cover the years 2020, 2025, 2030 and, where available, 2040 and 2050. Projected emissions are used to assess whether or not Member States are on track towards meeting their reduction commitments for 2020 and 2030 (see Table 1).

When a Member State is not on track to meet its emission reduction commitments, it is required to report projections complemented 'with additional measures' (WaM) — scenarios that reflect adopted and planned measures contributing to a further reduction of emissions. Sixteen Member States reported WaM projections for the five main pollutants for both 2020 and 2030, while six reported WaM projections for black carbon.

The analysis presented in this briefing is based on the latest air pollutant emission inventory data for the period 2010-2017, as reported by Member States in February 2019. The briefing also provides an assessment of the projected emissions reported by Member States^[2] for 2020 and 2030, in relation to the 2020 and 2030 reduction commitments. Projected emissions have a particularly important role in 2019 since they provide the basis for the Member States' National Air Pollution Control Programmes, which were due in April 2019. These programmes should outline the way each country anticipates meeting its reduction commitments for 2020 and 2030.

Air pollution

Box 1: 'Adjustments' to emission inventories under the NEC Directive

Consistent with a similar procedure agreed by Parties under the Gothenburg Protocol of the LRTAP Convention, the NEC Directive establishes a process that allows Member States to 'adjust' their emission inventories downwards if non-compliance with the national ceilings is caused by Member States having applied emission inventory methods that have subsequently been updated in accordance with new scientific knowledge available since the 2010 ceilings were originally set.

Member States wishing to adjust their data in this way must first notify the European Commission (EC) (by 15 February each year) and subsequently submit a range of documentation (by 15 March each year) for review. Adjustment applications for sub-sectors and pollutants that were approved by the EC in 2018 are taken into account in the present note, such that it is possible to identify whether ceilings have been attained. However, new adjustment applications submitted in 2019 are currently under evaluation and are not considered here. **The number of exceeded ceilings by Member State shown here is, therefore, still subject to change.**

Table 1: EU Member State progress in meeting 2010 NEC Directive emission ceilings and 2020/2030 reduction commitments

Member States	Reported emissions vs. 2010 ceilings							WM proj. vs. reduction commitments	Reported emissions vs. 2010 ceilings							WM proj. vs. reduction commitments	Reported emissions vs. 2010 ceilings							WM proj. vs. reduction commitments	Reported emissions vs. 2010 ceilings							WM proj. vs. reduction commitments	Reported emissions vs. 2010 ceilings							WM proj. vs. reduction commitments						
	NO _x							NMVOCs							SO ₂							NH ₃							PM _{2.5}																	
	2010	11	12	13	14	15	16	17	2020	2030	2010	11	12	13	14	15	16	17	2020	2030	2010	11	12	13	14	15	16	17	2020	2030	2010	11	12	13	14	15	16	17	2020	2030	2020	2030				
Austria	*	*	*	*	*	*	*	*	*	*	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		
Belgium	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		
Bulgaria	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		
Croatia											✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		
Cyprus	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*		
Czechia	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*		
Denmark	*	*	*	*	*	*	*	*	*	*	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Estonia	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Finland	*	*	*	*	*	*	*	*	*	*	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
France	*	*	*	*	*	*	*	*	*	*	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Germany	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Greece											*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	
Hungary	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Ireland	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Italy	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	
Latvia	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	
Lithuania	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	
Luxembourg	*	*	*	*	*	*	*	*	*	*	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Malta	*	*	*	*	*	*	*	*	*	*	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Netherlands	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Poland	*	*	*	*	*	*	*	*	*	*	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Portugal	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Romania	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	
Slovakia	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Slovenia	*	*	*	*	*	*	*	*	*	*	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Spain	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Sweden	*	*	*	*	*	*	*	*	*	*	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
United Kingdom	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
✓	15	18	21	24	26	26	27	27	22	12	21	25	25	25	26	26	26	26	19	11	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27			
*	12	9	6	3	1	1	0	0	6	16	6	2	2	2	1	1	1	1	9	17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

Air pollution

Notes:



✓ indicates that the emission ceiling or reduction commitment has been, or is anticipated to be, attained. The NEC Directive does not include a 2010 ceiling for PM_{2.5}.



✗ indicates that the ceiling or reduction commitment has not been, or is not anticipated to be, attained.

The comparison with current emission ceilings is based mainly on adjustment applications approved by the EC in 2018; new adjustment applications submitted in 2019 are not taken into account in this table. All adjustment applications will be reviewed by the EC. If approved, the number of Member States exceeding one or more emission ceilings in 2017 could change. The 'with measures' (WM) projection is calculated by Member States on the basis of adopted policies and measures currently in place. The WM projections are used to assess attainment of 2020 and 2030 reduction commitments for each Member State; NO_x and NMVOC emissions from the two main agricultural activities (manure management (3B) and agricultural soils (3D)) are not accounted for, as required by the new NEC Directive.

Besides the WM projections, sixteen Member States also reported WaM scenarios that reflect adopted and planned measures. These are Belgium, Bulgaria, Croatia, Czechia, Denmark, Estonia, France, Germany, Ireland, Latvia, Lithuania, Luxembourg, Netherlands, Romania, Slovakia and Spain.

Source: Metadata and other formats

Nitrogen oxides (NO_x)

Since 2016, all Member States have been in compliance with their NO_x emission ceilings. In absolute amounts, the largest emitters of NO_x in 2017 were Germany, followed by the United Kingdom and France. Between 2016 and 2017, 21 Member States reported emission reductions for NO_x. The total reduction in aggregated EU emissions amounted to 2.2 % between 2016 and 2017, with an overall reduction of 38 % since 2005.

Non-methane volatile organic compounds (NMVOCs)

In 2017, one Member States (the Netherlands) exceeded its ceilings by 37 %. The largest emitter of NMVOCs in 2017 was Germany, followed by Italy and the United Kingdom. Between 2016 and 2017, 13 Member States reported emission reductions for NMVOCs. In contrast, aggregated EU emissions increased from 2016 to 2017 for the first time (by 0.5 %).

Sulphur dioxide (SO₂)

All Member States were in compliance with their emission ceilings for SO₂ in 2017. The largest emitter of SO₂ was Poland, followed by Germany and Spain. Between 2016 and 2017, 17 Member States reported emission reductions for SO₂. From 2016 to 2017, the total reduction in aggregated EU emissions amounted to 1.2 %, with an overall reduction of 69 % since 2005.

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Ammonia (NH₃)

Six Member States (Austria, Croatia, Germany, Ireland, the Netherlands and Spain) exceeded their NH₃ ceilings in 2017. The highest exceedances, in percentage terms, were reported for Spain (47 %) and Croatia (25 %). The smallest exceedances were reported for Ireland (around 2 %). The largest emitter of NH₃ was Germany, followed by France and Spain. Between 2016 and 2017, 12 EU Member States reported emission reductions for NH₃. EU emissions of NH₃ increased by about 0.4 % between 2016 and 2017. This represents the fourth consecutive year of increasing NH₃ emissions in the EU.

Fine Particulate Matter (PM_{2.5})

The NEC Directive does not include a 2010 ceiling for primary PM_{2.5}. In 2017, the largest emitters of PM_{2.5} were Italy, France and Poland. Although EU emissions of PM_{2.5} have decreased by 28 % since 2000, the recent trend is less positive. From 2015 to 2016, emissions decreased by just 1 %, whereas between 2016 and 2017, EU emissions of PM_{2.5} increased by 0.4 %. This was in a context where 15 Member States reported emission reductions for PM_{2.5} over the period.

EU progress in meeting emission ceilings and comparison with future emission reduction commitments

The EU must continue to meet aggregated 2010 emission ceilings for the four main pollutants (NO_x, NMVOCs, SO₂ and NH₃) until the end of 2019. In every year since 2010, total EU emissions of these pollutants were below their respective ceilings (Figure 1).

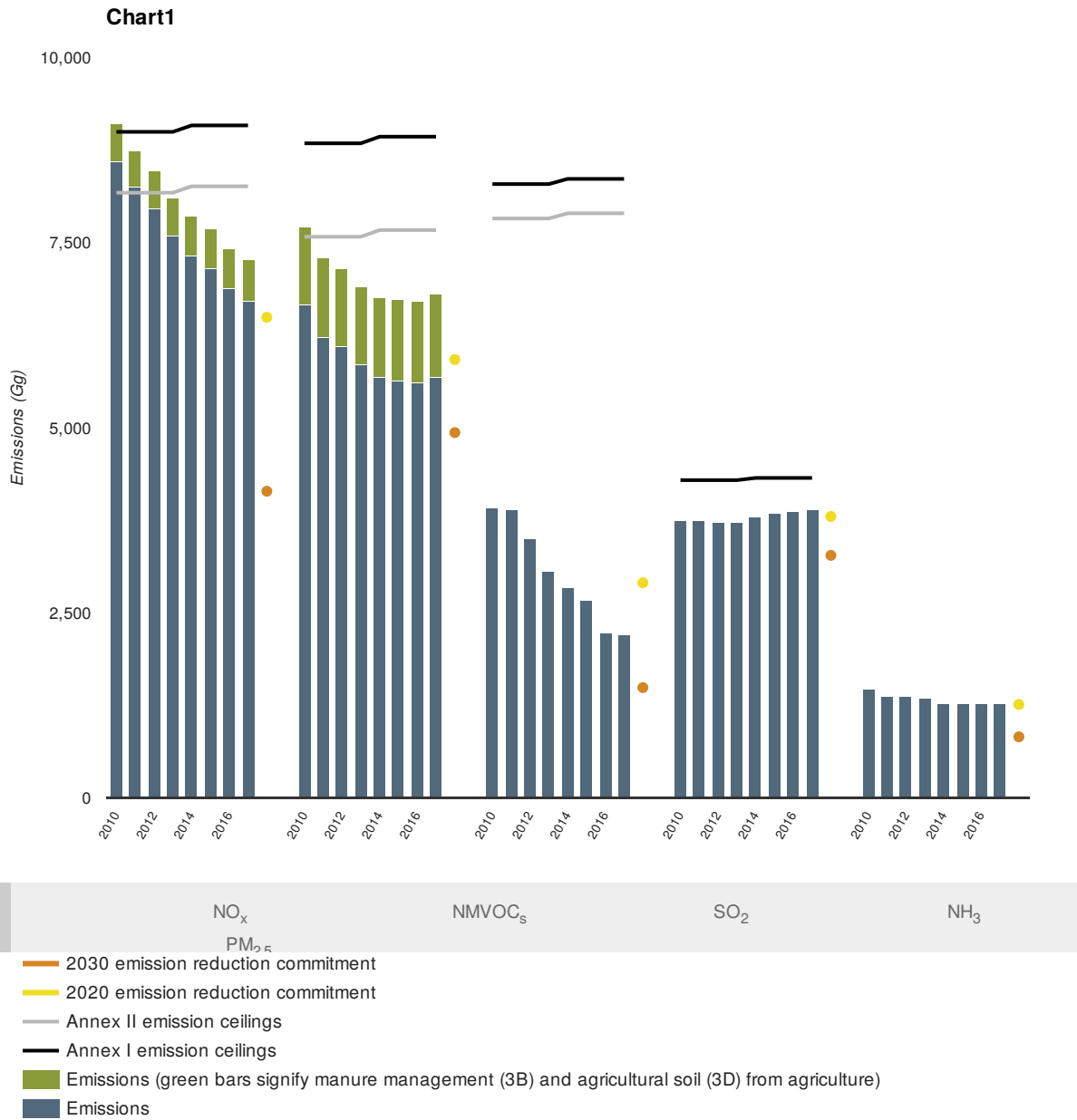
In 2017, EU emissions of NMVOCs and SO₂ were already below the 2020 reduction commitments set for these pollutants. For both PM_{2.5} and NH₃, a reduction of 1.3 % and 2.3 % compared with the 2017 level is required in order to meet the 2020 EU commitment, whereas, for NO_x, EU emissions need to be reduced by a further 3.2 % compared with 2017 levels.

In contrast, additional efforts are needed for all pollutants if the EU is to achieve its 2030 emission reduction commitments. The required percentage reductions from 2017 emissions are:

- 13 % for NMVOCs;
- 16 % for NH₃;
- 33 % for SO₂;
- 36 %; for PM_{2.5};
- almost 40 % for NO_x.

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Figure 1: EU progress towards meeting 2010 emission ceilings set out in the NEC Directive and the 2020/2030 reduction commitments



[Explore chart interactively](#)



Air pollution

Notes:

Greece did not submit an inventory in 2019. The EU inventory is therefore without emission data from Greece and thus, totals are underestimated.

Croatia joined the EU in mid-2013, so for the years 2010-2013, emissions and ceilings are not considered for this country.

The distance to ceilings was calculated taking into account information from adjustment applications approved by the EC in 2018 and reintroduced by Member States in 2019. The new adjustment applications from the Netherlands are not considered. The attainment of the ceiling might change after the adjustment review process. The NEC Directive does not include 2010 ceilings for PM_{2.5}.

The EU's 2020 and 2030 reduction commitments are calculated relative to 2005 base-year emissions.

When assessing future attainment of 2020 and 2030 reduction commitments, NO_x and NMVOC emissions from agricultural activities are not considered. The magnitude of these emission sources is indicated by the green bars on top of the NO_x and NMVOC columns. Thus, only the lower part of the NO_x and NMVOC columns should be considered for comparison with the 2020 and 2030 reduction commitments.

Additional efforts are needed to close the gap between 2020 and 2030

According to the NEC Directive, the reporting and assessment of reliable emission projections are essential to support the development of effective National Air Pollution Control Programmes (NAPCP). These should have been reported to the EC by 1 April 2019. By the time of publication, 17 of the Member States (Austria, Belgium, Croatia, Cyprus, Denmark, Estonia, Finland, Germany, Ireland, Italy, Latvia, Lithuania, Luxembourg, Netherlands, Portugal, Sweden and United Kingdom) had reported their NAPCP, or a draft version, via the online reporting mechanism on the Eionet website. Other drafts have been received informally by the European Commission..

In these programmes, Member States describe how current policies are expected to contribute to achieving both their 2020 and 2030 reduction commitments. Where current policies do not provide sufficient reductions to ensure compliance with the respective commitments, Member States are obliged to report additional measures that are either planned or foreseen for adoption, together with the associated emission projections that would deliver future compliance. A qualitative overview on the measures reported by Member States is available in an online data viewer.

For 2020, sixteen Member States are not on track to comply with at least one of their reduction commitments. The main challenge represent NH₃ emissions, for which thirteen EU Member States (Austria, Denmark, Estonia, France, Germany, Hungary, Ireland, Latvia, Lithuania, Luxembourg, Malta, Sweden and the United Kingdom) reported projected emissions above their agreed reduction commitments. Eight of them reported a WaM projection that would enable them to comply with their commitments.

Almost one third of all EU Member States reported projections above their respective NMVOCs reduction commitments for 2020. Of these, half reported WaM projections.

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Six Member States do not expect to meet their respective NO_x (Latvia, Lithuania, Greece, Poland, Romania and Slovenia) and PM_{2.5} (Bulgaria, Denmark, Hungary, Romania, Spain and the United Kingdom) emission reduction commitments in 2020. Of these countries, only Greece, Poland and Slovenia did not provide a WaM projection.

Looking ahead to 2030, further efforts are clearly required by Member States in order for them to meet their 2030 emission reduction commitments. As shown in Table 1, more than half of the Member States are not on track to comply with their agreed reduction commitments for NH₃, NMVOCs, NO_x and PM_{2.5}, whereas eleven are not expected to meet their SO₂ reduction commitments.

Sixteen Member States (Belgium, Bulgaria, Croatia, Czechia, Denmark, Estonia, France, Germany, Ireland, Latvia, Lithuania, Luxembourg, Netherlands, Romania, Slovakia and Spain) reported WaM projections for 2030.

In some cases, Member States did not report WaM projections, even though projections based on current measures indicate that compliance will not be attained. This is the case for:

- Sweden for NH₃ and NO_x;
- Malta for NMVOCs and NH₃;
- Poland for SO₂, NH₃ and PM_{2.5};
- Portugal and Slovenia for NMVOCs, SO₂ and PM_{2.5};
- Austria and Italy for NO_x, NH₃ and PM_{2.5};
- Hungary and the United Kingdom for all pollutants.

More information

- Access the complete data set reported by Member States in the EEA's online data viewer.
- Access the information on the Policies and Measures reported by Member States in the EEA's online data viewer.

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References and footnotes

[1] Croatia joined the EU in mid-2013, so for the years 2010-2013, Croatia's emissions and ceilings are not considered. As Greece did not report data in 2019, the aggregated EU emissions are incomplete.

[2] By 15 June, not all Member States had reported updated projections for the 2019 reporting cycle. For four of them (France, Greece, Malta and Portugal), submissions from 2017 or 2018 have been taken into account.

EEA, 2018, Air quality in Europe — 2018 report, EEA Report No 12/2018, European Environment Agency.

EU, 2016, Directive (EU) 2016/2284 of the European Parliament and of the Council of 14 December 2016 on the reduction of national emissions of certain atmospheric pollutants, amending Directive 2003/35/EC and repealing Directive 2001/81/EC (OJ L 344, 17.12.2016, p. 1-31).

Identifiers

Briefing no. 2/2019

Title: National Emission Ceilings (NEC) Directive reporting status 2019

PDF TH-AM-19-003-EN-N - ISBN 978-92-9480-077-0 - ISSN 2467-3196 - doi: 10.2800/49299

HTML TH-AM-19-003-EN-Q - ISBN 978-92-9480-076-3 - ISSN 2467-3196 - doi: 10.2800/573374

Published on 28 Jun 2019