



# State of Greenhouse Gas Emissions in the EU

(09/06/2021)

As we come closer to the European Commission's launch of the (first part of the) Fit for 55 Package (still announced for 14 July) which will include proposals to revise key EU key climate policies, it might be useful to have a look at where we are in terms of actual emission reductions and removals in the EU.

## 1. EU greenhouse gas emissions have reduced by around 30% in 2020

Despite strong resistance against efforts to increase the EU's 2020 climate target from -20% to -30% in the run up and shortly after the 2009 Copenhagen Climate Summit, actual emissions in 2020 will likely have been 30% below 1990 emissions, partially due to the COVID-pandemic.

The below table gives an overview of emissions and removals in the EU27. For 2020, only numbers for emissions covered by the Emissions Trading System (ETS) are available. The reference to overall EU emissions for 2020 are based on the assumption of a year-on-year reduction of overall greenhouse gas emissions of at least -8% (which is the lower end of an estimated 8-11% reduction as referred to by the Commission in its latest Climate Progress Report). Emissions in the power and industry sectors in 2020 are clearly below the 2020 ETS target of reducing emissions by 30% compared to 2005, and similarly emissions in the road transport, buildings and agriculture sectors will likely meet the 2020 target under the Effort Sharing Decision (ESD) which was originally set at -10% compared to 2005 but after Brexit has been adjusted to -8%.

	total ghg emissions ("EU 2020" = excl. LULUCF & incl. international aviation)		total greenhouse gas removals		total net ghg emissions ("EU NDC" = incl. LULUCF & incl. international aviation)		emissions in the ETS sectors		emissions in the ESD sectors	
	MtCO <sub>2</sub> -e	%	MtCO <sub>2</sub> -e	%	MtCO <sub>2</sub> -e	%	MtCO <sub>2</sub> -e	%	MtCO <sub>2</sub> -e	%
<b>1990</b>	4.925		211		4.714		-			
<b>2005</b>	4.639	<b>-6</b>	311	<b>47</b>	4.328	<b>-8</b>	2.369		2.278	
<b>2018</b>	3.892	<b>-21</b>	262	<b>24</b>	3.630	<b>-23</b>	1.683	<b>-29</b>	2.210	<b>-3</b>
<b>2019</b>	3.743	<b>-24</b>	249	<b>18</b>	3.494	<b>-26</b>	1.530	<b>-35</b>	2.219	<b>-3</b>
<b>2020</b>	3.443	<b>-30</b>					1.354	<b>-43</b>	2.089	<b>-8</b>

Source: EEA – greenhouse gas data viewer (updated 13/04/2021) & EEA – ETS data viewer (updated 19/05/2021)

## 2. The situation is very different at Member State level

In the table below we provide actual emission changes for each Member State for:

- emission reductions excluding removals for 2018 and 2019;
- net emission reductions including removals (reflecting the new 2030 climate target) for 2018;
- emission reductions in the sectors covered by the Effort Sharing Directive (ESD) for 2019.

The colour codes used give an indication (without this being an assessment) of whether:

- actual overall emissions (columns 2 and 3) have been reduced (light green), reduced substantially (+30%) (dark green) or have increased (orange);
- switching from gross to net accounting (column 4) would bring a country closer to net zero emissions (orange), substantially closer (-5%) (red) or makes achieving net zero more challenging (light green) or substantially more challenging (+5%) (dark green);
- 2019 emissions under the ESD (column 5) are below the 2019 target (light green), the 2020 target (column 6) (dark green), or are above (orange) or substantially above (+10%) (red) the 2020 target.

	Change in emissions in %			ESR targets (vs. 2005)		
	all GHG excluding LULUCF		all net GHG incl. LULUCF	all GHG in effort sharing sectors		
	2019/1990	2018/1990	2019/1990	2019/2005	2020	2030
<b>Austria</b>	5	3	13	-11	-16	-36
<b>Belgium</b>	-17	-17	-16	-7	-15	-35
<b>Bulgaria</b>	-44	-43	-40	23	20	0
<b>Croatia</b>	-22	-25	-26	-3	11	-7
<b>Cyprus</b>	63	54	53	3	-5	-24
<b>Czechia</b>	-34	-35	-30	10	9	-14
<b>Denmark</b>	-34	-29	-27	-19	-20	-39
<b>Estonia</b>	-62	-50	-53	20	11	-13
<b>Finland</b>	-23	-19	-16	-14	-16	-39
<b>France</b>	-18	-17	-18	-14	-14	-37
<b>Germany</b>	-34	-30	-30	-8	-14	-38
<b>Greece</b>	-16	-9	-10	-29	-4	-16
<b>Hungary</b>	-32	-32	-35	-9	10	-7
<b>Ireland</b>	9	14	11	-5	-20	-30
<b>Italy</b>	-18	-16	-22	-19	-13	-33
<b>Latvia</b>	-55	-54	-17	6	17	-6
<b>Lithuania</b>	-57	-57	-61	8	15	-9
<b>Luxemburg</b>	-3	-6	-8	-9	-20	-40
<b>Malta</b>	-12	-4	-4	24	5	-19
<b>Netherlands</b>	-13	-11	-12	-22	-16	-36
<b>Poland</b>	-17	-13	-14	15	14	-7
<b>Portugal</b>	15	19	6	-14	1	-17
<b>Romania</b>	-55	-53	-60	0	19	-2
<b>Slovakia</b>	-43	-41	-41	-5	13	-12
<b>Slovenia</b>	-10	-6	25	-9	4	-15
<b>Spain</b>	13	20	22	-15	-10	-26
<b>Sweden</b>	-27	-25	-67	-30	-17	-40

Sources: EC-Climate Action Progress Report; Eurostat; EEA – aha data viewer

### 3. Overachievement occurs in the ETS and in the non-ETS sectors

The Emissions Trading Scheme has been struggling for many years now with large amounts of surpluses which have (very) negatively affected the price of pollution in the EU. The current surplus in the ETS is estimated at **1.392 MtCO<sub>2</sub>-e**, which is greater than total actual emissions in 2020. Surplus allowances can

be carried over from pre- to post-2020, and new surpluses will be further added every year as total annual emission allocations in the ETS start from an unrealistic -32.4% in 2021 (while they are at -43% in 2020). Some measures have been taken to deal with these surplus allowances, through the Market Stability Reserve, but more will need to be done.

And despite the fact that the 2020 target seems to be only just achieved in the ESD, also the ESD is flooded by surplus allowances. This is in particular due to the fact that the ESD (similar to the ETS) is based on annual emission budgets that reduce year by year till they reach the foreseen target in 2020. Countries can carry over unused allowances from one year to the other (but luckily, as opposed to the ETS, there is no carry over between the ESD and the ESR (Effort Sharing Regulation) which starts in 2021). Because the ESD allowances in 2013 (the first year of the ESD) were well beyond actual emissions in that year, most countries have been building up large amounts of surpluses which allow them to fulfil their obligations under the ESD, even when they fail to reduce their emission to the level of their target in 2020. The two tables below give a good indication of how this happens.

The table on the left shows whether countries are meeting their annual targets (green if they do). In the first years almost all countries have met their targets (almost all are green), but coming closer to 2019 almost half (12 out of 27) of the Member States fail to meet their targets (which shows up in red). The table on the right then indicates the accumulated total of surplus allowances, showing that despite all the red in the table on the left, there are only three countries that are on track to miss their ESD commitments in 2019 (but might likely still meet them in 2020, partially thanks to COVID).

Table A1.4 Annual distance (MtCO<sub>2</sub>e) between Effort Sharing emissions and annual Effort Sharing Decision targets

Member State	Historical						Proxy
	2013	2014	2015	2016	2017	2018	2019
Austria	2.5	3.9	2.2	0.4	-2.1	-1.4	-2.4
Belgium	4.1	6.8	2.6	-0.3	1.7	-3.2	-4.6
Bulgaria	4.7	4.3	2.1	2.1	-0.7	-0.2	-0.8
Croatia	4.5	5.1	4.4	4.2	2.0	2.7	2.3
Cyprus	2.0	2.0	1.9	1.8	-0.1	-0.04	-0.26
Czechia	1.0	5.6	2.7	1.9	2.8	5.3	-1.2
Denmark	3.1	3.3	2.5	1.0	2.1	0.7	0.5
Estonia	0.5	0.2	0.2	0.1	-0.3	-0.2	-0.5
Finland	0.2	1.1	0.9	-1.0	0.1	-0.3	-0.3
France	28.0	35.9	31.4	27.5	5.4	10.7	6.6
Germany	12.3	29.0	15.1	-1.7	-34.5	-8.8	-21.6
Greece	14.8	14.9	14.2	15.0	13.7	14.7	15.5
Hungary	12.0	13.1	11.2	11.7	6.9	7.7	8.4
Ireland	4.7	4.1	1.6	-0.3	-2.9	-5.6	-5.8
Italy	34.8	40.9	31.0	31.6	28.1	17.1	21.1
Latvia	0.5	0.3	0.4	0.4	0.5	0.7	0.9
Lithuania	0.5	0.4	0.4	0.1	0.00	0.21	0.51
Luxembourg	0.170	0.480	0.531	0.422	-0.002	-0.545	-0.903
Malta	-0.1	-0.1	-0.1	-0.2	-0.3	-0.2	-0.2
Netherlands	14.7	22.8	17.3	14.8	11.7	12.1	9.4
Poland	7.5	13.3	9.4	-1.3	-11.5	-11.3	-3.4
Portugal	10.7	10.7	9.3	8.6	7.7	7.7	7.1
Romania	2.9	4.9	4.7	8.0	8.7	8.3	12.4
Slovakia	2.9	4.6	4.7	5.3	3.8	4.3	3.9
Slovenia	1.4	1.9	1.7	1.2	1.3	1.2	1.5
Spain	27.3	25.9	27.6	23.3	17.2	13.3	13.4
Sweden	6.4	6.5	6.5	7.2	5.3	5.8	6.2
United Kingdom	19.3	29.8	23.7	11.3	28.4	27.4	27.3
<b>EU-28</b>	<b>223</b>	<b>292</b>	<b>230</b>	<b>173</b>	<b>95</b>	<b>108</b>	<b>123</b>
<b>EU-27</b>	<b>204</b>	<b>262</b>	<b>206</b>	<b>162</b>	<b>67</b>	<b>81</b>	<b>95</b>

Table A1.5 Cumulative gaps between historical and projected Effort Sharing emissions and annual Effort Sharing Decision targets, 2013-2019

Member State	Historical						Proxy
	2013	2014	2015	2016	2017	2018	2019
Austria	2.5	6.4	8.6	9.0	6.9	5.4	3.0
Belgium	4.1	10.9	13.5	13.3	14.9	11.7	7.1
Bulgaria	4.7	9.0	11.1	13.3	12.6	12.4	11.6
Croatia	4.5	9.6	14.1	18.2	20.2	22.9	25.2
Cyprus	2.0	4.0	5.8	7.7	7.6	7.6	7.3
Czechia	1.0	6.6	9.3	11.2	14.0	19.2	18.0
Denmark	3.1	6.4	8.9	9.9	12.0	12.7	13.2
Estonia	0.5	0.8	1.0	1.1	0.9	0.7	0.2
Finland	0.2	1.3	2.2	1.2	1.3	1.0	0.8
France	28.0	63.9	95.3	122.8	128.2	138.9	145.5
Germany	12.3	41.4	56.4	54.7	20.2	11.3	-10.3
Greece	14.8	29.6	43.8	58.8	72.5	87.3	102.7
Hungary	12.0	25.1	36.2	47.9	54.9	62.6	71.0
Ireland	4.7	8.8	10.4	10.1	7.1	1.6	-4.3
Italy	34.8	75.7	106.7	138.3	166.4	183.5	204.6
Latvia	0.5	0.8	1.2	1.7	2.2	2.8	3.7
Lithuania	0.5	0.9	1.3	1.4	1.4	1.6	2.1
Luxembourg	0.170	0.650	1.181	1.603	1.600	1.056	0.153
Malta	-0.1	-0.2	-0.3	-0.5	-0.8	-1.0	-1.2
Netherlands	14.7	37.5	54.8	69.6	81.3	93.4	102.8
Poland	7.5	20.9	30.2	29.0	17.4	6.1	2.7
Portugal	10.7	21.4	30.7	39.3	47.0	54.7	61.8
Romania	2.9	7.8	12.5	20.5	29.2	37.6	50.0
Slovakia	2.9	7.5	12.2	17.6	21.3	25.6	29.5
Slovenia	1.4	3.3	4.9	6.1	7.4	8.6	10.1
Spain	27.3	53.2	80.8	104.1	121.3	134.5	147.9
Sweden	6.4	12.9	19.4	26.6	31.9	37.7	43.8
United Kingdom	19.3	49.1	72.7	84.0	112.4	139.8	167.0
<b>EU-28</b>	<b>223</b>	<b>515</b>	<b>745</b>	<b>918</b>	<b>1 013</b>	<b>1 121</b>	<b>1 244</b>
<b>EU-27</b>	<b>204</b>	<b>466</b>	<b>672</b>	<b>834</b>	<b>901</b>	<b>982</b>	<b>1 077</b>

## 4. New surpluses will further undermine the ESR

The current ESR foresees to hand out a total of **2.226 Mt** of emission allowances to the 27 Member States in 2021. Based on the calculations above, emissions in 2020 will be at **2.095 Mt**, and unless we see a drastic increase of emissions in 2021, this would mean that already in the first year of the ESR a surplus of over **130 Mt** could be built up. This equals the total 2021 ESR allocations to Belgium, Denmark and Finland combined. This will further undermine the value of this instrument and needs to be tackled in the revision.

## 5. Additional info: targets, accounting and sources

There are several sources that provide data on EU greenhouse gas emissions, which often provide different numbers, which can be very confusing. This is because the EU has multiple targets and accounting responsibilities. The table below gives an overview of these different approaches.

	UNFCCC	EEA	KP 2020	EU 2020	EU NDC	ETS	ESR	LULUCF
<b>sectors</b>	All – excl. International transport	All – incl. international transport	All – incl. some LULUCF and some aviation	All – excl. LULUCF and incl. some aviation	All – incl. LULUCF and aviation	power and heating; energy-intensive industry; aviation	road transport, buildings, non-ETS industry; agriculture; waste	land use, land use change and forestry
<b>aviation</b>	no	yes	only domestic	all domestic; some international	all domestic; (all) international (tbd)	all domestic; (all) international (tbd)	no	no
<b>LULUCF</b>	both emissions and removals	both emissions and removals	forest emissions and removals and some LULUC	not included	yes	no	no	yes
<b>base year</b>	n.a.	n.a.	1990	1990	1990	2005	2005	subject to accounting rules
<b>years covered</b>	n.a.	n.a.	2013-2020	2013-2020	2021-2030	2021-2030	2021-2030	2021-2030
<b>target</b>	no target	no target	-20% on average for the whole period	-20% in 2020	at least -55% in 2030	-43% in 2030 (-37% on average) (tbd given new NDC)	-30% in 2030 (-21% on average) (tbd given new NDC)	no debit in 2030 (tbd given new NDC)

The following list contains links to the main sources for EU greenhouse gas data:

- [The European Commission's EU climate action progress report;](#)
- [The European Environment Agency \(EEA\)'s Trends and Projections in Europe 2020 report;](#)
- [The EU's Annual GHG inventory report to the UNFCCC;](#)
- [The EEA greenhouse gas data viewer;](#)
- [The ETS data viewer;](#)
- [Eurostat's Climate change statistics.](#)