

WHITE PAPER

EU Climate Ambition: Falling Short of Long-term Targets?

TO THE POINT

The EU is divided over whether to make changes to its climate targets following the Paris Agreement. According to the European Commission, the EU's target to cut emissions by at least 40 percent by 2030, approved prior to the Paris COP, is in line with the Paris Agreement. This is because, the Commission states, the 40 percent target places the EU on track for an 80 percent reduction by 2050, which the EU has defined as its domestic contribution to the 2°C goal. However, we find that the 40 percent target keeps the EU off track towards its 80 percent target. Moreover, we note that the post-2020 EU ETS legislation proposed by the Commission puts off efforts to reduce emissions and relies on uncertain technological improvements to help the EU deliver its 80 percent target. These findings call into question the credibility of EU's plan to deliver on its contribution to the 2°C goal.

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Introduction

The Paris Agreement commits signatories to the aspirational goal of keeping global warming to “well below 2 °C above preindustrial levels and pursuing efforts to limit the temperature increase to 1.5 °C.” The agreement has prompted the EU to question whether its goal of reducing emissions by 40 percent by 2030 (compared to 1990 levels) is in line with objectives the EU signed onto in Paris. In this analysis, we assess this question and discuss its implications for EU climate policy going forward.

Last week, the European Commission released its [assessment](#) on the implications for the “Road from Paris” and concluded that the EU’s 2030 target is in line with the ambition of the Paris Agreement. Also last week, a debate in the Environment Council showed that a large number of member states agreed with the Commission, implying that a decision – which will have to be agreed by all 28 member states – to increase the EU climate ambition is off the table for now. However, the question of whether EU’s plans are consistent with the Paris Agreement remains far from settled. It will probably continue to surface in decision-making processes related to climate and energy policy.

How do we assess the consistency of EU’s 2030 target with the Paris Agreement? First, we leave out any considerations of the ambition laid out in Paris to keep global warming “well below” 2°C. We do so because, at this stage, it is unclear what efforts to stay well below 2°C will mean for EU climate policy. Such an assessment requires normative considerations of what would constitute a “fair contribution” from the EU relative to contributions from other countries. Instead, we evaluate whether EU’s 2030 target is consistent with what the EU has already committed to contribute to the Paris effort.

The EU has defined that its contribution to the 2°C goal would be to reduce domestic emissions by 80 percent by 2050 compared to 1990. The Commission’s logic is that the 40 percent target is consistent with the 2°C ambition of the Paris Agreement because it places the EU on a credible track to reduce emissions by 80 percent by 2050. Below, we assess whether the 2030 target actually places the EU on track to deliver on its 2050 target and thus whether it can be considered to be in line with the 2°C goal of the Paris Agreement.

Short, medium and long-term targets

EU’s 2050 goal is based on the 2007 fourth assessment report by the IPCC, which suggested that developed countries reduce emissions by 80-95 percent by 2050 to limit global warming to 2°C. On the back of this, the European Council [adopted](#) in 2009 a long-term target to cut EU emissions by at least 80 percent by 2050. The progress towards EU’s long-term target was set out in the 2050 [Roadmap](#) towards a low carbon economy

“The question whether EU’s plans are consistent with the Paris Agreement remains far from settled

published by the Commission in 2011. In addition to indicative reduction targets for 2030 and 2040, the Roadmap also indicated a split between emission cuts in the EU ETS and non-ETS sectors. Specifically, the roadmap recommended that, for the reason of cost-efficiency, the EU ETS sectors reduce emissions by 90 percent by 2050, while the non-trading sectors deliver a cut close to 70 percent (both compared to 2005 level).

The rationale for the 40 percent target was the Commission’s 2050 Roadmap which concluded that such a target would be a cost-effective milestone on the way to an 80 percent 2050 target. The indicative 2030 target in the 2050 Roadmap was adopted politically by the European Council in [October 2014](#), which committed the EU to the 40 percent reduction target and confirmed the split between ETS and non-ETS sectors which must contribute with cuts of 43 percent and 30 percent, respectively, by 2030 (compared to 2005 levels).

Table 1 displays the various targets that define the EU climate policy ambition. It should be noted that the overall targets have 1990 as base year, while 2005 is the base year for the individual targets for the EU ETS and non-ETS sectors. Some targets are enshrined in EU legislation (2020), while others are agreed politically (2030 and 2050) or only indicative at this stage (2040).

When it comes to the EU ETS, there are at least two questions that are relevant to assess whether the 2030 target is in line with the long-term 2050 target. Firstly, is the annual reduction of the EU ETS cap on track towards the 2050 target? And secondly, is the 2030 target setting a cost-effective pathway towards the 2050 target? As we will argue below, it is hard to give affirmative answers to any of these questions.

Table 1: How to cut 80 percent by 2050?

	2020	2030	2040	2050
Total EU emissions (cuts from 1990)	20%*	40%**	60%***	80%**
EU ETS	21%*	43%**		90%***
Non- ETS	10%*	30%**		70%***

*Target set in legislation

** Target adopted politically, not yet in legislation

*** Target indicated in 2050 roadmap

Table [source](#)

Is the annual reduction factor consistent with EU's 2050 target?

To assess whether the EU ETS is on track to deliver the necessary emission cuts, we must look at the so called "linear reduction factor", which defines the rate at which the EU ETS cap declines every year. Currently, the EU ETS cap declines by a linear reduction factor of 1.74 percent every year (a reduction in the cap by 38 Mt per year). In line with the guidance from the European Council, the Commission proposed a linear reduction factor of 2.2 percent for after 2020, in its phase 4 [review proposal](#) presented last summer. This implies a reduction of 48 Mt/year in the ETS cap.

However, a linear reduction factor of 2.2 percent places the ETS sectors on track for only an 84 percent reduction by 2050, not 90 percent as the Roadmap suggested as the required cut in order to meet the 2050 target in a cost-effective manner. The Commission admits this in the fine print of the [impact assessment](#) to its 2030 framework (didn't you notice footnote 122?).

Therefore, the Commission's proposal for a 2.2 percent linear reduction factor will keep the ETS off the course necessary for the EU to meet its 80 percent 2050 target. To be in line with the long-term target, the ETS cap must be reduced by a linear reduction factor of 2.4 percent (53Mt/year) from 2021 onwards (illustrated by the grey line in Figure 1). The difference between a factor of 2.2 percent and 2.4 percent will accumulate to 2,045 billion tons over the period from 2021 to 2050. Therefore, the EU is on track to emit two billion tons more than what is implied

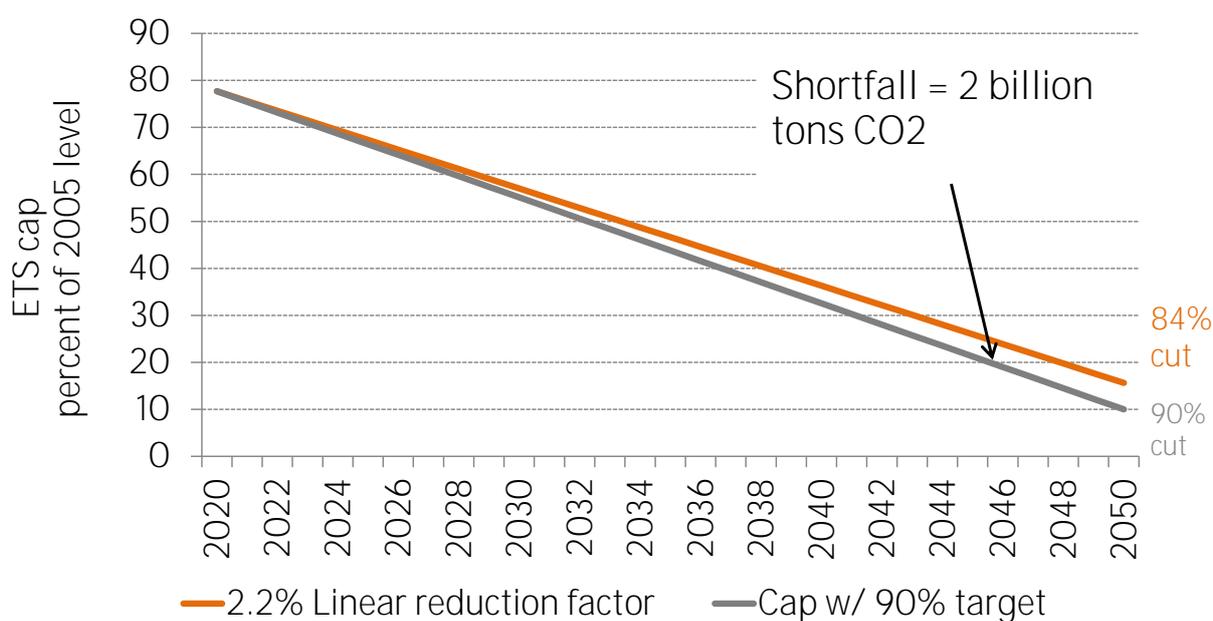
by its long term target. This is the equivalent of the annual emissions of about 650 medium sized coal plants.

One option for the EU to deliver on its 2050 target is for the non-ETS sectors to provide a greater reduction than what is implied in the Commission's roadmap. However, in its Council Conclusions from October 2014 the European Council set the target for the non-ETS sectors to a 30 percent cut from 2005 levels. This is in line with a trajectory towards a 66 percent to 71 percent cut in 2050. Therefore, there is no indication that the underperformance in the EU ETS will be compensated with a correspondingly larger cut in the non-ETS sectors.

Another option is for the EU to steepen the annual reduction in the EU ETS cap after 2030 to align it with the goal to reduce EU ETS emissions by 90 percent by 2050. We calculate that this would require a 2.5 percent linear reduction factor starting in 2031. We estimate this by first projecting the EU ETS cap out to 2030 using the 2.2 percent linear reduction factor. The 2030 cap in this case will be 1,333 Mt. For this cap to reach a 90 percent reduction in 2050 compared to the 2005 baseline (meaning a 2050 cap of 234 Mt), it would have to drop by 55 Mt per year, or 2.5 percent of the baseline used to calculate the ETS linear reduction factor.

“ “ The EU is on track to emit 2 billion tons of CO2 more than its 2050 target implies

Figure 1: Aiming for the long-term target?



*We note that this figure does not take into account how actual emissions in the EU ETS will turn out. While emissions may be lower than the cap, we choose to focus this analysis on the EU ETS cap. The cap is what legislators can control, while emissions are inevitably highly uncertain.

Is the EU on a cost-effective track toward its 2050 target?

According to the 2050 Roadmap, a 40 percent cut by 2030 and a 60 percent cut by 2040 would represent a cost-effective pathway towards the 2050 target. The main argument why these milestones represent a cost-effective trajectory is that the “reduction effort would become greater over time as a wider set of cost-effective technologies becomes available”.

To what extent the reduction effort increases over time is clearly illustrated by the linear reduction factor in the EU ETS. The reduction factor is expressed as a fixed percentage of the average annual cap over the 2008-2012 period. This means that the reduction factor does not represent a percentage change in the annual cap, as it is often presented and perceived. Instead, the 2.2 percent linear reduction factor is equal to a fixed cut in the allocation of 48 Mt/year. However, as the annual cap declines steadily, the annual reduction effort in *relative terms* will increase significantly over time.

As shown in Figure 2, this year-on-year cap reduction will start at 2.7 percent in 2021, increase to 3.5 percent in 2030 and 5.4 percent in 2040. In the last decade before 2050 the relative annual reduction effort will increase sharply and end with five consecutive years where the EU ETS has to deliver additional reductions of more than 8 percent compared to the previous year. If the EU wants to reduce the ETS cap by a constant percentage every year, it would have to reduce the EU ETS cap by 5.2 percent per year.

“The EU ETS reduction effort increases significantly over time in relative terms

In the 2050 Roadmap, the Commission assumes that increasingly larger cuts can be delivered because more cost-effective technologies will become available over time. That might be correct, but it is a highly uncertain assumption. Another scenario is that it could be more and more challenging to make additional cuts as the low-hanging fruit will be taken first, leaving more expensive and technologically challenging abatement measures to the later years. As a large share of the future abatement must be achieved by technology that is currently unproven or very expensive, all assumptions about cost-effective pathways towards the 2050 target are by definition highly uncertain.

The Commission’s analysis illustrates the significant effort it would take to achieve the emission reductions displayed in Figure 2. According to the 2050 roadmap, the EU ETS carbon price would have to reach somewhere between €100/t and 370/t by 2050, levels which may be politically unrealistic. It is important to note that these carbon prices do not include inflation, but are expressed in real 2008 euros.

Figure 3 shows a more accurate picture of the emission reduction effort implied by the EU ETS cap. The grey line shows the logarithm of the annual cap with a 2.2 percent linear reduction factor, while the orange line displays the logarithm of the annual cap with an equal year-on-year reduction factor (5.2 percent). The advantage of looking at the cap in logarithmic terms is that the slope of the lines in the figure represents the actual percentage reduction in the cap (for the purposes of this analysis, the values on the vertical axis are less relevant than the slope of the lines).

Figure 2: Kicking the can down the road?

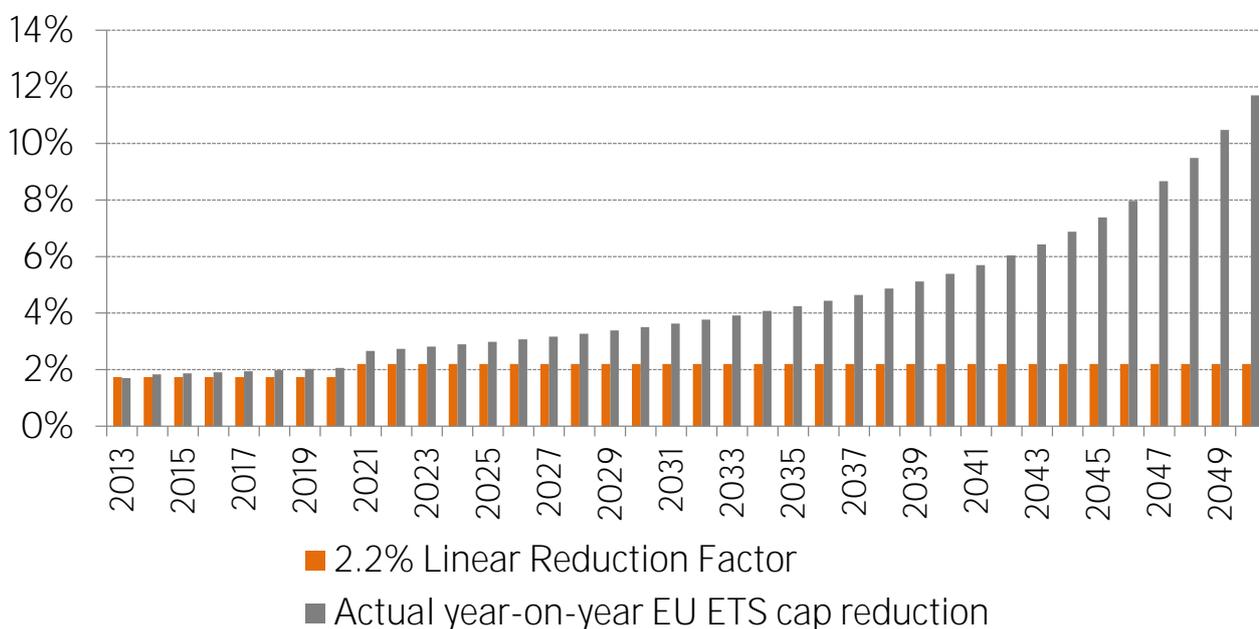
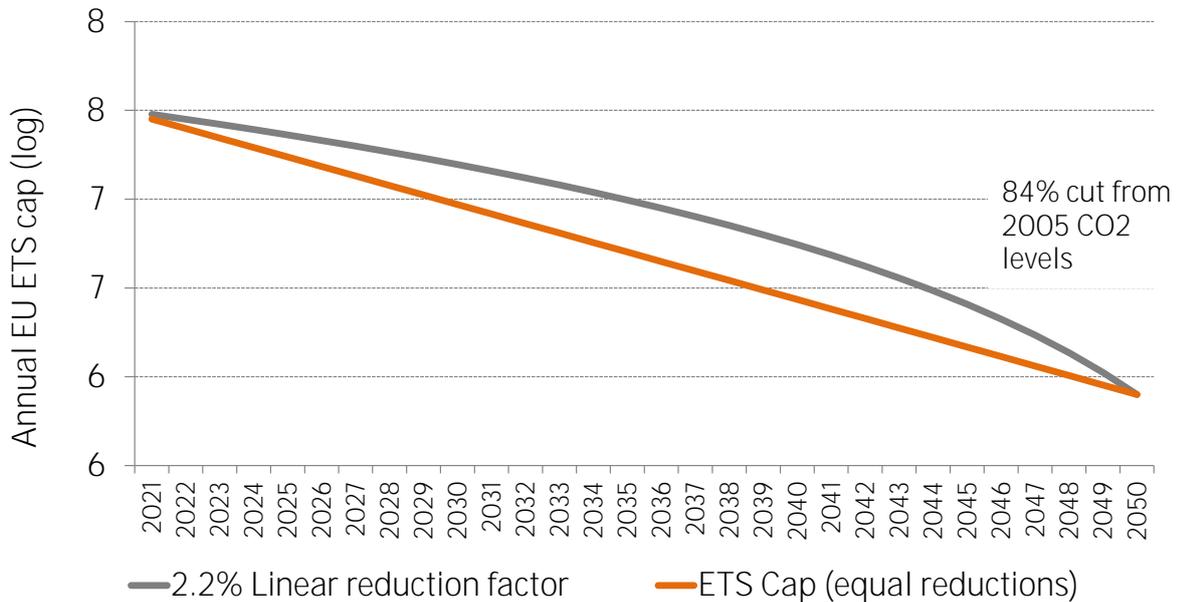


Figure 3: How linear is the linear reduction factor?



As the grey line shows, the EU ETS cap with a 2.2 percent linear reduction factor declines at a relatively slow rate at first and then forces large relative emission reductions later on. The figure illustrates the fact that the 2.2 percent linear reduction factor does not place the EU ETS on a steady pathway towards the 80 percent target for 2050.

Conclusions

We conclude that it is false to claim that the EU is on a credible or cost-effective track towards its self-determined contribution to the Paris Agreement. The first main reason is that the current proposal for phase 4 of the EU ETS does not add up to a sufficient contribution from the EU ETS to EU’s 2050 target, and this shortfall is not compensated by an additional cut by the non-trading sectors. The second reason is that the proposed reductions in the EU ETS cap mean that the EU ETS is putting off efforts to reduce emissions by relying on uncertain technological improvements. It is questionable whether this is the most cost-effective pathway towards EU’s 80 percent target for 2050.

It currently appears very unlikely that the EU changes its 2030 targets during the on-going phase 4 review or the upcoming process to set new targets for the non-trading sectors under the Effort Sharing decision. However, the question will not go away. There will be a global stocktake to assess the progress towards the targets under the Paris Agreement both in 2018 (called “facilitative dialogue”) and in 2023, and all Parties are encouraged to communicate updated long-term climate targets and strategies before 2020. This will keep the debate going in the EU for several years, but we still find it quite unlikely that this actually will lead to a higher reduction target for 2030.

Yet, the fact that the 2.2 percent linear reduction factor is not in line with the 2050 target means that the EU may steepen it after 2030. The EU could do that as part of the 2025 review in light of

the Paris stocktake and its upcoming mid-century low emissions development strategy. To align the ETS cap reduction with the goal to reduce ETS emissions by 90 percent by 2050, the EU would have to adopt a linear reduction factor of 2.5 percent from 2031 onwards.

In any case, even if the EU aligns the EU ETS cap with the 90 percent goal for 2050, the nature of the linear reduction factor will still mean that annual emission reductions will become progressively greater and, possibly, harder.

The implication of this analysis is that the EU will have to step up its efforts after 2030 if it is to meet its 80 percent target for 2050. This fact raises the possibility that the EU will be unable to meet this target. While the Commission presents the case that the EU is on track towards delivering this target, our assessment suggests that the EU may have an even chance of either meeting or missing the target. Brussels is rolling the dice.

Annex: Analysis Probability Guidelines

Probability	Percent
Extremely likely	95-100%
Very likely	82-94%
Quite likely	69-81%
Somewhat likely	56-68%
Even chance	45-55%
Somewhat unlikely	32-44%
Quite unlikely	19-31%
Very unlikely	6-18%
Extremely unlikely	0-5%

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