Assessing the EU 2030 climate and energy targets: looking at 2020 and beyond

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Six years ahead of 2020 deadline, the European Union is laying the groundwork of its post-2020 climate and energy policy. The approval of the 2030 framework by the European Council’s meeting in October represents the last advancement of this longstanding process. Although it is definitively too early to provide a complete assessment of the EU performance, it would be interesting to reflect on the progress made by Member States in the achievement of the 2020 targets in order to understand how these relate to the commitments launched for 2030 and at the same time whether they are coherent with longer-term objectives.
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Introduction

Following the suggestion of the science community, in 1996, the European Union adopted a long-term climate protection objective: the 2°C limit on global temperature increase by the end of the century. Since then, the European Union started to define a set of measures aimed at abating GHG emissions and supporting clean energy sources. In 2005, Member Countries established the world’s first regional Emission Trading Scheme (EU ETS). Three years later, through the so-called 20-20-20 package, the EU launched an integrated approach to climate and energy policy with the objective to transform Europe into a low carbon economy. The overall target included in the package is to cut EU emissions by at least 20% by 2020, as compared to 1990 levels. It is being implemented through two main measures, represented by stronger price incentives under the ETS and the support to renewable sources and energy efficiency. Six years ahead of the 20-20-20 deadline, the European Union is laying the groundwork of its post-2020 climate and energy policy. In January 2014 the European Commission outlined the EU executive’s strategy to reduce GHG emissions and shape the Union’s energy policy in the next decade. The approval by the European Council’s meeting in late October represents the last advancement of this longstanding process.

The 2030 climate and energy targets

The Council on October 23rd endorsed a binding target of at least 40% domestic reduction of greenhouse gas emissions compared to 1990 levels, an EU-wide goal of at least 27% of renewable energy consumption, and an indicative target at the EU level of at least 27% for improving energy efficiency compared to projections of future energy consumption. The conclusions retrace the EU Commission’s proposal released in January, but reduces the 30% target on energy efficiency proposed more recently by 3 percentage points. It will be reviewed by 2020, “having in mind an EU level of 30%”.

The emissions reduction goal will be followed in the most cost-effective manner possible, with the reductions in the ETS and non-ETS sectors amounting to 43% and 30% by 2030 compared to 2005, respectively, “all Member States will participate in this effort, balancing considerations of fairness and solidarity”, the document said.

In order to help weaker EU Member States in achieving the targets and persuade the opposition led by heavy industry and Poland some specific measures were set: a fund was set to address particularly high additional investment needs in low income Member States with GDP per capita below 60% of the EU average, while 10% of the EU ETS allowances auctioned by the Member States will be distributed among those countries whose GDP per capita did not exceed 90% of the EU average in 2013.

Overall, the Council’s agreement has been well-received, especially by EU industry and reluctant Member States. However, environmental and advocacy groups as well as green companies claimed that it would not be enough to keep the EU-bloc on track with its GHG reduction goal of 80% below 1990 levels for 2050, and that it would not guarantee sufficient incentives to invest in renewables, energy saving and low-carbon technologies.

Nevertheless, the European climate and energy policy is far from being legally formalized, and the targets may be adjusted in the future - by the EU Council itself, as stated in the conclusions adopted at the recent meeting, as well as by the EU Commission and Parliament, that hold the executive and legislative powers respectively.

The 40% cut was presented as “the world’s most ambitious 2030 climate energy policy”, that strengthens the EU-bloc position in view of the international climate summit to be held in in Paris in December 2015. However, fossil fuels-dependent EU countries and industry sectors opposing more demanding 2030 targets stressed that it would incautious to take on burdensome responsibilities without knowing whether other countries and especially major emitters are willing to do the same. Therefore, a “flexibility clause” was added to the Council’s document, making it possible to return

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A look at the 20-20-20 targets

The 2030 package is meant to be a natural extension of the of the so-called 20-20-20 climate-energy package towards the achievement of longer term reduction objectives.

Although it is definitively too early to provide a complete assessment of the EU performance, it would be interesting to look at the progress made by Member States in the achievement of the 2020 targets in order to understand how these relate to the commitments launched for 2030 and beyond.

Concerning the GHG emissions reduction, the EU is already very close to meeting its target. In 2013, its emissions\(^2\) were, indeed, already 19% lower than in 1990\(^3\), just 1% from the 2020 goal. According to latest EEA estimates, last year (2013) contributed with a 1.8% reduction. In addition, current measures are expected to lead Member States to overcome the target and achieve an overall 21% emission reduction by 2020.

Single Member States performed quite differently: using the individual targets agreed under the effort sharing decision\(^4\) as a reference measure, we see that major emission reductions have been achieved in most of Eastern European nations along with Spain, Greece and Sweden. On the contrary, countries like Poland, Luxembourg and – surprisingly – Germany will have to improve their efforts in cutting emissions.\(^5\) In particular, Germany, whose emissions were in line with its reduction objective in 2012, lost some ground in the last year, mainly because of weather conditions, which required more oil and gas for heating in homes and buildings, and because of the increased use of coal in the power sector. At the sectoral level, almost all EU sectors decreased their carbon emissions from 1990 to 2013, with the waste and industrial sector achieving the major reduction (-33% and -30% respectively). Transport sector is the only one that registered an increase of emissions (+14%). These figures are very important since in 2013 the transport sector represented 20% of total European emissions.

According to EEA data, overall emissions of ETS sectors decreased by 19% compared to 2005, bringing the scheme very close to the 21% overall reduction required for 2020. Although the actual effectiveness of the EU Trading Scheme in terms of emissions abatement is still under debate, recent literature seems to agree on the fact that the first two phases of the scheme contributed to the Union’s emission reduction in the range of 40-80 MtCO2/yr, annual average.\(^6\) Even if one of the drivers has been identified in the recent economic crisis, which led to a significant decline in industrial production, other factors, such as fuel mix changes in favour of renewables and gas in the electricity sector, proved to be relevant as well.\(^7\)

A lower-than-expected carbon price, however, has been widely recognized as one of the main weaknesses of the system. The first two phases have been, indeed, affected by an over- allocation of permits through the National Allocation Plans that, alongside the impossibility to bank them to the phase 2 and the economic downturn, generated an oversupply of permits estimated between 1.5 and 2 billion at the end of 2012 and a consequent price fall from €30 in mid-2008 to €5 at the end of 2012.\(^8\)

If from one side, this situation contributed to limit the so-called carbon leakage effect since the

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\(^2\) Including international aviation.
\(^5\) See footnote n.3.
\(^7\) Ibidem and EE (2014), as in footnote n.3
\(^8\) Zachmann G. (2013), You'd better bet on the ETS, Bruegel Policy Brief, 2013/2
implementation cost for the EU companies remained low, on the other side such a low carbon price significantly reduced the incentive for companies to invest effectively in clean technologies in the long term also leading some countries, like UK and Germany, to a greater use of hard coal for the electricity production and thereby undermining one of the primary goals of the system.

Looking at the renewable energy target, EEA reported that the EU exceeded its 2012 indicative objective that was set at 13%. In 2012, gross final consumption of energy from renewables in the 27 Member States was 14.1% of the total. Biomass-based technologies are dominant among other technologies, with 61% of all RES consumption in 2012. Among the nations that showed the highest shares of renewable energy there is Sweden, which lead with 51% of its gross final consumption, followed by Latvia (36%) and Finland (34%). On the contrary, Malta, Luxembourg, the Netherlands and the United Kingdom had the lowest shares (less than 5%). Although the encouraging overall data, it has to be highlighted that to reach the target for 2020, renewable energy consumption has to grow on average by 5.4% per year, which is less than the average growth experienced since 2005 (6.4%/y), but it is 1.4 time larger in absolute terms (83 Mtoe).

More puzzled is the EU path towards the achievement of the energy efficiency target. The 2005–2012 overall decline in primary and final energy consumption were higher than the average 2005–2020 reductions required to achieve both the primary and the final energy consumption targets: in 2012, primary energy consumption resulted 7.3% less than in 2005 while the final energy consumption was 7.1% lower than in 2005. Once again, however, the effects of the economic recession on energy demand played a relevant role in influencing the EU energy consumption choices and will likely continue having a lasting effect in the coming years. On the other side, however, the European Commission estimates that, without further policy efforts, the EU will miss its 2020 energy efficiency target of 1 or 2%.

Towards 2030 and beyond

During the political debate, the main question was whether the emission reduction target is ambitious or not. Since the EU-28 emission level in 1990 amounted to 5,626,25 MtCO2e, a 40% cut corresponds approximately to 3,375,75 MtCO2e. First of all, this means a further emissions reduction by about 25% compared to 2012 verified emissions. However, according to recent projections from Member States’ national communication, future emission reductions would be less than required both including existing or planned policies. In particular, existing measures would likely lead 2030 EU emission reduction 1% more than ten years before (from -21% to -22% compared to 1990) while considering also domestic measures currently at the planning stage, emissions in 2030 would result to be 28% below 1990 levels. The reference scenarios of the EU Commission itself show that current measures “combined with mandatory objectives on renewables”, the EU ETS and “the steep increase in fossil fuel prices”, are projected to bring about GHG emissions reduction of 24% in 2020 compared to 1990, further decreasing to 32% in 2030 and to 44% in 2050.

This substantially means that Member States have to implement further policies to achieve the additional 8% required to attain the 2030 target. It is important to remind here that a 40% domestic emission reductions below 1990 was considered as the cost-effective pathway by 2030 to achieve the emission abatement objective of 80–95% below 1990 levels by 2050 as set in the EU roadmap to 2050, released in 2011. Other studies add that even if the 40% target is implemented, the

9 See footnote n.3.
10 OECD Database. Our elaboration (accessed 8 November 2014).
13 Ibidem.
emission reductions need to accelerate further after 2030 to achieve the 80-95% emission cut by 2050.

According to the EU’s 2030 impact assessment, the main driver for a 40% CO2 emissions cut will be a €40 a ton carbon price by 2030, and a €264 a ton by 2050. Extensive reforms are needed to achieve such prices, though. The implementation of the so called back-loading plan (a short term measure consisting in a temporary removal of a total 900 million allowances from auctions in years 2014-2016 of phase 3), the higher linear reduction factor (from current 1.74% to 2.2% after 2020) and the restriction to international offsets included in 2030 targets by the EU Commission seems to be insufficient to recover the system.

On this regard, the establishment of a market stability reserve was recognized as an essential elements by both the Council and the Commission, as well as by some Member States. In January the Commission introduced the proposal of “an objective and rule-based mechanism” starting from 2021, according to which allowances are placed in and released from the market stability reserve in relation to the total number of allowances in circulation. The reason behind is that without intervention the large surplus of allowances will circulate into the next trading period (phase 4), undermining market stability. As the EU Commission reported, the allowances surplus will amount to more than 2.5 billion by 2020, two thirds of which are due to the inflow of international offsets in the period 2008-2020.

The need to ponder over the functioning and scope of the EU ETS, however, goes well beyond the creation of new policy framework for 2030.

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results from the AMPERE project, at http://ampere-project.eu/web/images/Final_Conference/ampere_synthesis_1-2014_reduced.pdf

15 See footnote n.3.


17 EU Commission (2012), The state of the European carbon market.
As for renewable, the EU Commission proposed an EU-wide renewable energy target of “at least 27%” for 2030. Unlike the 2020 goal, it would not be translated into national obligations leaving flexibility for Member States to meet their emission reduction targets in the most cost-effective manner in accordance with their specific circumstances, energy mixes and capacities to produce renewable energy18.

The renewables target turned out to be the most controversial issue, with some EU countries, such as the UK, and most of the industrial sectors arguing that a binding commitment would lead to a further rise in EU energy costs, thus widening a gap in competitiveness compared to the US and emerging economies. Gas prices for industry fell by 66% in the US between 2005 and 2012, while they rose 35% in Europe over the same period, according to latest figures19. As pointed out by a number of studies, a complementary renewables target under the EU ETS could lead to a perverse interaction: additional allowances generated by complying with the renewable target in the power sector would be diverted to other sectors, neutralizing the emissions-reduction impact and increasing the overall abatement costs20.

In addition, as mentioned above achieving further increase in the RES share will imply greater and greater efforts in absolute terms and other factors could influence the future EU energy path. Among these other factors, EU’s energy demand is likely to increase in the next few years as the EU economy will, hopefully, recover from the economic crisis and this will have an influence in both renewable and energy efficiency target achievements.

As in the 2020 framework, energy efficiency remains the only non-binding target. As explained above, this is leading EU Member States to leave aside policy instruments which would incentivize a more efficient use of energy. A recent study by Fraunhofer ISI showed that the EU has a 41% cost-effective end-use energy savings potential for 2030, and unlocking it would be an opportunity to curb energy waste and excessive spending on energy imports, with substantial benefits in terms of emission reduction (49-61% compared to 1990 levels), lower energy costs, competitiveness, employment21. Another study by Fraunhofer ISI22 shows that the largest final energy saving potential is in the buildings sector, whereas the highest financial benefits can be gained in the transport sector. In 2050, the overall final energy demand could be reduced by 57% compared to the baseline projection, with annual cost savings of about €240 billion by 2030 and €500 billion by 2050. Despite potential benefits, energy efficiency remains the tail-end when it comes to EU climate and energy policy.

Conclusions

The EU currently seems to be substantially on track towards the achievement of all three targets set by the 20-20-20 package. However, more than climate and energy policy, the economic crisis played a relevant role in accelerating the emissions reduction and lowering energy demand that, in turn, facilitated the increase in the share of renewables.

At the same time, the economic downturn prevented climate policy to display its beneficial effects in terms of incentives to clean technology investments and effectiveness of the EU carbon market. Therefore, the success of the climate and energy package towards the 2030 objectives and beyond strongly depends on how the EU bloc will be able to develop an effective carbon market.

18 See footnote n.1.
and large investments in low carbon technologies in the light of a future recovery of its economy.

As showed above, further policy efforts will be certainly required in the near future to achieve the targets recently approved by the EU Council. Without any doubt, the emission reductions required from now to 2030 are larger than those achievable with the policy measures currently in place.

The largest emission cuts will be required to the energy sector. The renewable deployment path will be steeper and steeper and the energy efficiency objective will require a stronger implementation of targeted measures. In addition, a relevant decarbonization of the energy system will also necessitate the modernization of power infrastructures and the development of cost-effective energy storage options. In the wake of the recent Ukrainian crisis, unlocking the energy efficiency potential appears to be a crucial option to curb GHG emissions, increase competitiveness and, at the same time, improve future EU’s energy security. The EU decision makers have a great opportunity for strengthening the coherence between these policy objectives and learning from the past in order to avoid overlapping and distorted interactions as well as delivering a clear price signal able to drive investments in low-carbon technologies.