PBL Netherlands Environmental Assessment Agency

PBL-report

Comments on the EC Green Paper 'A 2030 framework for climate and energy policies'

Authors: Robert Koelemeijer, Jan Ros, Jos Notenboom and Pieter Boot

Contact: Robert.Koelemeijer@pbl.nl

Date: 1 July 2013

PBL publication number 1158

1. Introduction

On 27 March 2013, the European Commission published the green paper 'A 2030 framework for climate and energy policies' (COM(2013) 169 final). In that document, the Commission formulated a number of questions for public consultation. Below we provide our views on these questions.

Our insights regarding an appropriate design for the EU post-2020 policy framework have been described in a recent study: Koelemeijer, R. et al. (2013), EU policy options for climate and energy beyond 2020, PBL Netherlands Environmental Assessment Agency, Bilthoven/The Hague (available at http://www.pbl.nl/sites/default/files/cms/publicaties/PBL_2013-EU-policy-options-for-climate-and-energy-beyond-2020_1082.pdf).

In that study we followed an integrated approach and took a long term perspective. Starting from the ambition of realising a low carbon economy in 2050, the study investigated possible policy designs for 2030. Our overall conclusion is that an a multiple target approach, with targets for GHG emission reduction, energy efficiency improvement and low-carbon innovation may be preferred from the long-term decarbonisation perspective. This is to ensure that policies are developed that address the different market failures that hamper progress towards a low-carbon economy.

2. Green paper questions

Below we have addressed the questions regarding lessons learned from the 2020-package, the role of targets and instruments, based on the above mentioned study. In our answers, we refer to the relevant pages in the above mentioned report in parenthesis.

2.1 General

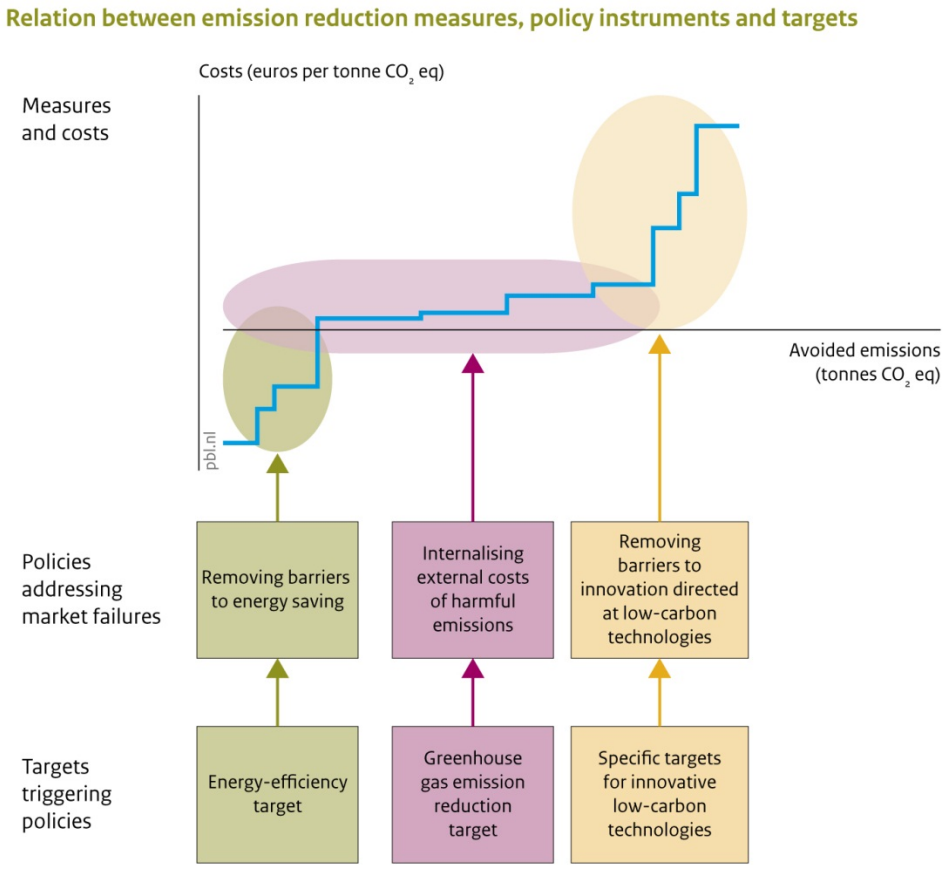
Which lessons from the 2020 framework and the present state of the EU energy system are most important when designing policies for 2030?

Some lessons that can be drawn from the current policy approach are:

- Carbon pricing forms the core of efficient policies. For various reasons, current CO2-prices within the ETS are too low to trigger low-carbon investments and to avoid a continuing lock-in in high carbon assets.
- Verdonk et al. (2013) have quantified the effects of different options to reform the EU-ETS. Introducing a minimum price for emission allowances would offer the best opportunity to stimulate companies to reduce their emissions and invest in low-carbon technology.
- Carbon pricing alone, however, will not stimulate the learning process of innovative low-carbon technologies in a cost-effective manner (pp. 20-22). Low-carbon innovation will need to be supported by both RD&D policies for technologies in early development stage as well as deployment support policies for more mature technologies.
- The high prices that would be needed to make several promising low-carbon technologies cost-competitive, in the short term, would render much currently installed installations unprofitable (e.g. existing coal-fired power plants). For example, CO2 prices of more than 100 EUR/tonne would be necessary to stimulate offshore wind power or CCS without additional subsidies. More dedicated policies than carbon pricing alone are needed to stimulate the learning process of such technologies.
- The 2020-target for renewable energy has clearly triggered innovations and cost-price reductions of renewable energy sources, like wind-energy and solar-PV. This underlines the importance of targets to stimulate the learning process of technologies (p. 27).
- However, especially in the case of biomass, having a general renewable energy target is not sufficient to stimulate innovations. The targets for 2020 have not proven to be a real incentive for the more promising, innovative, yet more expensive biomass options (pp. 24-26).
- Moreover, other low-carbon technologies, such as carbon capture and storage (CCS) and technologies directed at electrification are not being stimulated by the existing renewable energy targets.
- Hence, a general target for renewable energy, similar to the current 2020 target, is not optimal to stimulate low-carbon innovation (pp. 29-31).

2.2 Targets

Which targets for 2030 would be most effective in driving the objectives of climate and energy policy? At what level should they apply (EU, Member States, or sectoral), and to what extent should they be legally binding?



Stylised cost curve, identifying various market failures and policy approaches to address these. Source: adapted from Hood (2011) and IEA (2012).

- An efficient policy mix consists of instruments that addresses three main market failures: (1) negative externalities from greenhouse gas emissions; (2) underinvestment in energy-efficiency improvement (various barriers); and (3) underinvestment in low-carbon innovation due to knowledge spill-overs and high upfront costs (Figure 1).
- Realisation of such a policy mix is more likely when backed by a renewed mix of complementary targets for greenhouse gas reduction, energy efficiency, and low-carbon innovation.

<u>Addressing negative externalities from greenhouse gas emissions</u>

- Policies that put a price on carbon (through cap-and-trade and/or taxation) internalise – at least to some extent – harmful external effects of greenhouse gas emissions. Setting a legally binding EU-wide (interim)GHG-emission reduction target for 2030 will help to guarantee that such policies are put in place, and such a target will provide clarity for energy investments. A conditional 2030 target, in the sense that are only applicable if other (groups of) countries also make a contribution, will not provide this investment security as long as the conditions are not being fulfilled.
- Based on equal costs as a share of GDP, the EU should reduce emissions by 45% to 47% compared to 1990, as its contribution to the target of limiting global temperature increase to 2 °C. In case of other effort-sharing regimes, an EU emission reduction of 40% by 2030 compared to 1990 would suffice to keep the 2 °C target within reach (Hof et al., 2012).

Addressing underinvestment in energy-efficiency improvement

- Energy efficiency improvement is insufficiently triggered by CO2-pricing only. Complementary policies directed at unlocking barriers to energy efficiency improvement can lead to more efficient policy mix. In this respect, policies like Ecodesign and EU standards for cars and buildings are of prime importance to limit energy demand.
- Setting a non-binding indicative target for energy efficiency improvement may suffice to trigger the development of energy efficiency policies at the EU-level while leaving sufficient room to manoeuvre for Member States to tailor their approach to fit specific solutions at the national level (pp. 16-17).

Addressing underinvestment in low-carbon innovation

- Low carbon innovation is insufficiently triggered by CO2-pricing only. From the long-term perspective of achieving a low-carbon economy by 2050, overall policies may be more efficient if action is triggered today such that necessary technologies are developed through pilots, demonstration projects or in niche markets, and to develop necessary institutions and infrastructure. This requires innovation policies that may be backed by dedicated targets for innovative low-carbon technologies (pp. 9-10).

Are targets for sub-sectors such as transport, agriculture, industry appropriate and, if so, which ones? For example, is a renewables target necessary for transport, given the targets for CO2 reductions for passenger cars and light commercial vehicles?

- Targets to stimulate specific developments can be appropriate. For example, if one wants to stimulate zero-emission vehicles, one may set a target for the number of zero-emission vehicles sold. Only setting a CO2-target for new passenger cars is not likely to stimulate the innovation of zero-emission vehicles, because it is likely that the automotive industry can achieve a CO2-target against lower costs by making ICE-motors more fuel efficient or by making cars lighter. Setting a specific target will be more appropriate to stimulate innovation.
- A renewables target for transport is too general to stimulate the development of 2nd generation sustainable biofuels with large long-term potential (e.g. FT-diesel from woody biomass). To decarbonise heavy duty transport, such 2nd generation biofuels may play an important role. The renewables target for transport has however until now primarily stimulated the development of 1st generation biofuels or 2nd generation biofuels from waste-streams that have limited long-term potential. A more tailor-made target for 2nd generation sustainable biofuels may be more appropriate to stimulate innovation.

How can targets reflect better the economic viability and the changing degree of maturity of technologies in the 2030 framework?

- A general target for renewables is not optimal to stimulate low-carbon innovations. Not all renewables are innovative; not all necessary innovations concern renewables. Innovation policies should focus on stimulating those options that can make a large contribution to GHG emission reduction in the long term and have an attractive perspective for cost-price reduction (pp. 30-31). The relevance of various technologies for long-term decarbonisation have been assessed (pp. 43-44).
- Innovation policies is more than support for RD&D only (technology push). Specific deployment targets for innovative technologies can help to pull technologies through the 'valley of death' (market pull). Even more mature technologies will have to compete on the market without specific support except for a credible CO2-price (pp. 17-23).

2.3 Instruments

Are changes necessary to other policy instruments and how they interact with one another, including between the EU and national levels?

Interactions will always occur between the various instruments in a policy mix.

- Energy efficiency improvement will make it easier to reach a certain share of renewable or low-carbon energy in final energy demand.
- On the other hand, emission reductions induced by policies to support renewable energy or low-carbon technology, energy-efficiency policies and emissions performance standards, together,

do not lead to additional emission reductions within the ETS if the emission cap is not changed, as well.
- Additional policies will always have some impact on the carbon price in the ETS, which may weaken the effect of CO2 prices spurring on low-carbon innovation. However, the effect of a slightly lower CO2 price that would result from complementary policies to stimulate innovation may not necessarily be problematic, as low-carbon innovations after all would be stimulated directly through those specific, complementary policies.
- Interactions ask for thorough (ex ante) analysis to carefully align policies, and for regular, announced reviews to keep instruments aligned once they are implemented.

How should specific measures at the EU and national level best be defined to optimise cost-efficiency of meeting climate and energy objectives?

- In discussing cost-efficiency, it is important to distinguish between short-term cost-optimisation and optimisation in the long-term. Meeting 2020 or 2030-targets at lowest costs does not automatically lead to lowest costs for long-term decarbonisation.

Which measures could be envisaged to make further energy savings most cost-effectively?

- Dynamic regulation may stimulate a race to the top. Dynamic regulation is not (yet) part of EU energy-efficiency regulation. In case of dynamic regulation, future product standards are determined by the currently best performing products. Such an approach stimulates competition between manufacturers to produce the most energy-efficient products (p. 18).
- An example is the Top Runner programme in Japan. Another example is the budget-neutral reform of the purchase tax on passenger vehicles in the Netherlands – with penalties on the purchase of the most polluting vehicles while introducing a bonus for the least polluting ones – which has stimulated the rapid increase in efficient cars over the last years.

How can EU research and innovation policies best support the achievement of the 2030 framework?

- EU research and innovation policies should be developed such that all important low-carbon technologies, i.e., those technologies that can make a large contribution to GHG emission reduction in the long term and have an attractive perspective for cost-price reduction, are stimulated in their learning process.
- One policy framework including RD&D and implementation of technologies, such as CCS, has to be developed, otherwise RD&D risks to have no 'follow-up'.

3. References

- Hof A, Brink C, Mendoza Beltran A, Den Elzen M. (2012). Greenhouse gas emission reduction targets for 2030- Conditions for an EU target of 40%, report 500114023, PBL Netherlands Environmental Assessment Agency, Bilthoven/The Hague.
- Hood C. (2011). Summing up the parts – Combining policy instruments for least-cost climate mitigation strategies, IEA, Paris
- IEA (2012). Energy Technology Perspectives, IEA, Paris.
- Koelemeijer R, Ros J, Notenboom J and Boot P. (2013), EU policy options for climate and energy beyond 2020, PBL publication number 1082, PBL Netherlands Environmental Assessment Agency, Bilthoven/The Hague.
- Verdonk M, Brink CJ, Vollebergh H and Roelfsema M. (2013). Evaluation of policy options reforming the EU Emission Trading System - Effects on carbon price, emissions and economy, PBL publication number 934, PBL Netherlands Environmental Assessment Agency, Bilthoven/The Hague.