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20% RES by 2020 - an assessment of the new EU RES policy framework

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Overview

Recent years were full of important policy decisions, laying the grounds for a promising future of renewable energies sources (RES) in Europe. Of highlight in this respect, the European Commission's proposal of a new RES directive (EC, COM (2008) 19) and later on its adoption by the European Parliament and Council throughout 2008. With this, the target of 20% RES by 2020 is implemented in EU legislation by setting Member State (MS) targets for the year 2020, which represents a long term commitment to an increased use of renewable energies in Europe. Besides overall national RES targets also minimum targets for RES in transport were established, but no sectoral targets – neither for RES electricity nor for RES heating & cooling. As RES targets are defined in relation to overall energy demand, also accompanying energy efficiency policies to reduce / inverse demand growth deserve key attention.

The new RES Directive aims to offer a proper combination of strong ambition, stability of national support schemes and new cooperation measures between Member States in order to reach this ambitious policy goal. National RES targets are allocated based on a "flat rate" approach modulated by the wealth of individual Member States. Such an approach of target setting neglects however the national resource availability. Consequently, in order to contribute to an EU-wide least cost allocation of RES potentials and to facilitate RES target fulfilment for individual Member States accompanying flexibility measures have been implemented.

Within the scope of this paper we aim to undertake an assessment of this new policy framework by conducting a qualitative and quantitative assessment of future policy options for RES in general, and renewable electricity in particular. With this we aim to clarify the following central questions:

- What are the key elements of the new RES directive?
- Which Member States have to possibility to strive for a pure national RES target fulfilment, and which ones require cooperation?
- What are the consequences of key policy choices in terms of resulting consumer / societal expenditures due to RES support?
- In comparison to support cost, which benefits with respect to climate change and supply security arise from the enhanced RES deployment?

Methods

Besides qualitative analyses an independent in-depth model based assessment of various policy options for renewable energies in general, and RES electricity in particular, to meet Europe's commitment on 20% RES by 2020 was undertaken within the scope of the European research project futures-e (www.futures-e.org). A broad set of policy scenarios conducted with the Green-X model were thoroughly analysed, illustrating the consequences of policy choices for the future RES evolution and the corresponding cost within the European Union as well as at country level. Feasible policy pathways were identified and targeted recommendations provided in order to pave the way for a successful and in the long-term stable deployment of RES in Europe.

The finally compiled scenario work represents the outcome of an intensive feedback process established via lively debates at the national and the European level. A broad set of regional workshops had been held all over Europe within the futures-e project throughout 2008. Thereby, policy makers and key stakeholders provided essential inputs on draft outcomes and recommendations, facilitating to improve and reshape the performed work by better taking into account national specifics. For further details on scenarios and assement we refer to (Resch et al., 2009).

Results

The effects of striving for an accelerated RES deployment can be summarised as follows:

A strong expansion of renewable energies is an important element in Europe's greenhouse gas reduction strategy. The deployment of new RES installations in the period 2006 to 2020 as projected in the discussed case of strengthened national RES support results in a total reduction of CO_2 -emissions by 758 Mt/yr in 2020, which corresponds to 14% of EU-27 GHG emissions in 1990.

The increased RES-deployment due to new RES installations in the case of optimised national RES support leads to a reduction in fossil fuel demand of yearly 264 Mtoe by 2020. Oil imports can be reduced by 9%, gas imports by 30% and coal imports even by 42%. This will significantly increase the EU's security of supply. In 2020 105 billion €can be saved on fossil fuels, which corresponds to 0.7% of GDP. This monetary expression is based on PRIMES high energy prices as used for this modelling exam. The results show that the 20% RES could be achieved at moderate cost, which illustrates the ability of RES to protect the EU economy against volatile fossil fuel prices. The financial support provided to increase the support of RES in the coming years should reflect these benefits to EU's supply security.

The ambitious RES deployment requires additional generation cost of yearly 5.4 billion \in on average in the period 2006 to 2020 according to the discussed case of strengthened national RES policies. In case of a EU-wide "least cost" policy additional cost can be further reduced to about 3 billion \in on average (but with a lower RES exploitation). However, policy cost – i.e. the consumer expenditures due to RES support would tremendously increase in case of simplistic uniform policy choices – i.e. from about 25.8 to a level of 36.4 billion \in as yearly average. The "least cost" option in terms of policy cost / consumer expenditures represents the case of harmonised technology-specific premium tariffs which leads to a average yearly cost reduction by 1.4 billion \in to an amount of yearly 23.4 billion \in As noted above, such costs are strongly influenced by energy price assumptions.

Conclusions

Key conclusions drawn from this assessment comprise:

- The 2020 RES targets are challenging. Many Member States are not even on track to achieve their 2010 targets and need a step change in RES growth.
- Besides proactive RES support, both an accompanying (strong and) effective energy efficiency policy to reduce overall demand growth and a removal of non-economic barriers for RES are necessary to meet the 2020 RES commitment. In this context, efforts are needed in all Member States and a broad set of RES technologies has to be supported.
- The realisable domestic RES potentials are large enough to achieve the national 2020 RES targets in almost all countries (with the exception of e.g. Luxemburg) from an economic viewpoint intensified cooperation is however recommended.
- RES targets can be achieved either by improved (strengthened) national support systems or by a harmonized EUwide support system, as long as support is offered technology-specific.
- RES targets cannot be achieved by a harmonized, technology-neutral support system, because such a system fails to trigger immediate deployment, development and cost reduction of technologies which are currently still more expensive but whose contribution is needed in the mid- to long-term.
- The (support) cost of achieving 20% RES by 2020 are significantly lower in case of technology-specific support compared to technology-neutral support. In the latter case huge producer rents have to be borne by the consumer.

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