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13th European IAEE Conference 2013

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FEASIBLE PATHWAYS FOR A EUROPEAN RES STRATEGY BEYOND 2020

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(1) Overview

With Directive 2009/28/EC, the European Parliament and Council have laid the grounds for the policy framework for renewable energy sources (RES) in the European Union until 2020. The aim of this paper is to look more closely beyond 2020, well in advance, contrasting and analysing potential RES policy options that are currently being discussed. Generally the assessment includes RES in all energy sectors but a topical focus is put on renewable electricity, specifically within the discussion of policy options for a harmonisation of RES support.

It can be concluded that a strategy, and clear commitment to RES beyond 2020, is needed in order to ensure substantial future RES growth. The initial results of the policy assessment indicate that both cooperation and coordination among Member States appear beneficial and, indeed, are required to tackle current problems in RES markets. Thus, these policy options would also appear to be fruitful for the period beyond 2020.

Note that the work represented in this paper reflects interim findings of the beyond2020 project (see Resch et al. (2012)), a collaborative action of European research institutions, consultants and industry partners. Thus, we gratefully acknowledge the financial and intellectual support for this initiative provided by the "Intelligent Energy - Europe (IEE)" Program.

(2) Methods

The model-based analysis of policy pathways as discussed in this paper has addressed specifically the role of RES support schemes and related impacts on financing. Fig. 1 provides an overview of the limited set of policy cases assessed during the interim analysis conducted within the beyond2020 project. The quantitative pre-assessment of policy options was done by application of the Green-X model. Green-X is an energy system model that offers a suitable representation of RES technologies in Europe and that allows indicating the consequences of RES policy choices in a real-world energy policy context. The model allows conducting in-depth analyses of future RES deployment and corresponding costs, expenditures and benefits arising from the preconditioned policy choices on country, sector and technology level.

In order to assure consistency with other related studies at EU level, key assumptions on the conventional reference system, energy and carbon prices as well as energy demand were based on these general energy scenarios, in particular on the PRIMES "high renewables" case. Moreover, in common with this PRIMES case, the targeted deployment of RES (as a share of gross final energy consumption) at EU level by 2030 was set at 31.2% for all Green-X scenarios. Note that this assessment ignores social, political, and legal implications, in contrast it focuses only on the performance of researched pathways regarding economic evaluation criteria, in particular effectiveness, and static and dynamic efficiency. Conclusions on equity and environmental and economic effects can also be drawn using Green-X results, but are not described further here.

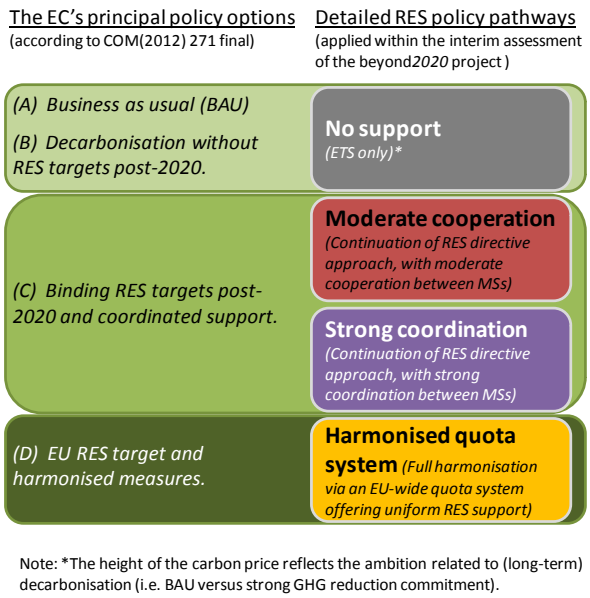

Fig. 1: A European RES policy beyond 2020 - from principal policy options to detailed implementation concepts

(3) Results

Next, only a brief overview of the results gained within the interim assessment is given, indicating the key outcomes for RES policy assessment, using the example of the EU level for the electricity sector only:

Fig. 2 indicates – in addition to RES-E deployment – the cost impact, in particular the resulting support expenditures for new RES-E installations. More precisely, Fig. 2 offers a comparison of both overall deployment of new RES-E plants (installed between 2021 and 2030) by 2030 and the corresponding support expenditures (on average per year for the period 2021 to 2030) for all the assessed cases. Apparently, strengthened national RES policies complemented by moderate to strong cooperation and coordination appear suitable to keep RES well on track to reach moderate-to-ambitious deployment targets for 2030. Related support expenditures can then be maintained on a comparatively low level, while the uniform RES support involved in the case of a harmonised RES trading regime (without banding) may lead to almost twice as high a consumer burden.

In the case of "no (dedicated RES) support", obviously no support expenditures for RES are applicable. If long-term climate targets are taken seriously, meaning that Europe strives for the 80%-95% GHG reduction by 2050, no dedicated RES support may, however, possibly cause unexpected side effects. A comparison of the two variants of "no support", characterised by either low (in the case of no strong carbon commitment) or moderate-to-high carbon prices (reflecting a strong long-term carbon commitment: i.e. an 80%-95% GHG emission reduction by 2050), shows that, in the absence of a strong RES deployment, a rise in electricity prices may lead to an indirect consumer burden of almost similar magnitude to that involved in the case of perfectly-tailored RES policies. In the absence of continuous RES support and related expansion, this is caused, on the one hand, by a reduction of the so-called "merit order" effect that usually goes hand in hand with RES deployment. On the other hand, a lower RES-E penetration leads to higher carbon prices and, thus, also higher electricity prices, since more alternatives have to enter the (common) carbon market in order to comply with the carbon target.

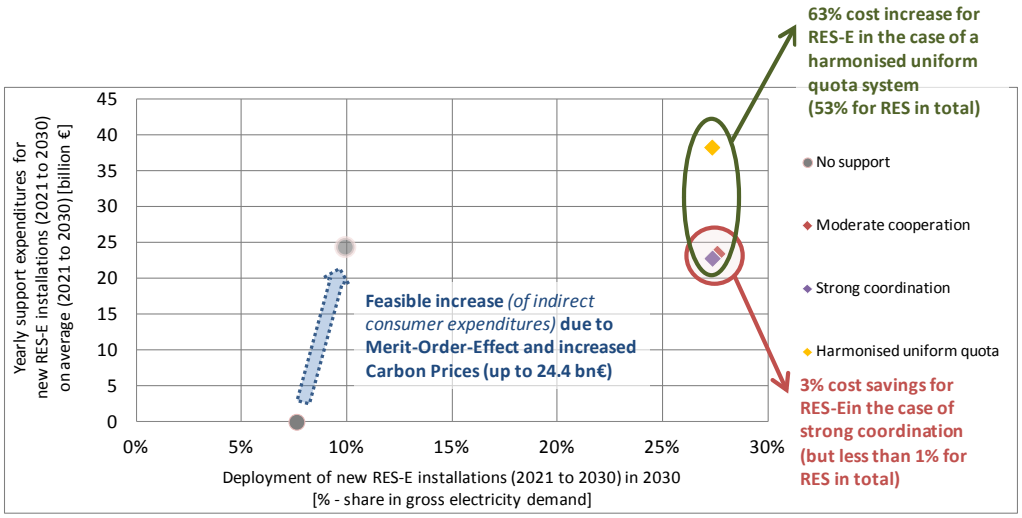

Fig. 2: Comparison of the resulting 2030 deployment on new RES-E (installed 2021 to 2030) and the corresponding (yearly average) support expenditures in the EU-27 for all assessed cases

(4) Conclusions

The current RES Directive (Directive 2009/28/EC) lays the basis for the EU's RES policy framework until 2020, but a strategy and clear commitment to RES beyond 2020 is needed (if RES are to deliver what is expected). The initial results of the policy assessment indicate that cooperation and coordination among Member States appear beneficial and, indeed, are required to tackle current problems in RES markets. Thus, both of these policy options would also appear to be fruitful for the period beyond 2020. By contrast, "simplistic approaches" to RES policy harmonization (e.g. via a uniform RES certificate trading) cannot be recommended – neither in the short nor in the long term (compare also Resch et al (2010)).

References

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