EUROPE TAKES THE CHALLENGE – THE WAY FORWARD IN PROMOTING RENEWABLE ELECTRICITY

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OVERVIEW

Energy policy is the main driver for the enhanced deployment of electricity from renewable energy sources (RES-E) as observed in several countries worldwide. Now, to the first time in Europe, binding targets for renewable energy sources (RES), regardless the energy sector, have been set – 20% RES up to 2020 indicates a huge future challenge for upcoming years. Despite, efforts have to be taken in all three energy sectors, the electricity sector will play a major role in achieving the overall target. Hereby, efficient and effective support measures have to be implemented in order to accompany a strong increase in the share of RES-E with low transfer costs for the society. Several policy options will be discussed with respect to their effectiveness – the development of RES-E – and their efficiency – the associated costs to the development of RES-E[1].

Besides the Feed-In Tariffs and the quota systems based on Tradable Green Certificates (TGC), some flexibility mechanism are needed in order to support Member States with moderate RES potentials achieving their RES targets up to 2020. Since all these promotion schemes show different reaction in terms of RES deployment as well as the associated costs, the **core objective of this paper** is to depict the **pros and cons** of these **policy design options with respect to their impact on future growth** of RES and the **corresponding costs**, and finally draw recommendations for policy makers.

METHODS

The issue of effectiveness and efficiency of support schemes is discussed mainly based on the results of scenarios using the model ***Green-X*** funded by the European Commission (EC). It allows analyses for both, the EU as a whole as well as for every single member state. Within the model all relevant RES-E technologies – e.g. biomass, wind, geothermal, PV, solar thermal...) technologies as well as demand-side conservation measures are described for every EU country by means of static (and further-on dynamic) cost-resource curves. A static cost curve provides for a point-of-time a relationship between (categories of) technical potentials (of e.g. wind energy, hydro, biogas..) and the corresponding (full) costs of utilisation of this potential at this point-of-time.

To analyse various scenarios different policy schemes can be selected, (e.g. feed-in tariffs, tendering systems, investment subsidies, tax incentives, quotas, tradable certificates) and modelled in a dynamic framework. All the instruments can be applied to all RES technologies separately for the various energy sectors. In addition, general taxes can be adjusted and the effects simulated. These include energy taxes (to be applied to all primary energy carriers as well as to electricity and heat) and environmental taxes on CO_2-emissions as well as policies supporting demand-side measures. The corresponding costs and benefits for companies and consumers are an output.

RESULTS

Investigations have been carried out, that strengthening the national RES-E support schemes would allow on the one hand to meet the target of 20% RES by 2020 and on the other hand keep the annual consumer expenditures on a moderate level (see Figure 1). Comparatively and relatively high transfer costs appear by introducing a common quota system based on a uniform tradable green certificate scheme – although in this case only the most cost-efficient technologies would be installed, the hereby most expensive power plant determines the common

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1 This assessment was conducted for the European Commission, DG TREN within the European research project OPTRES (www.optres.fhg.de) and futures-e (www.futures-e.org).

support level, increasing the transfer costs for the society dramatically (see Figure 1). However, a quota system based on a technology specific support measure almost equals the strengthened national policy system with respect to both, the transfer costs for the society and the achieved overall RES target. Strengthening national policy schemes implies on the one hand to adjust the support level appropriate and on the other hand to overcome non-economic market barriers (as grid connection issue, planning bureaucracy, etc…).

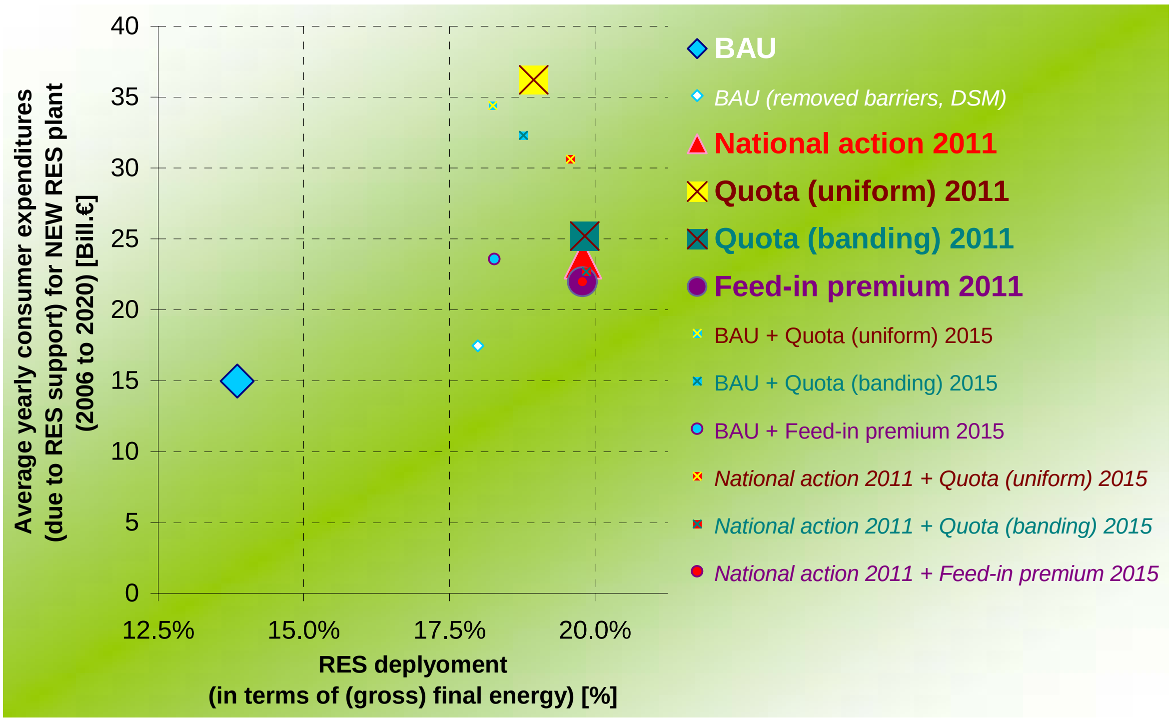

Figure 1: Comparison of average yearly transfer cost / consumer expenditure for new RES plants in relation to the achieved RES deployment – in terms of gross final energy – within the European Union (EU27)

CONCLUSIONS

The **key criterion for achieving an enhanced future deployment of RES-E in an effective and efficient manner,** besides the continuity and long-term stability of any implemented policy, **is the technology specification of the necessary support.** Concentrating on only the currently most cost-competitive technologies would exclude the more innovative technologies needed in the long run. In other words technology neutrality may be cost-efficient in the short term, but is more expensive in the long term. The major part of possible efficiency gains can already be exploited by optimising RES-E support measures at the national level – **about two thirds** of the overall **cost reduction potential** can be attributed to **optimising national support schemes**. Further efficiency improvements are possible through **guaranteed but strictly limited duration of support** as well as that **support schemes are targeting solely new RES installations.** Introducing a harmonized RES policy can only be favourable if it is designed technology-specific and, that a common European power market exists.

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