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12th IAEE European Energy Conference

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Energy challenge and environmental sustainability

September 9-12, 2012 in Venice, Italy
Ca' Foscari University of Venice

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The Conference Objectives

Recent events - such as the conflicts within several North African and Middle East oil and gas-exporting countries, and the nuclear disaster in Japan - have added elements of uncertainty in the already complex evolution of the energy situation in the world and in Europe in particular.
Security of supply, geopolitical aspects and environmental problems are once more at the forefront.
The Conference aims at providing a forum for an analysis of the new developments and a new vision of the future.
No better stage can be imagined for this discussion than the magic and fragile environment of one of the most beautiful cities in the world.

The first plenary sessions of the **12th IAEE European Energy Conference** will therefore be dedicated to the evolution of demand and to the new energy markets less dependent on major commodities.

A debate will follow on how to deal with climate change through better regulation of CO2 emissions and what opportunities Europe can get from these new regulations.
The last sessions of the Conference will deal with energy security in a geopolitical context that is getting more and more complex and difficult in all the main areas of the world .

Besides these main topics the 12th IAEE Conference will also discuss all the issues related to the environmental change and its new perspectives, such as energy efficiency, developing renewable sources, biofuels and sustainable transportation. 8 plenary and 80 concurrent sessions will be organized by the AIEE - together with the International Association for Energy Economics - IAEE in cooperation with Fondazione Eni Enrico Mattei and Ca' Foscari University of Venice.

FONDAZIONE ENI ENRICO MATTEI

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Future prospects for RES in Europe by 2020 and beyond – the need for and impact of cooperation

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Overview

This paper illustrates selected outcomes of an 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. Within the European research project RE-Shaping [1] 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. For a detailed representation of approach, key parameter and assumptions, results and conclusions we refer to the corresponding scenario report (see [2]).

This paper focuses on national policy options, illustrating the impact of individual measures to move from a business-as-usual to a strengthened national policy path in line with the 2020 RES commitments. The scenario discussion includes an analysis of the need for and impact of cooperation between Member States in order to achieve national 2020 RES targets in an effective and efficient manner. In addition to above, scenario results are compared to the RES trajectories as outlined by the Member States in their National Renewable Energy Action Plans (NREAPs) [3] and a brief outlook on RES prospects beyond 2020 is presented.

Method

As in previous research projects and related policy assessments the Green-X model was applied to perform a detailed quantitative assessment of the future deployment of renewable energies in Europe on country-, sectoral- as well as technology level. The core strength of this tool lies on the detailed RES resource and technology representation accompanied by a thorough energy policy description, which allows assessing various policy options with respect to resulting costs and benefits. For a detailed description of this modeling tool we refer to www.green-x.at.

In order to ensure maximum consistency with existing EU scenarios and projections the key input parameters of the modeling work presented in this paper are derived from PRIMES modeling (i.e. for energy demand and price trends) [4] and from the Green-X database with respect to the potentials and cost of RES technologies.

Results

With currently implemented RES support – i.e. according to our scenario definition named as "business-as-usual" (BAU) case – it can be expected that the majority of EU countries would fail to trigger the required investments in new RES technologies as needed for 2020 RES target fulfilment. Subsequently Figure 1 exemplarily illustrates the impact of individual measures to move from BAU to a policy path where all Member States would meet their RES commitments. More precisely, the BAU scenario, implying that all relevant energy policies and energy market structures will remain unchanged, is compared to a scenario of "strengthened national policies" (SNP), considering improved financial support as well as the mitigation of non-economic barriers that hinder an enhanced RES deployment.

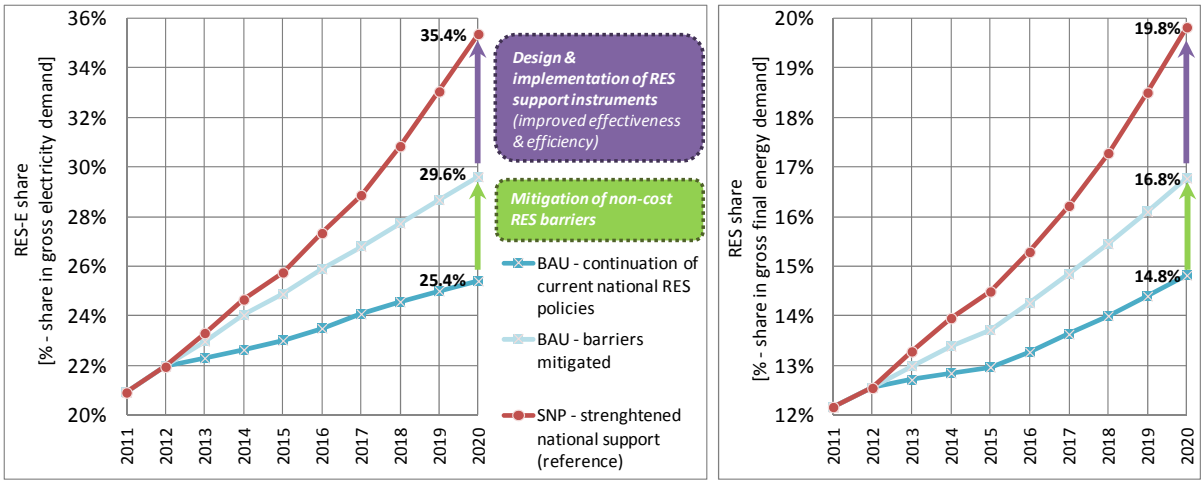

Figure 1: RES-E (left) and RES (right) deployment (expressed as share in gross electricity demand (left) / gross final energy demand (right)) in the period 2011 to 2020 in the EU-27 according to the BAU case (incl. a sensitivity variant of mitigated barriers) and the (default) case of "strengthened national policies"

Conclusions

Key conclusions of the model-based RES policy assessment comprise:

- The majority of Member States will fail to deliver the required RES deployment in 2020 if no further measures or adaptations are undertaken. The current policy mix (BAU case) is likely to result in a RES share in gross final consumption of about 15% by 2020. Thus, only four out of 27 countries may succeed in (over)fulfilling their 2020 RES targets with RES policies in place under the current framework conditions.
- The picture improves if non-economic barriers are mitigated. At EU level, the gap then decreases to 3%. Removing obstacles leads to a significant improvement in the effectiveness of RES support in the majority of Member States. On the other hand, in a few countries – that is, the Netherlands, Malta, Belgium, Luxembourg, Hungary and Portugal – changes arising from the removal of non-economic barriers are less pronounced which underpins the need to strengthen the financial support offered.
- Intensifying cooperation allows for a more cost-efficient RES target fulfilment at EU level. This is confirmed by the model-based quantitative assessment where "strong cooperation" compared to pure "national thinking" as conditioned in the case of "limited cooperation" increases benefits (in terms of carbon reduction or avoidance of fossil fuels) to a limited extent, but causes a significant decrease of additional generation cost as well as of capital and support expenditures (-6% compared to "limited cooperation").
- A comparison of Green-X and PRIMES modelling with respect to RES deployment trends up to 2030 shows that the policies put in place to achieve the 2020 target would only need to be continued to achieve further ambitious climate targets later on.

References

[1] European research project "Shaping an effective and efficient European renewable energy market (RE-Shaping)" conducted by a consortium of nine research partners led by Fraunhofer ISI in the period 2009 to 2011, with support of the European Commission, Executive Agency for Competitiveness and Innovation, Intelligent Energy for Europe. Project website: www.reshaping-res-policy.eu

[2] Resch, G.; Panzer, C.; Ortner, A.; Busch, S.; Hoefnagels, R.; Junginger, M.; Ragwitz, M.; Steinhilber, S.; Klessmann, C.; Faber, T. (2012): Renewable energies in Europe – Scenarios on future European policies for RES. Reshaping project report D22, Vienna, 2012 – available at www.reshaping-res-policy.eu.

[3] National Renewable Energy Action Plans (NREAPs) (2011): 27 NREAPs prepared by EU Member States throughout 2011 as required according to Article 4 of Directive 2009/28/EC, accessible at http://ec.europa.eu/energy/renewables/transparency_platform/action_plan_en.htm

[4] National Technical University of Athens (NTUA) (2011): PRIMES Reference scenario (for the EU27) with updated world energy prices – conducted by National Technical University of Athens, 21 June 2011.