



# Future consequences of reshaping RES support policy - Prospective Policy Assessment

Authors: Gustav Resch, Christian Panzer, Sebastian Busch

Energy Economics Group, Vienna University of Technology

Contact:

Web: <http://eeg.tuwien.ac.at>

Email: [resch@eeg.tuwien.ac.at](mailto:resch@eeg.tuwien.ac.at)

*This presentation reflects research conducted within the European project:*

◀ Shaping an effective and efficient European renewable energy market ... [www.reshaping-res-policy.eu](http://www.reshaping-res-policy.eu)

## Content

- (1) Introduction
- (2) 20% RES by 2020 ... *what do the NREAPs tell us?*  
... *how sufficient are current RES support schemes?*
- (3) Strengthening of national RES support ... *a "bumpy ride"?*
- (4) Harmonisation as preferable option? ... *some "basics"*
- (5) Conclusions

(1) Introduction - Green-X ... a simulation model for energy policy instruments (for RES)

[www.green-x.at](http://www.green-x.at)

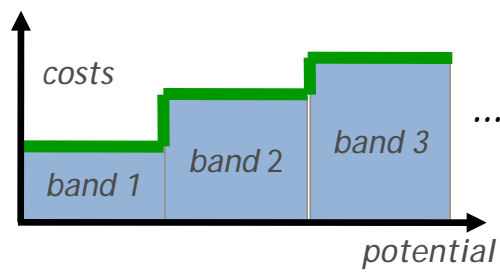


The **Green-X** approach:

**Dynamic cost-resource curves**

a detailed **energy policy representation**

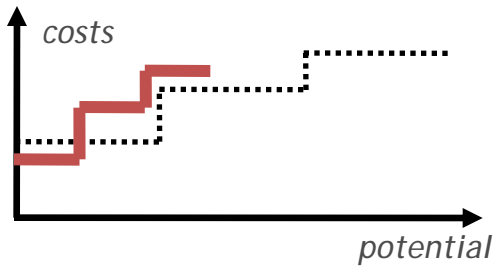
**Mid-term (up to 2020)**  
**realisable potentials** in year **n+1**  
 & corresponding costs for RES at country level  
 by RES technology (subdivided into several bands)



Potential  
 Cost (efficiency)

Technology diffusion ('S-curve')  
 (non-economic barriers by technology/country)

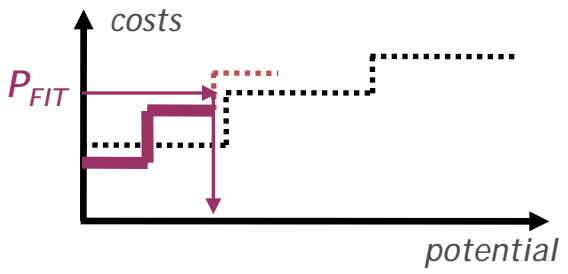
Technological change  
 ((global) learning curves by technology)



**Realisable yearly potentials** in year n

Energy policy  
 (energy prices, RES support)

e.g. Feed-in tariffs,  
 Investment incentives,  
 Tendering schemes,  
 Quotas with tradable green certificates



**Deployment** in year n  
 and corresponding costs & benefits

## ► 20% RES by 2020

What do the NREAPs tell us?

... National Renewable Energy  
Action Plans describe the way forward  
from the Member State's perspective

► 20% RES by 2020

... **What do the NREAPs tell us?**

*The NREAPs submitted are of different quality and completeness.*

*Several provided a comprehensive & complete RES roadmap*

*Others drew a nice picture that does not match with reality*

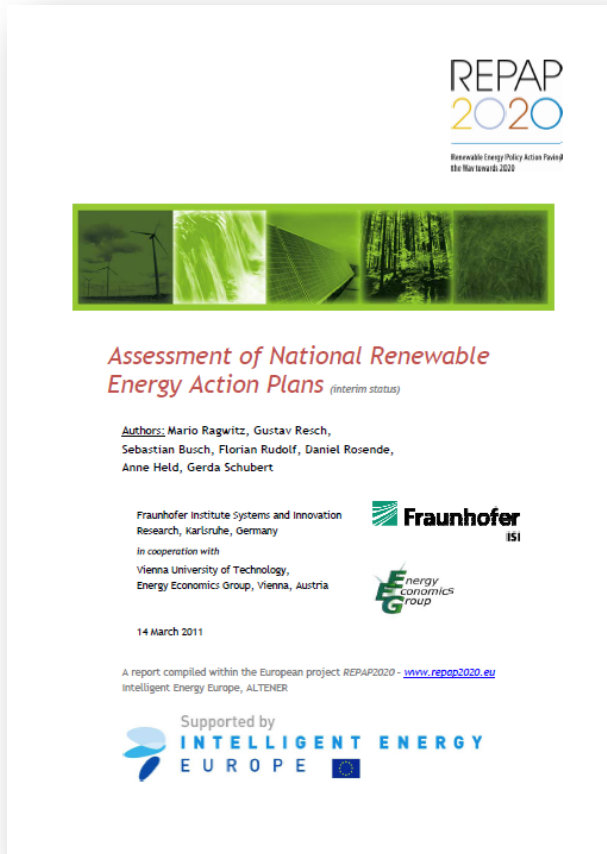
*Few delivered a minimalistic and incomplete plan*

*Substantial optimisation potential exists for all assessment categories used.*

*Strongest deficits for administrative procedures & spatial planning ...*

*... followed by support measures for RES heating & cooling. The highest optimisation potentials exist in these two areas.*

*But even support for RES electricity on average shows room for improvement in many EU member states.*

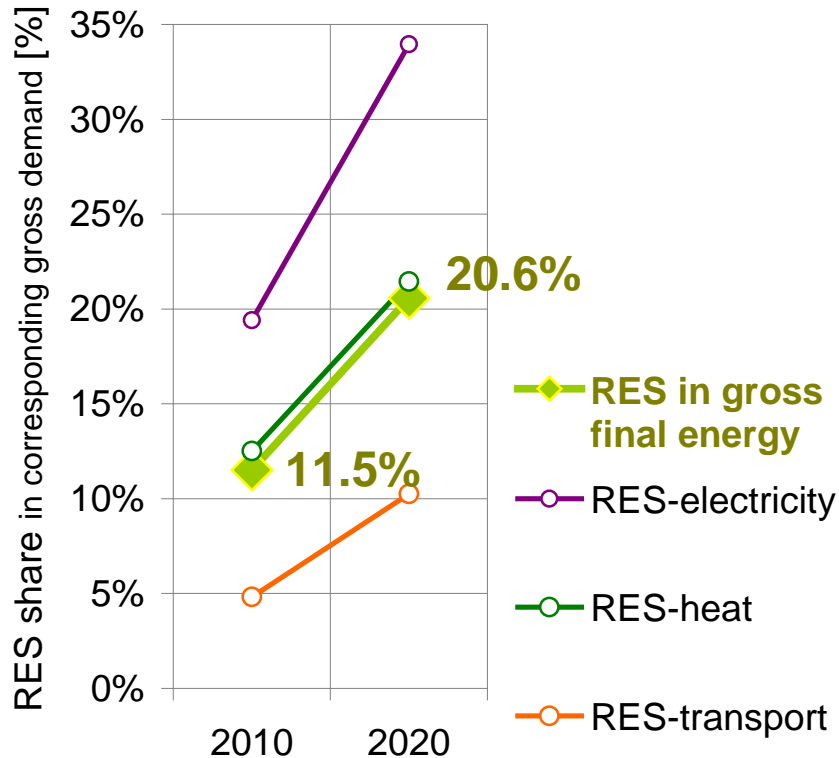


Source: "Assessment of the NREAPs"  
(Ragwitz & Resch (2011)  
- REPAP2020 report) ([www.repap2020.eu](http://www.repap2020.eu))

► 20% RES by 2020

... **What do the NREAPs tell us?**

**NREAP** – outlook to 2020 (EU level)



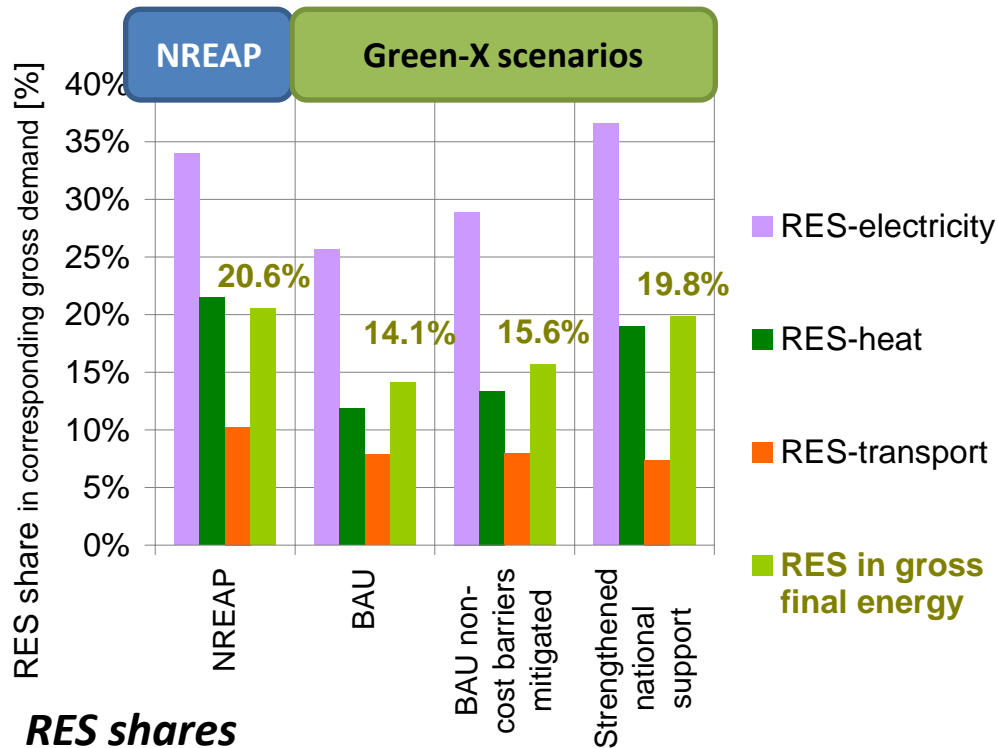
*According to the NREAPs, Member States plan to overachieve the overall 20% RES target by 0.6%.*

*... whether or not the proposed actions will be ambitious enough to achieve these targets remains to be seen. ...*

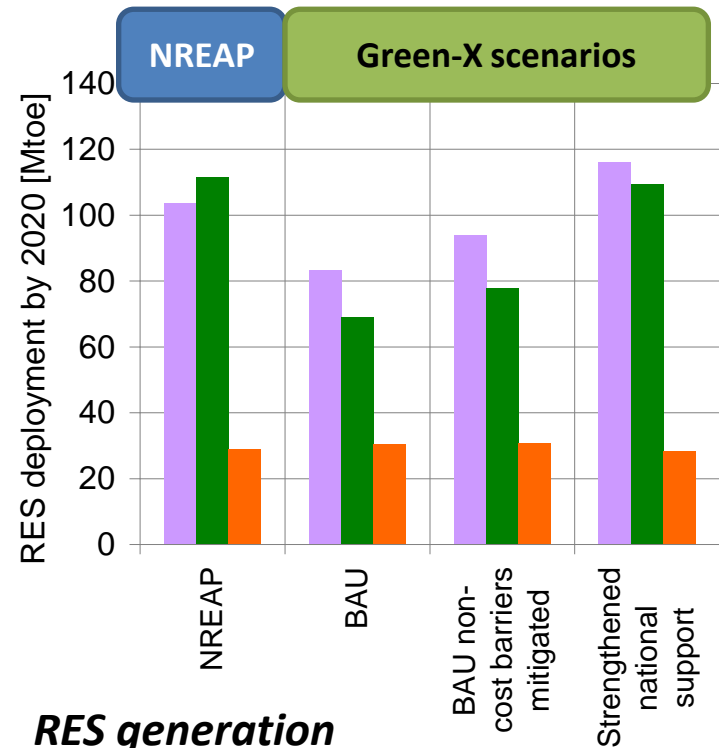
► 20% RES by 2020

... What do the NREAPs tell us?

... a first quantitative comparison  
with our own scenario work ...



**RES shares  
by 2020**



**RES generation  
by 2020**

◀ Green-X BAU scenarios draw a more pessimistic view - the open question remains: Are proposed new measures sufficient to trigger the required deployment?

◀ Strengthened national support (SNP) show more ambition for RES-electricity, while the NREAPs indicate a higher deployment of RES-heat

► 20% RES by 2020

... **What do the NREAPs tell us?**

*... a first quantitative comparison with our own  
scenario work ...*

◀ Important remark: NREAPs reflect a world  
where energy efficiency deserves key attention ...

◀ ... whereas Green-X scenarios are based on PRIMES modeling  
(reference (2010) & baseline case (2009)).

◀ Both PRIMES cases represent no „high energy efficiency“ scenario  
... - i.e. the reference case is characterised by a  
**8% higher gross final consumption**

◀ Specifically the demand for heat is higher (11%)

*... Final version of RE-Shaping scenarios:  
Implementation of proposed new measures and demand trends  
in Green-X scenario work*



## ► *Strengthening national RES support*

- ◀ from “business as usual” (BAU) to  
“strengthened national RE support”  
*... a “bumpy ride”?*
- ◀ *the need for & the impact of cooperation*

## ► Strengthening national RES support

**National perspective:** Each Member States tries to fulfil its national RES target by its own. → **less cooperation**

**BAU** case: RES policies are applied as currently implemented (without any adaptation) until 2020, i.e. a **business as usual (BAU)** forecast.

## Strengthened national RES support:

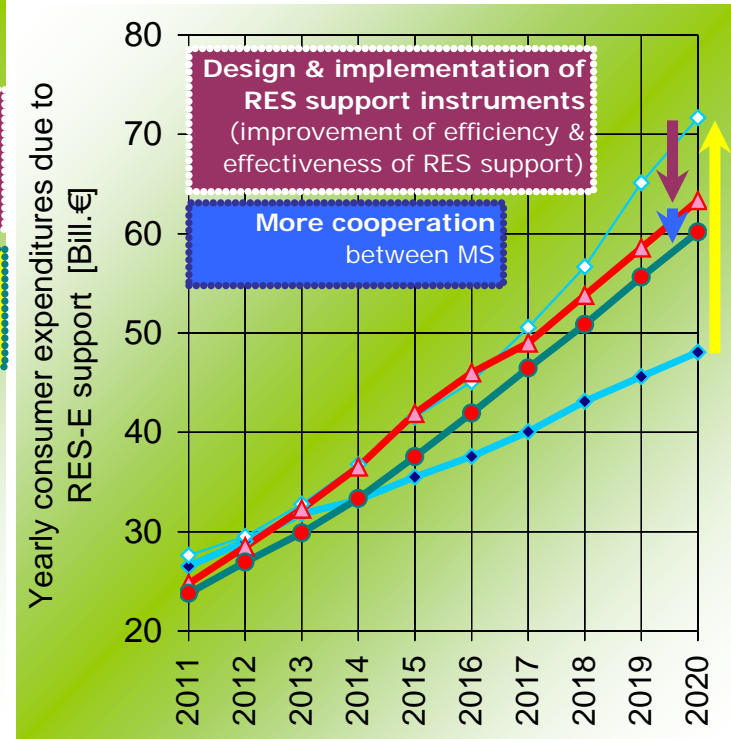
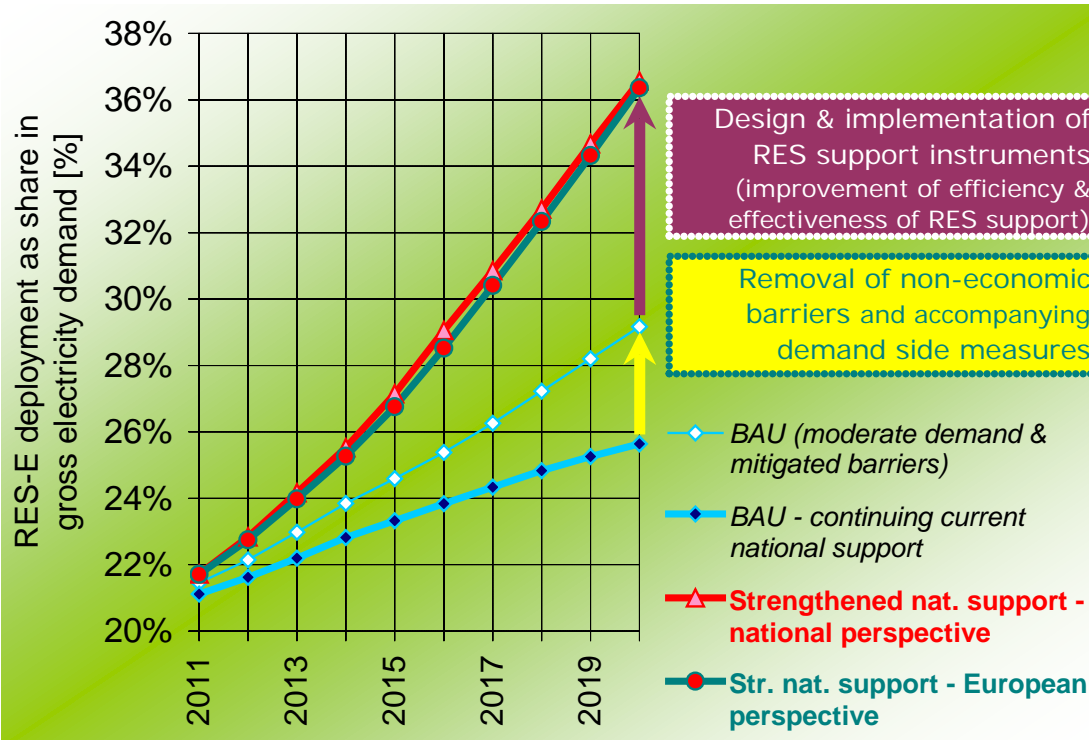
- ◀ Meeting 20% RES by 2002 as precondition
- ◀ Continuation BUT fine-tuning (increasing cost-efficiency & effectiveness) of national RES policies
- ◀ No change of the in prior chosen policy track
- ◀ Mitigation of non-cost barriers

**European perspective:** If a MS does not possess sufficient RES potentials that can be **economically\*** exploited, cooperation mechanisms would serve as a **complementary option**. → **strong cooperation**

\*“European perspective”: Support premiums are limited to a maximum of 8 €/MWh<sub>RES</sub> while in the “national perspective” variant this feasible bandwidth is set to 20 €/MWh<sub>RES</sub>.

**Results:** Towards an effective and efficient RES target fulfillment

- from BAU to strengthened national support *w/o intensified cooperation*

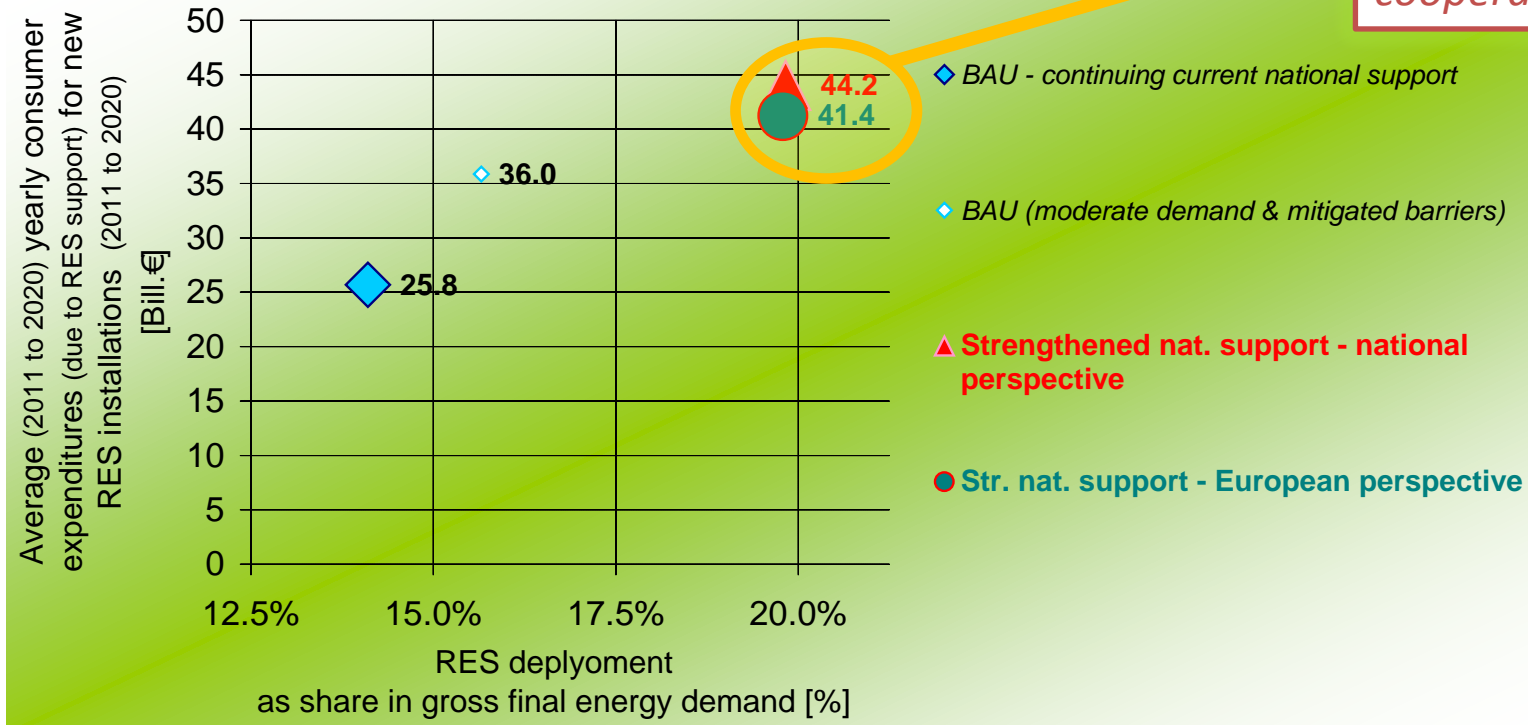


Comparison of RES-E deployment & corresponding consumer expenditures due to support for new RES-E (installed 2011 to 2020) in the EU-27 for all selected cases

- i.e. BAU and strengthened national support without (national perspective) or with intensified cooperation (European perspective) between member states

**Results:** Towards an effective and efficient RES target fulfillment  
- from BAU to strengthened national support *w/o intensified cooperation*

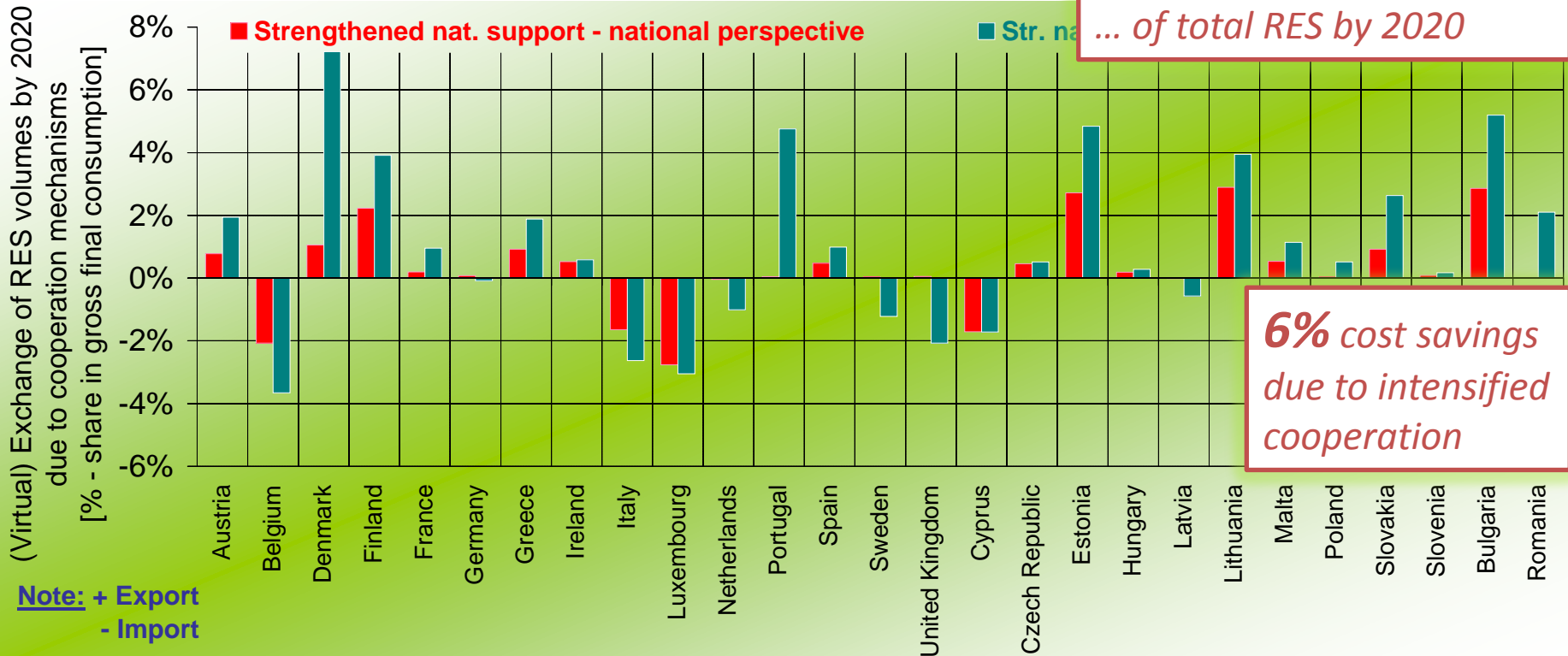
**6% cost savings  
due to intensified  
cooperation**



Comparison of of the resulting 2020 RES deployment and the corresponding (yearly average) consumer expenditures due to RES support for new RES (installed 2011 to 2020) in the EU-27 for selected cases - i.e. BAU and strengthened national support without (national perspective) or with intensified cooperation (European perspective) between member states

**Results:** Towards an effective and efficient RES target fulfilment  
- from BAU to strengthened national support *w/o intensified cooperation*

*Exchange of RES volumes:*  
**National perspective: 1.4%**  
**European perspective: 4%**  
*... of total RES by 2020*



The need for cooperation - (virtual) exchange of RES volumes by 2020 for selected cases - i.e. **strengthened national support without (national perspective) or with intensified cooperation (European perspective) between member states**

► **Some “basics”**

Cooperation	...	Harmonisation
Technology-neutral	...	Technology-specific RES support

*The RES directive (Directive 2009/28/EC) lays the ground for the RES policy framework until 2020 ...*

*... However, discussions on the possible harmonisation of RES support have been prolonged.*

## ► **Assessment of "alternative" RES policy options** ... discussion on (early) harmonisation

... *Background paper: "Quo(ta) vadis, Europe? - a comparative assessment of two recent studies on the future development of renewable electricity support in Europe" (Resch, Ragwitz (2010) - RE-Shaping report)*

*EWI-study<sup>1</sup>*

*futures-e<sup>2</sup>*

► ... significant cost savings through a harmonized uniform quota system (HQS). ... A switch from BAU to HQS ends up with cumulative (generation cost) savings of 174 billion € ...

► 2020 RES targets can be achieved either by improved (strengthened) national support systems or by a harmonized support system, as long as support that is offered is technology-specific ...

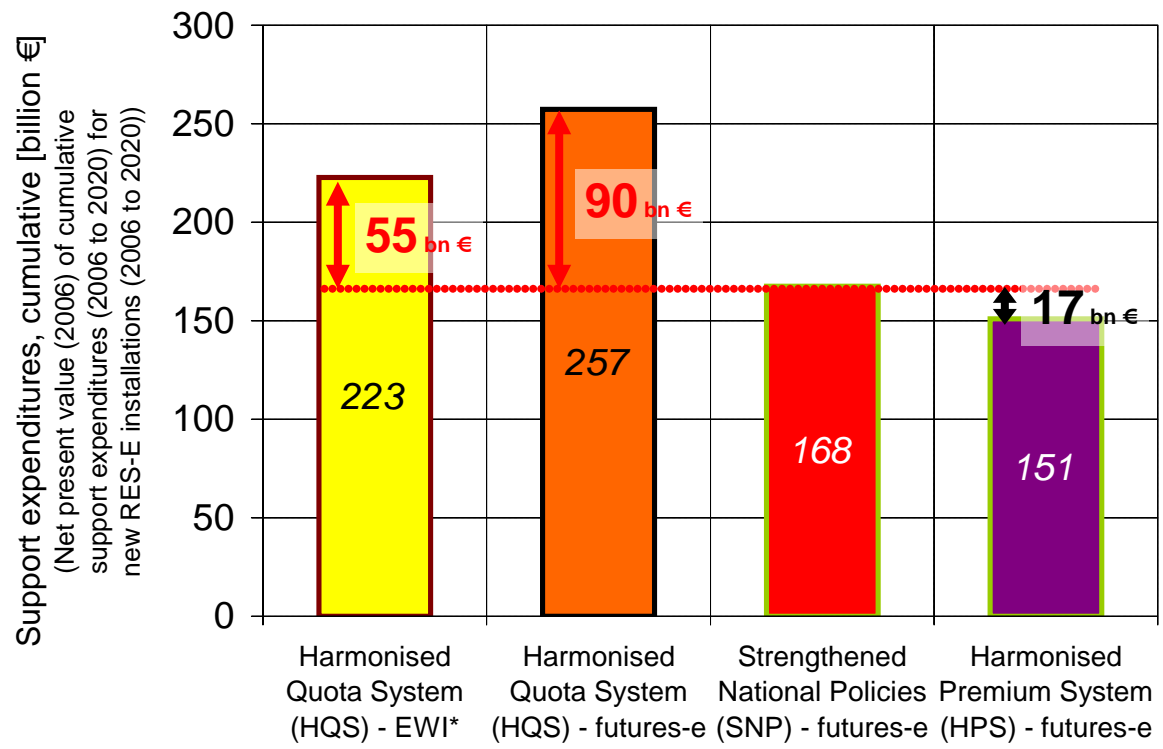
<sup>1</sup> Institute of Energy Economics at the University of Cologne (EWI):  
"European RES-E Policy Analysis - A model based analysis of RES-E deployment and its impact on the conventional power market"  
(Fürsch et. al. 2010)

<sup>2</sup> European (IEE) research project futures-e (Deriving a future European RES electricity market), conducted by EEG, Fh ISI, Ecofys, etc. in the period 2006 to 2008

Web: [www.futures-e.org](http://www.futures-e.org)

► Comparative assessment: **EWI** versus **futures-e**

**Comparison of support expenditures** ... we can conclude that a switch to the harmonised quota system based on technology-neutral RE support would result in an increase of support expenditures compared to the adequate reference case of strengthened national RE support (complemented by cooperation mechanisms).



The **cumulative "efficiency losses"** resulting from that simplified harmonisation range from **55 to 90 billion €**, depending on which study (EWI or futures-e) to rely on.

Note: \*Estimated based on expressed certificate prices in 2020



## Conclusions<sup>(1)</sup>

The RES directive (Directive 2009/28/EC) lays the ground for the RES policy framework until 2020 ...

► Thus, any discussion on “early harmonisation” appears obsolete & creates uncertainty ...

... a **harmonisation of RES support** based on simplistic policy options offering uniform support e.g. via a uniform RES certificate trading cannot be recommended.

► A further strengthening and fine-tuning of national RES support policies is essential, whereby a **focus** needs to be set also on the removal of currently prevailing non-economic constraints (administrative procedures, grid access and grid expansion) which hinder an accelerated RES diffusion.

## Conclusions<sub>(2)</sub>

A stable effective & efficient RES policy based on technology-specific support is a key success criteria

→ "Stop-and-Go" policies increase the cost of meeting 20% RES!

... *Taking out the risk for investor's represents a challenging task for some Member States in times of a prolonged financial crisis ...*

**Intensified cooperation** between Member States appears beneficial & represents for some Member States a necessity

**Strong central coordination** a essential

to assure the required flexibility (for RES target achievement)

- continuous monitoring of member state's progress
- transparency & guidance
- *clear enforcement mechanism (in case of non-compliance)*

# Thanks for your attention!

*Forthcoming (~ end of February 2012):*

RE-Shaping final report &

RE-Shaping scenario report (WP4) ...

Scenarios on future European policies for RES

[www.reshaping-res-policy.eu](http://www.reshaping-res-policy.eu)

## Contact

Gustav Resch

e-mail: [resch@eeg.tuwien.ac.at](mailto:resch@eeg.tuwien.ac.at)

phone: +43-1-58801-370 354

Energy Economics Group (EEG)  
Vienna University of Technology  
Gusshausstrasse 25-29/E370-3  
1040 Vienna, Austria  
<http://eeg.tuwien.ac.at>

*New research:*

beyond2020 ... design and impact of a  
harmonised policy for renewable electricity in  
Europe

[www.res-policy-beyond2020.eu](http://www.res-policy-beyond2020.eu)



[www.green-x.at](http://www.green-x.at)