



# beyond 2020

## Cost-benefit analysis ... *initial results* of the quantitative assessment of RES policy pathways beyond 2020

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*This presentation reflects research conducted within the European projects*

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

◀ Design and impact of a harmonised policy for renewable electricity in Europe ... [www.res-policy-beyond2020.eu](http://www.res-policy-beyond2020.eu)

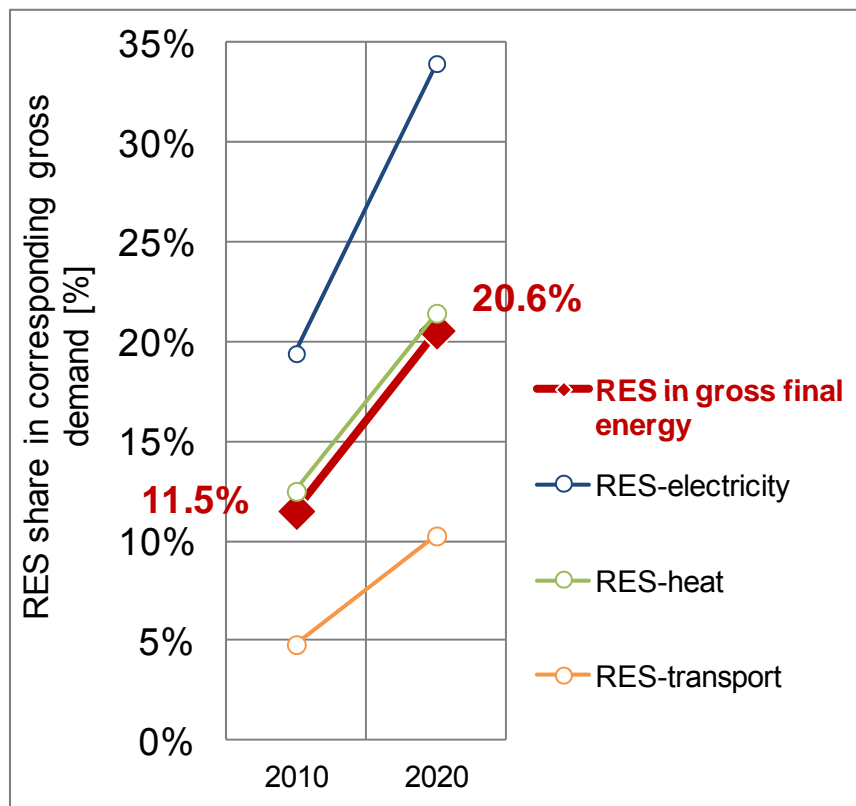
## Content

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- (2) **A closer look *beyond 2020*** ... *the challenges & the policy options*
- (3) **Initial results** *of the quantitative RES policy assessment*
- (4) **Conclusions**

## ► 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. ...*

- *The starting point*  
... *20% RES by 2020* ... from “business as usual” (BAU) to “strengthened national RES policies”

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



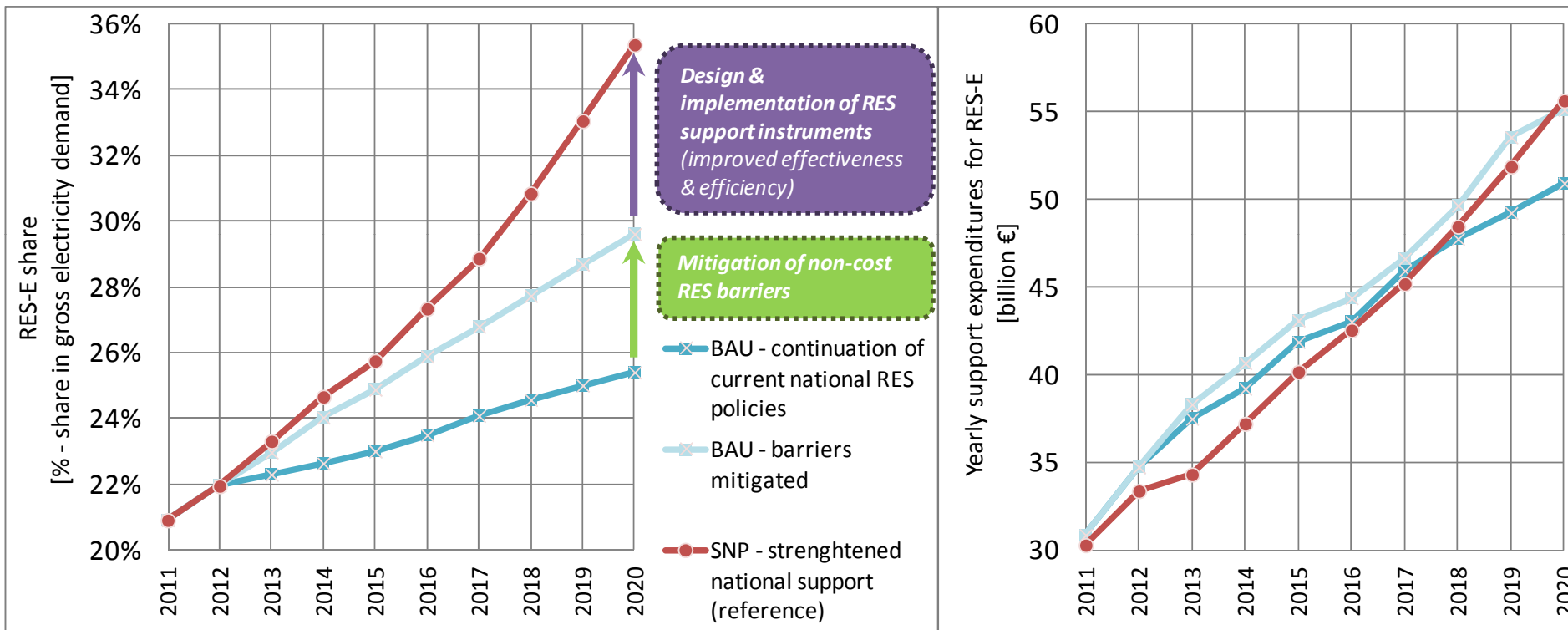
## Strengthened national RES support:

- ◀ Meeting 20% RES by 2022 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

- ◀ Green-X BAU scenarios draw a more pessimistic view where only a RES share of **15% to 17%** appears feasible under current RES support (*BAU case*)
- ◀ A strengthening of national RES policies (SNP) appears essential as well as a removal of non-economic barriers that hinder an accelerated marked diffusion

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

- from BAU to strengthened national support



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

- i.e. BAU and strengthened national support

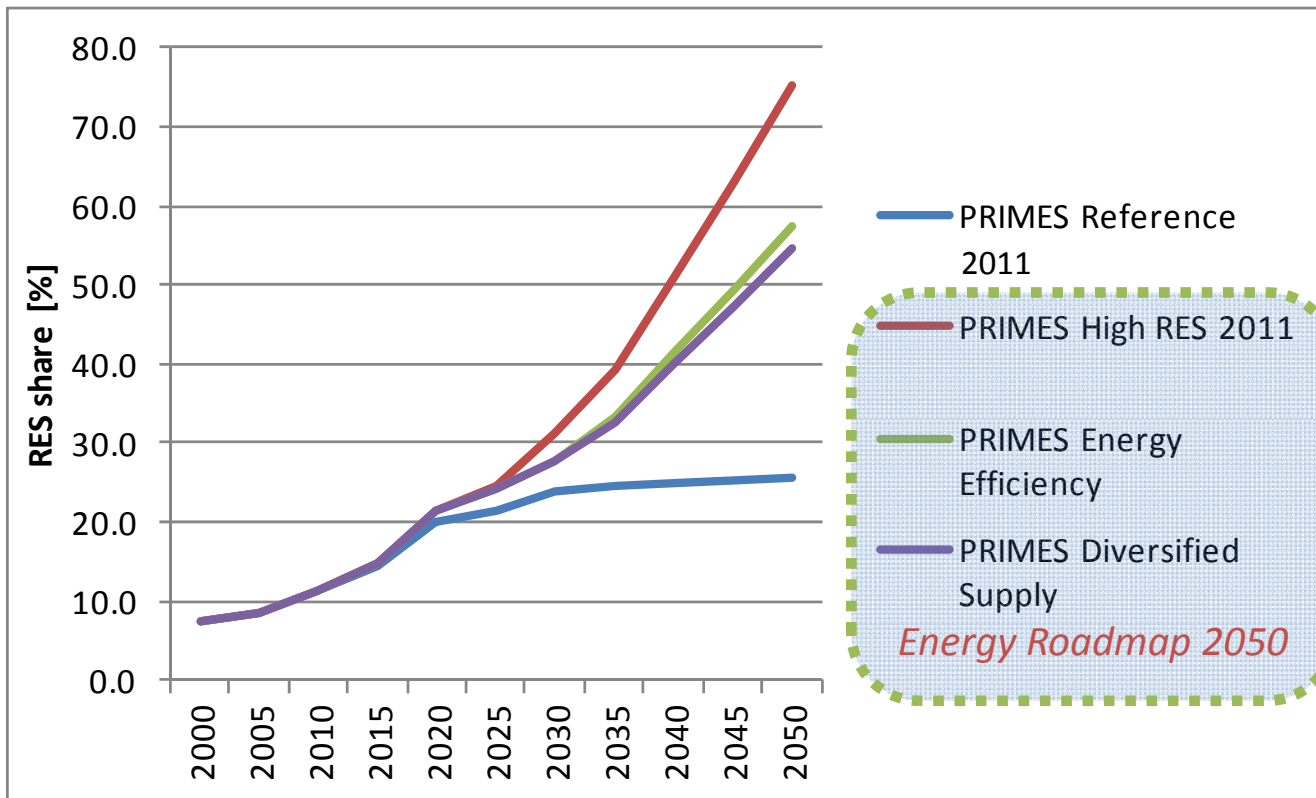
Source: Re-Shaping project (2012)

## Our agenda for “tomorrow”

→ *Tackle the energy & climate problem ...*

*... for which renewable energies are  
the key mitigation option*

Source: Energy Roadmap 2050 (EC, DG ENER, 2011)



## A RES strategy beyond 2020

Several policy dimensions relate to the debate on a future RE strategy for Europe beyond 2020. These include:

- ◀ **RE support instruments** and financing aspects related to that,
- ◀ **Electricity market design** and impacts on market functioning arising from an enhanced use of (volatile) renewable energy sources,
- ◀ **Sustainability concerns**, in particular related to the use of biomass,
- ◀ **Cooperation with third countries**, in particular imports (to the EU) of biofuels and solid biomass as well as renewable electricity (RES-E).

Generally, future policy choices related to above dimensions might show a *more national orientation* or could reflect *further consolidation and cooperation among Member States*, whereby the ultimate extent would be a harmonised approach across the EU.

## Pre-assessment of RES support instruments beyond 2020

## Assessed RES policy options

### No support

*Under this option no binding RES targets are conditioned for 2030. The ETS represents the key driver (at EU level) for low carbon technologies in the period beyond 2020.*

### Moderate cooperation

*Prolonging the current policy framework as given by the RES directive (2009/28/EC), implying a continuation of strengthened national RES policies until 2030 with moderate cooperation ("national perspective")*

### Strong coordination

*A continuation of the policy framework defined by the RES directive is conditioned, but with strong coordination (and cooperation) among Member States ("European perspective")*

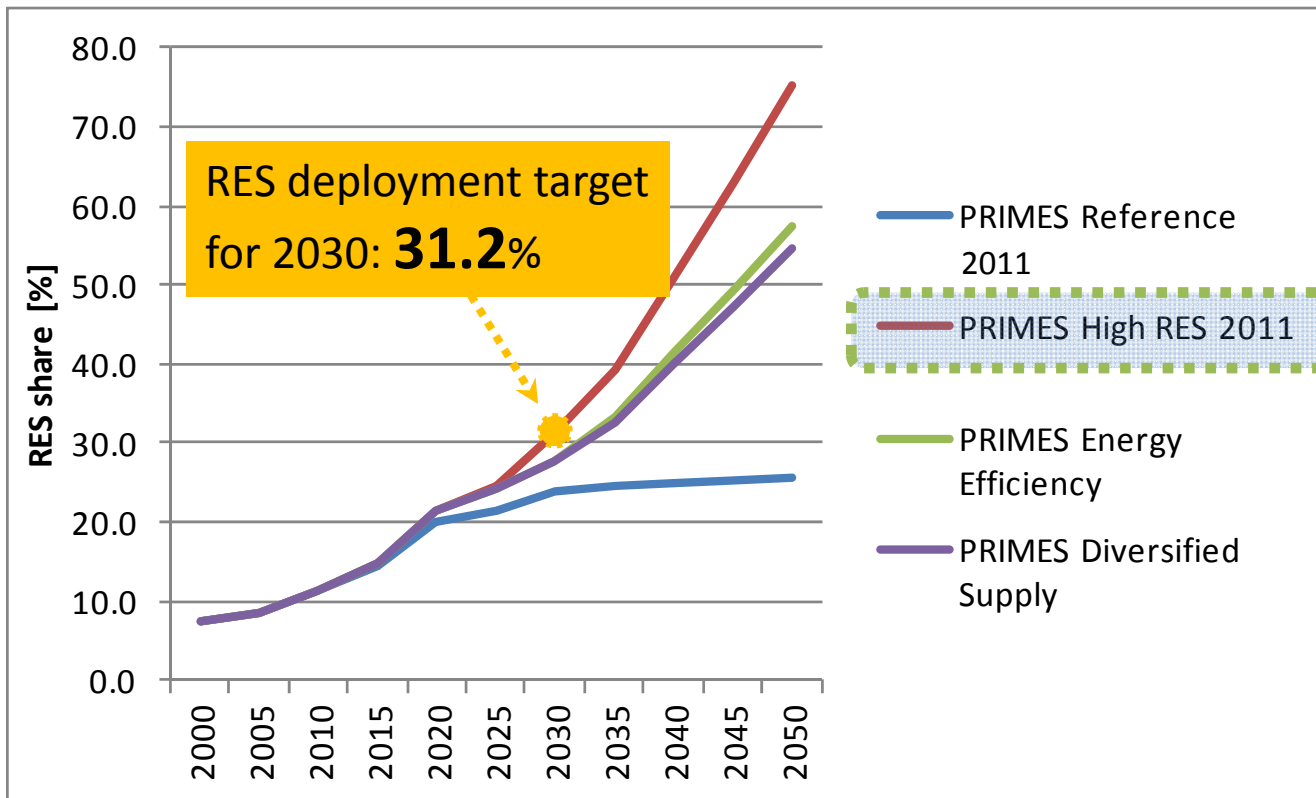
### Harmonised quota system

*A full harmonisation of RES support is conditioned, whereby the most prominent representative - a harmonised quota system offering uniform support for all RES options across the EU - is assessed.*



## Key assumptions / approach

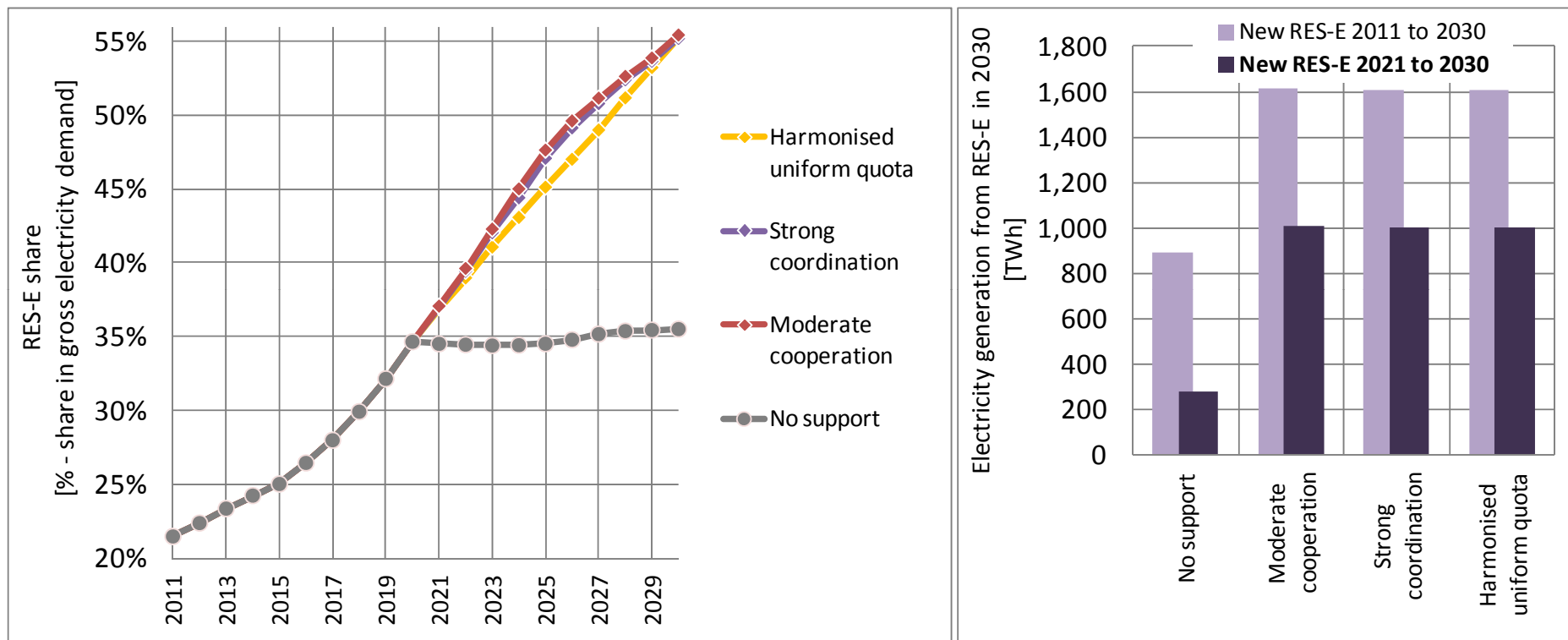
- ◀ RES policy assessment conducted with Green-X model
- ◀ Assumptions on conventional reference system, energy and carbon prices as well as energy demand based on *PRIMES „high renewables“ case* (EC, Energy Roadmap, 2011)



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

Source: Energy Roadmap 2050  
(EC, DG ENER, 2011)

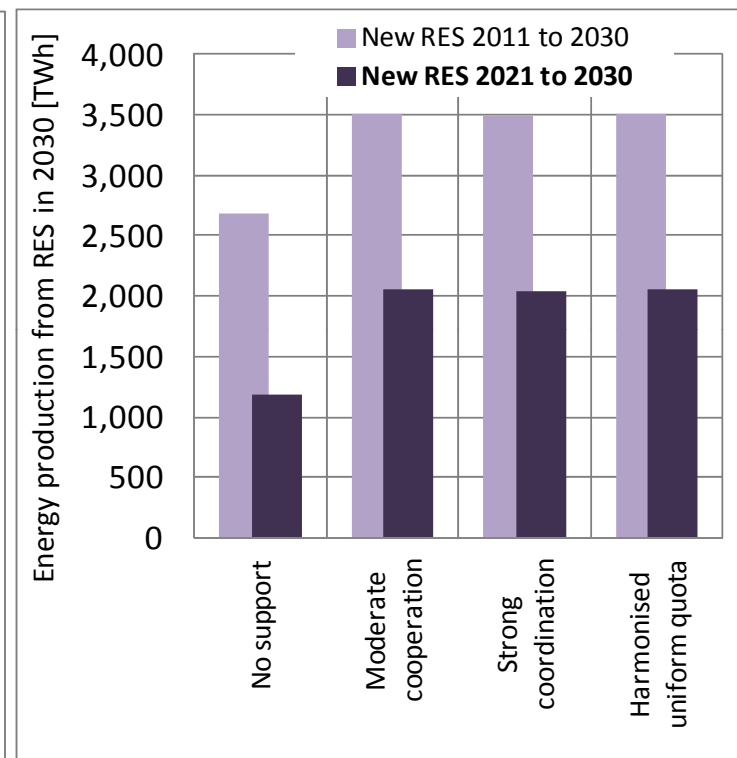
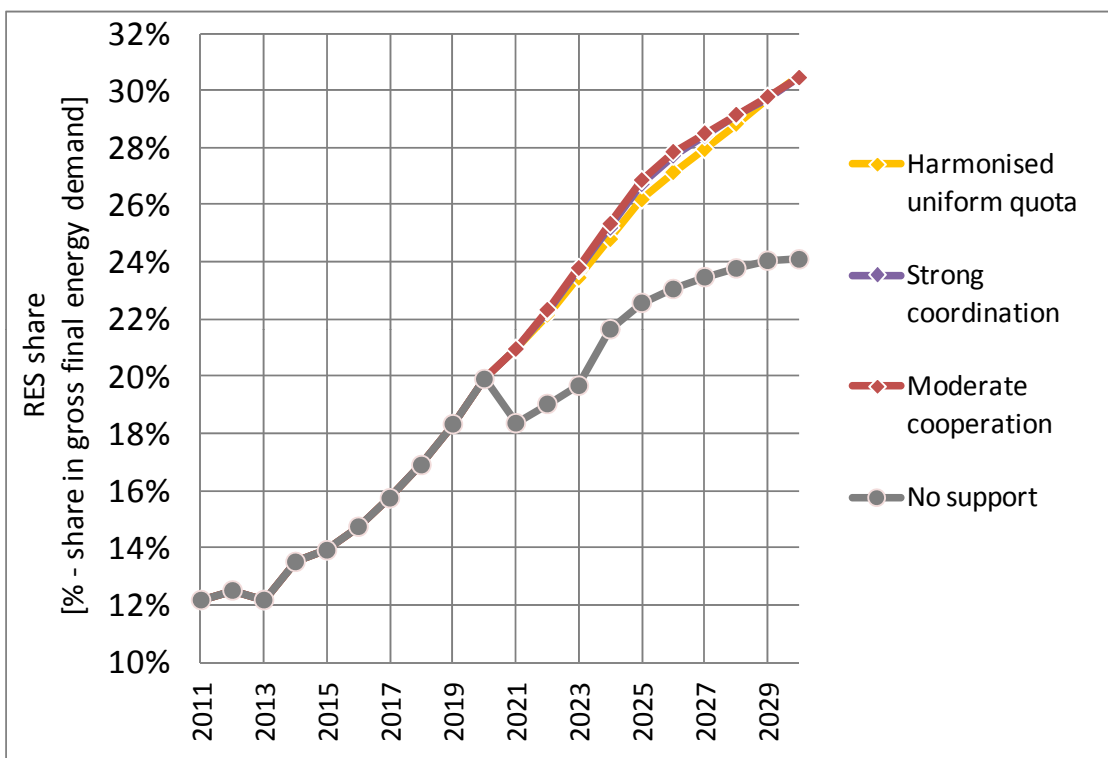
## Results: RES pathways beyond 2020 ... interim results (on deployment)



### Comparison of the resulting RES-E deployment

- over time for all RES-E (*left*)
  - by 2030 for new installations only (either from 2011 to 2030, or from 2021 to 2030) (*right*)
- in the EU-27 for all assessed cases

## Results: RES pathways beyond 2020 ... interim results (on deployment)



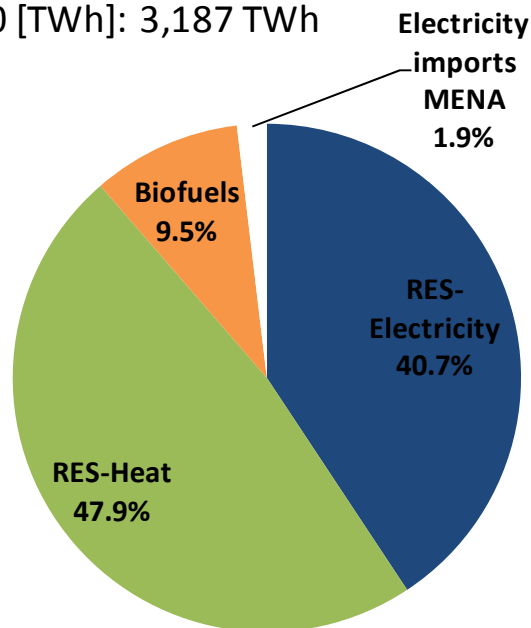
### Comparison of the resulting RES deployment

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  - by 2030 for new installations only (either from 2011 to 2030, or from 2021 to 2030) (*right*)
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## Results: RES pathways beyond 2020 ... interim results (on deployment)

### Case: No Support

Energy production from RES  
by 2030 [TWh]: 3,187 TWh



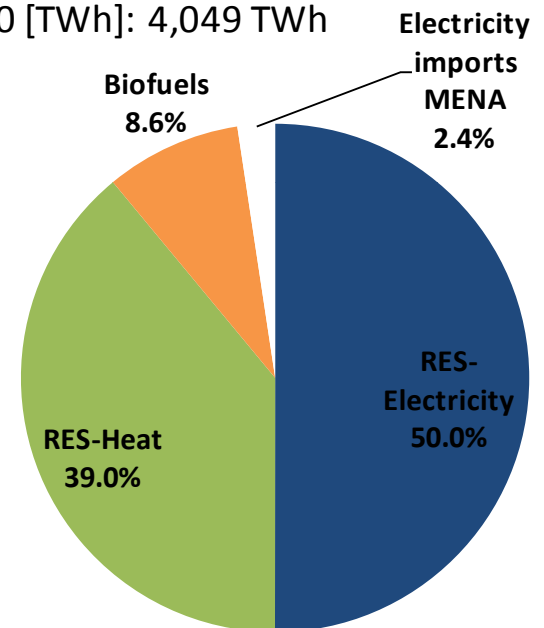
**27%  
more RES  
by 2030  
(in total)**



**74% more  
new RES  
(installed  
2021 to  
2030)  
by 2030**

### Case: Moderate Cooperation

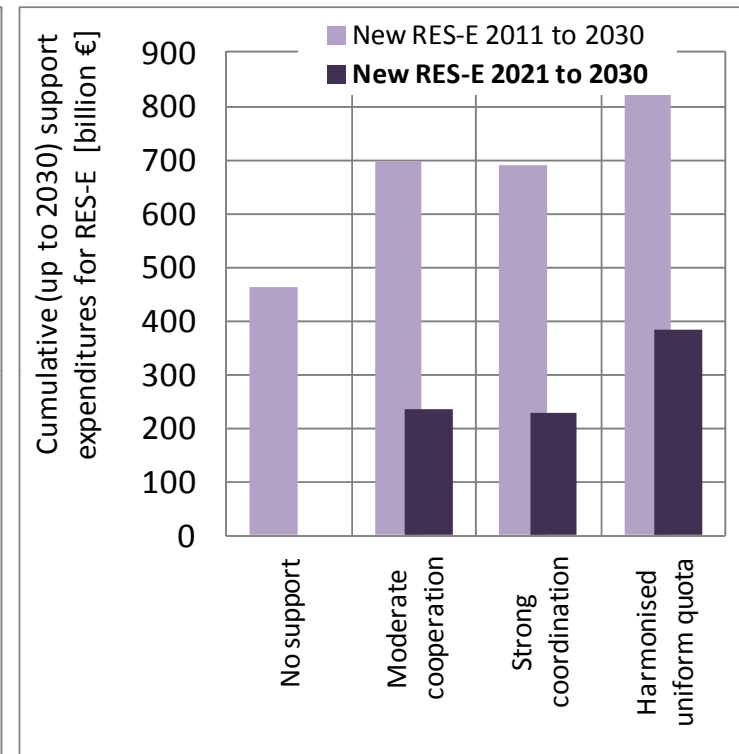
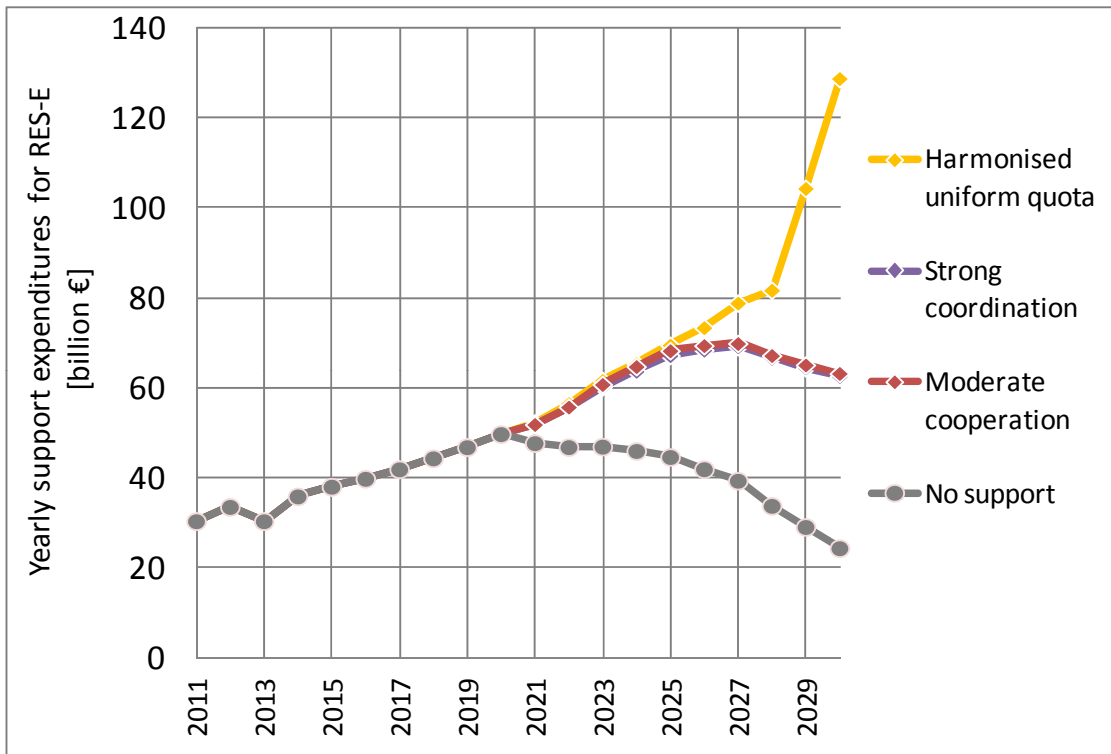
Energy production from RES  
by 2030 [TWh]: 4,049 TWh



Breakdown of energy production from **RES by 2030** in the EU27

- for the "No Support" case (*left*)
- for the case of "**Moderate Cooperation**" (*right*)

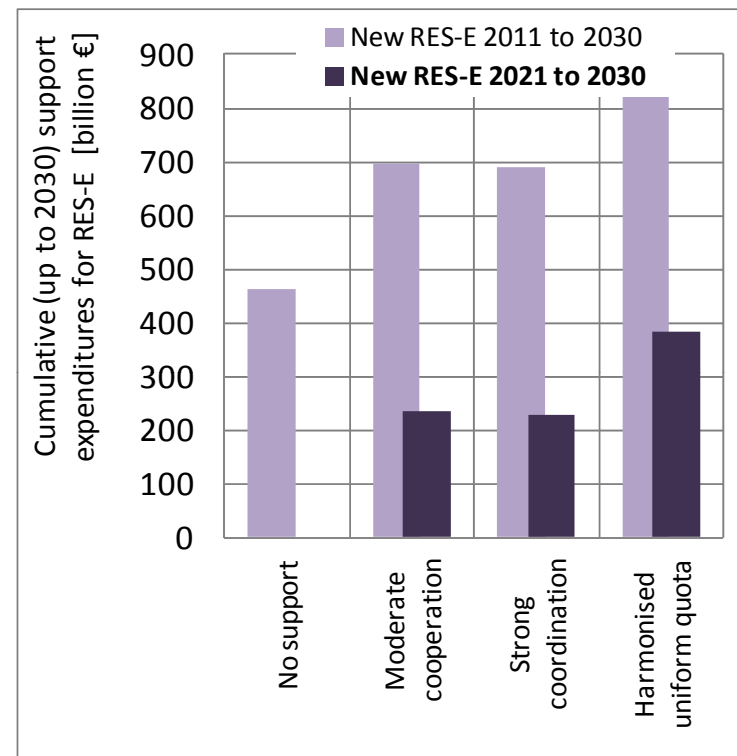
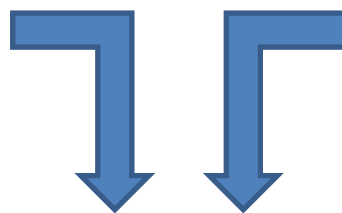
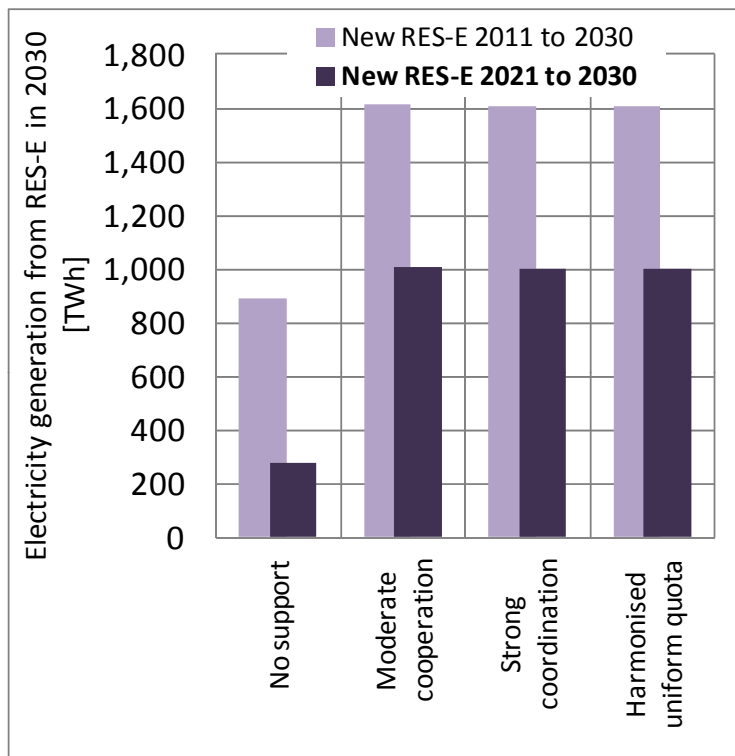
## Results: RES pathways beyond 2020 ... interim results (on cost & expenditures)



### Comparison of support expenditures

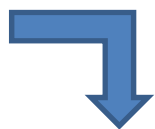
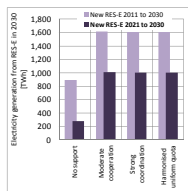
- over time for all RES-E (left)
  - in cumulative terms (i.e. up to 2030) for new installations only (either from 2011 to 2030, or from 2021 to 2030) (right)
- in the EU-27 for all assessed cases

## Results: RES pathways beyond 2020 ... interim results (on deployment, cost & expenditures)



Comparison of **deployment & support expenditures**  
for new **RES-Electricity installations only** (from 2021 to 2030)  
in the EU-27 for all assessed cases

# Results: RES pathways beyond 2020 ... interim results (on deployment, cost & expenditures)

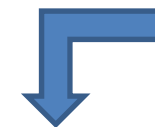
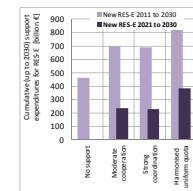


Comparison of **deployment**  
& **support expenditures**

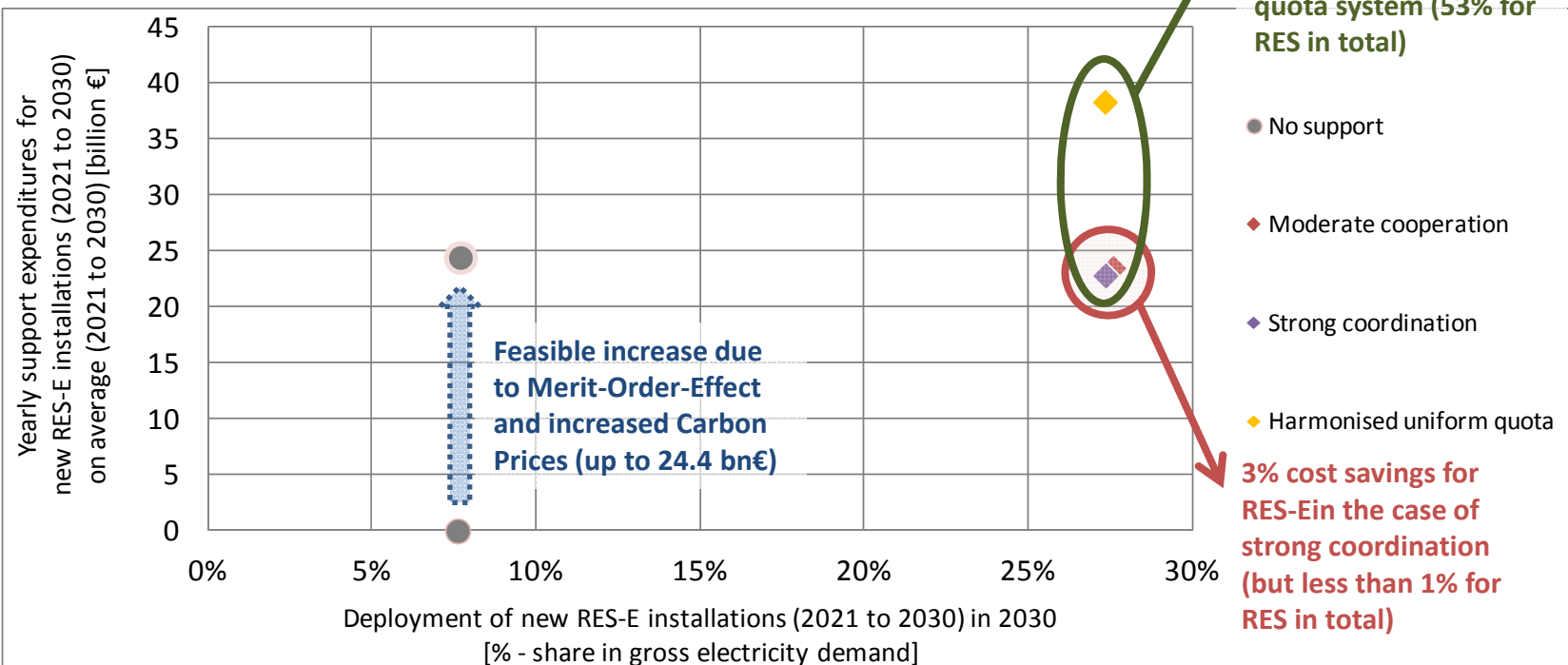
for new **RES-Electricity** installations only

(from 2021 to 2030)

in the EU-27 for all assessed cases

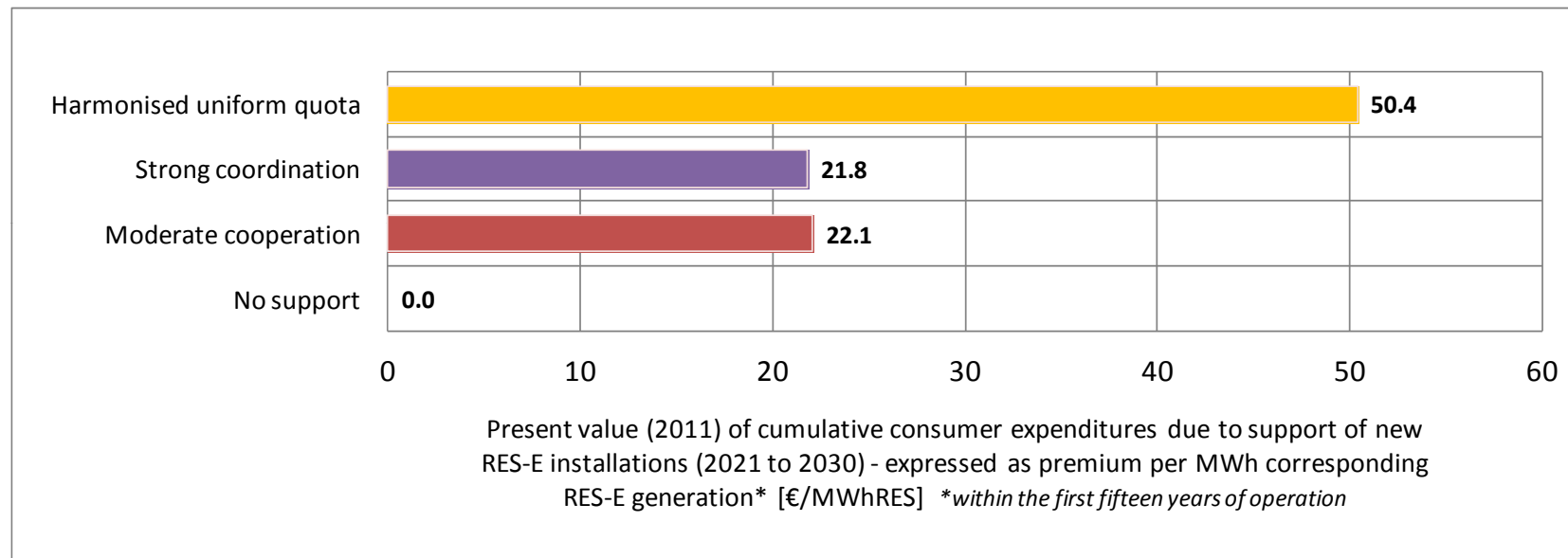


**63% cost increase for RES-E in the case of a harmonised uniform quota system (53% for RES in total)**



## Results: RES pathways beyond 2020 ... interim results (on cost & expenditures)

→ *Differences between uniform and technology-specific support are even more pronounced*

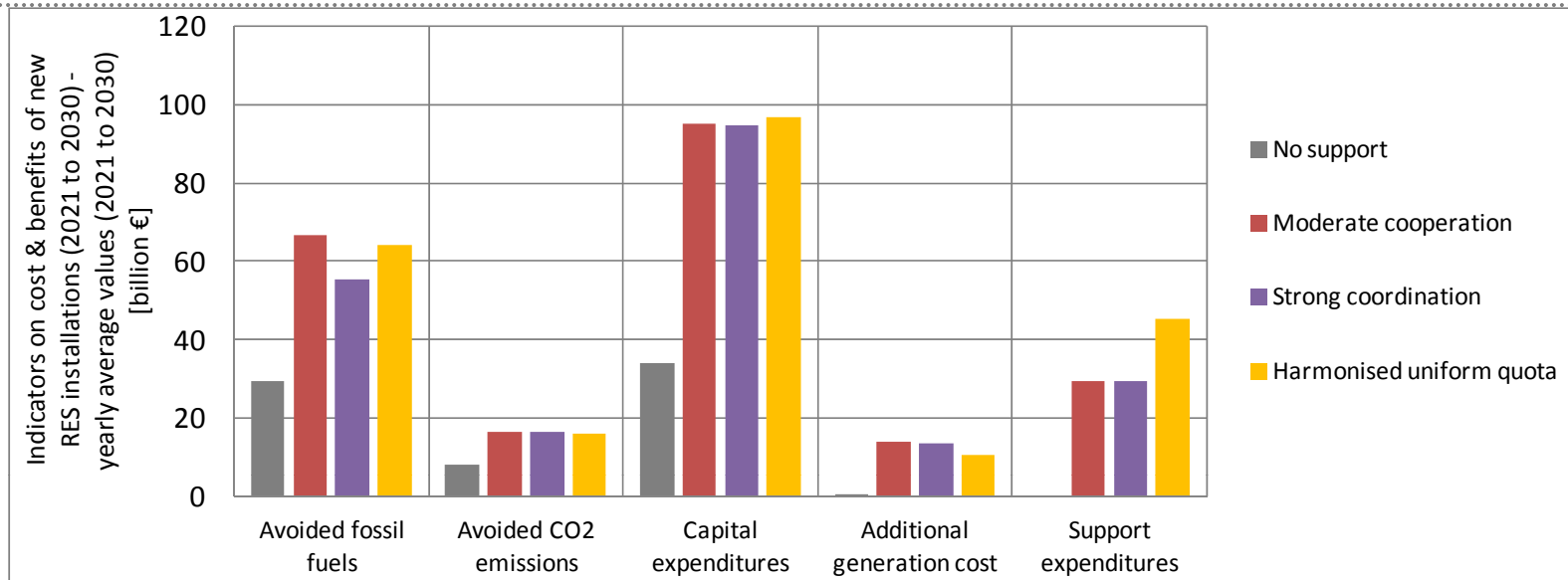


Comparison of **support expenditures for RES-Electricity** (in specific terms) ...

*Present value (2011) of cumulative\* support expenditures for new RES-E (2021 to 2030), expressed as premium per MWh induced RES-E generation*

\*within the assessed period 2021 to 2030 as well as estimation of residual cost thereafter (due to support guarantees)

## Results: RES pathways beyond 2020



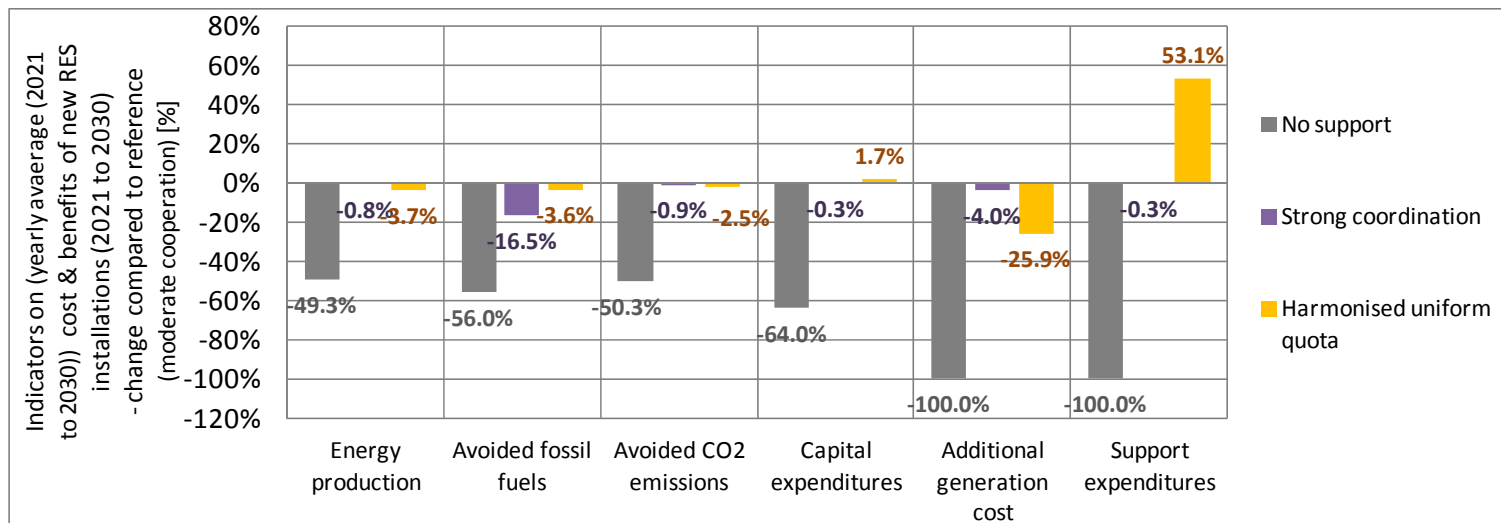
Comparison of  
(yearly average)

costs &  
benefits of  
new RES  
installations  
(2021 to 2030)

• in absolute  
terms  
(monetary  
expression)

• In relative  
terms  
(deviation to  
reference  
(moderate  
cooperation))

in the EU-27  
for all assessed  
cases



# Conclusions

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

*... but **a strategy and clear commitment to RES beyond 2020 is of need** (if RES shall deliver what is expected)*

- ▶ **Cooperation & coordination** among Member States **is beneficial** *and required to tackle current problems in RES markets*
- ▶ **Ignore “simplistic approaches” for RES policy harmonisation!**  
... a harmonisation of RES support based on simplistic policy options offering uniform support e.g. via a uniform RES certificate trading cannot be recommended (- for the 2020 and the 2030 perspective -).
- ▶ A further strengthening and fine-tuning of national RES support policies is essential to achieve short- and long-term targets.  
... whereby prevailing non-economic constraints (administrative procedures, grid access and grid expansion) need to be mitigated as well!

# Proposed policy pathways (for follow-up assessment)

Instrument		FIT	FIP	QUO	QUO banding	ETS (no dedicated support)	TEN Large scale RES	Reference (national support)
Degree of harmon- isation	Character- isation							
<b><u>Full</u></b>	<ul style="list-style-type: none"> <li>•One instrument</li> <li>•EU target</li> <li>•Burden sharing Y/N</li> </ul>	1a	2a	3a	4a	5	6 •Sensitivity to 7 (national support, but harmonisation for selected technologies)	7 •NAT targets •Co-operation mechanism •w/o increased cooperation •w/o minimum design standards for support instruments (with ... <b><u>Minimum Harmon.</u></b> )
<b><u>Medium</u></b>	<ul style="list-style-type: none"> <li>•EU target</li> <li>•One instrument</li> <li>•Additional (limited) support allowed</li> </ul>	1b	2b	3b	4b			
<b><u>Soft</u></b>	<ul style="list-style-type: none"> <li>•NAT targets</li> <li>•One instrument</li> <li>•MS can decide on various design elements incl. support levels</li> </ul>	1c	2c	3c	4c			

Key pathways  
for cost/benefit  
assessment

Other dimensions	Capacity markets Y/N	Harmonised context (electricity prices and procedures aligned) Y/N	Harmonised „general RES framework“ conditions (grid codes, permission, spatial planning, grid access and system regulation,...) conditions Y/N
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# Thanks for your attention!

24 October 2012, Madrid:

beyond2020 ... Topical workshop on

**Interactions between RES policies  
& Electricity markets**

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

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