

WP4: Assessing Costs and Benefits of RES

"What's in it for member states, what are costs & benefits?" Brussels, 25th of June, 2015

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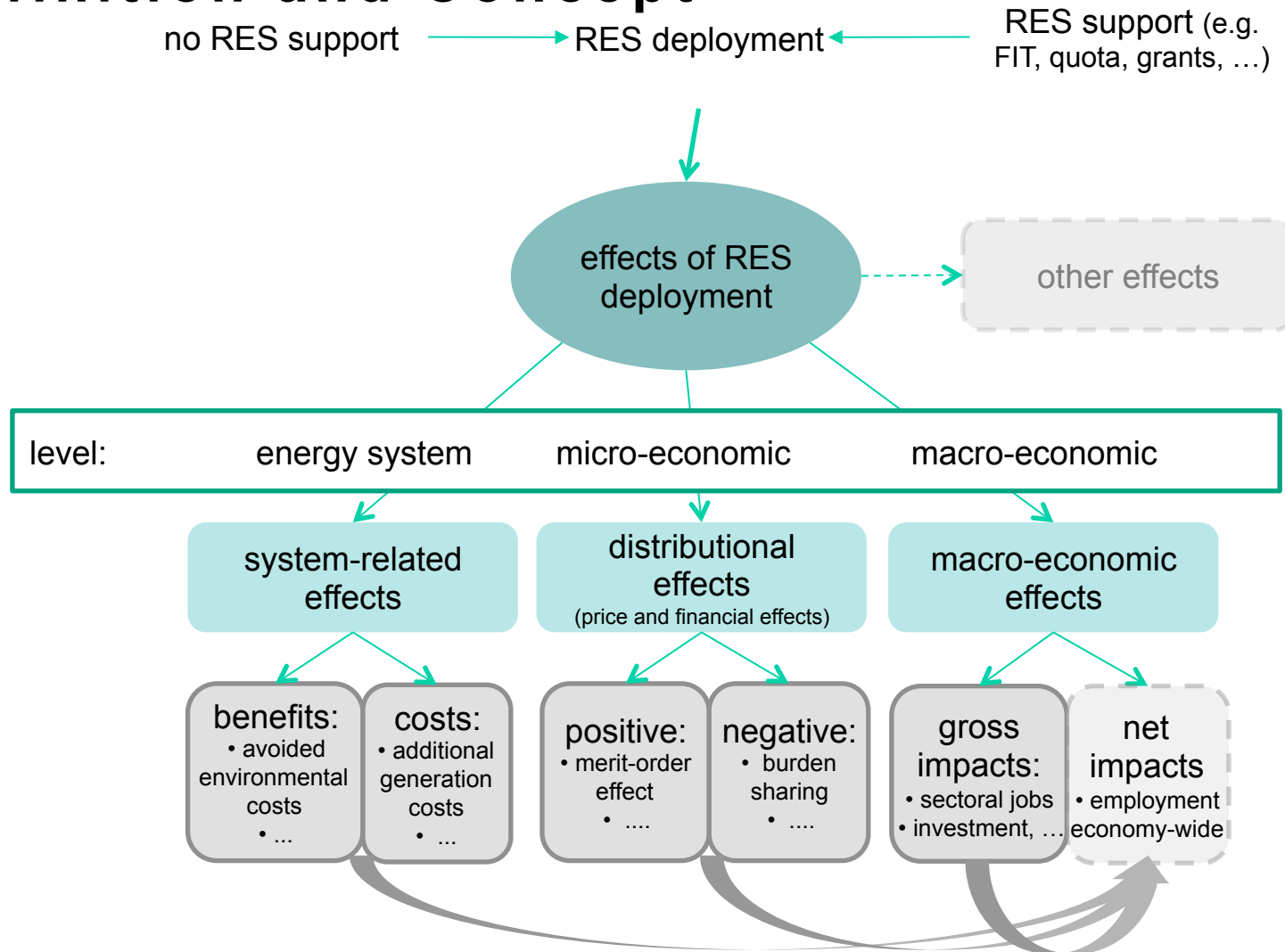


The Policy Context



- The **EU Directive on the support of energy from renewable sources (2009/28/EC)**, comprises the establishment of binding RES targets for each Member State
- For the strategy up to 2030, a binding EU-wide RES target of achieving **at least 27%** as RES share in gross final energy demand was adopted
 - This has to be seen as an important first step in defining the framework for RES post 2020
 - Other steps, like a clear concept for and agreement on the **effort sharing** across Member States have to follow

Definition and Concept



Overview

■ Questions to be addressed:

- What are costs and benefits for EU Member States?
- How can they be interpreted?
- **Cost types:**
 - Additional generation costs of RES systems
 - Support expenditures for different RES policies
- **Capital expenditures** necessary for new RES installations
- **Benefits:**
 - Avoided fossil fuels
 - Avoided CO₂ emissions

Background Information

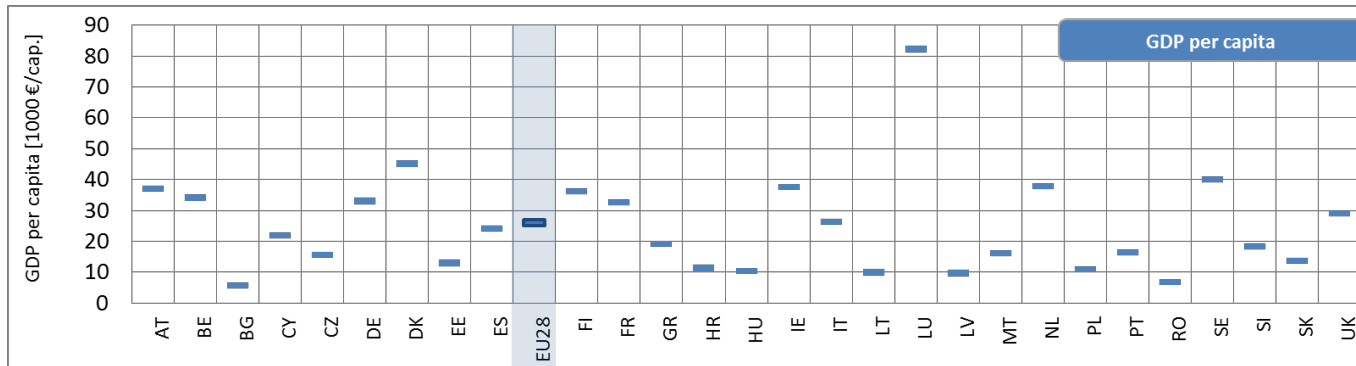


Figure: GDP per capita [1000 €/capita] (on average (2011-2020)) of the 28 EU Member States

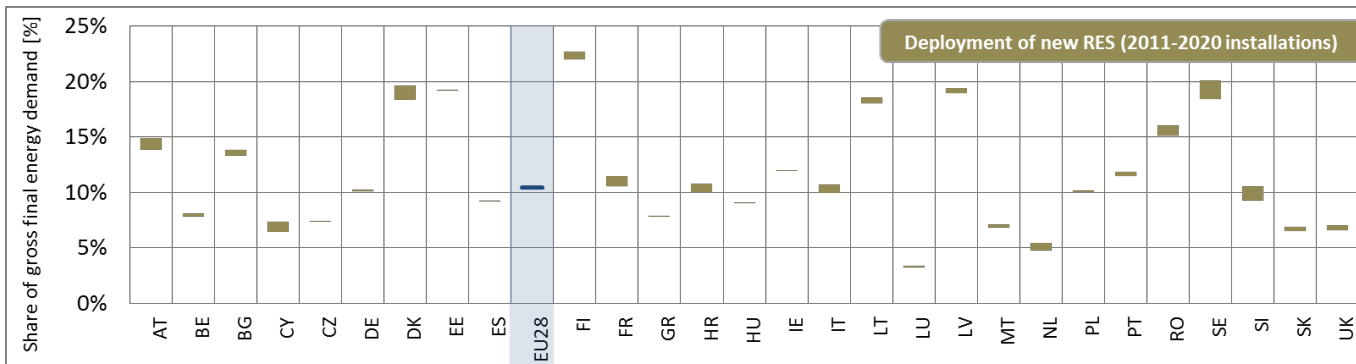


Figure: Deployment by 2020 of new RES (installed in the period of 2011 to 2020)

Costs and Benefits at EU level

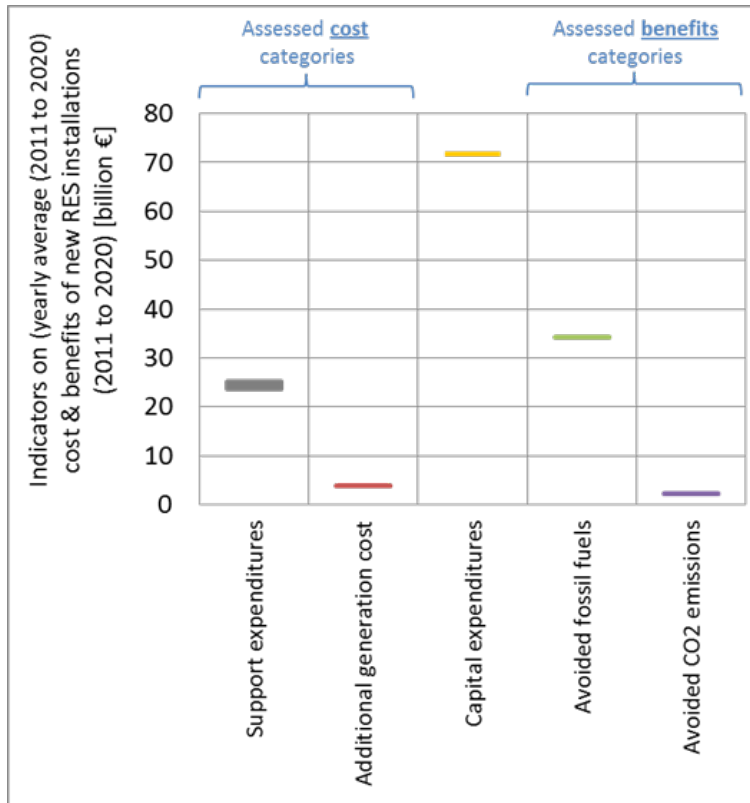


Figure: Indicators on yearly average cost and benefits of new RES installations (2011 to 2020) at EU level for all assessed cases, expressed in absolute terms (billion €)

- For the focal period up to 2020 it can be stated that not all Member States will reach their 2020 target via their own domestic RES deployment alone
- This means that volumes of RES would have to be exchanged (virtually) to a certain extent between different states
- The graph on the left hand side states the range for different measures of costs and benefits for the EU
- In the following the spotlight will be on the Member State perspective

Cost benefit categories at Member State level

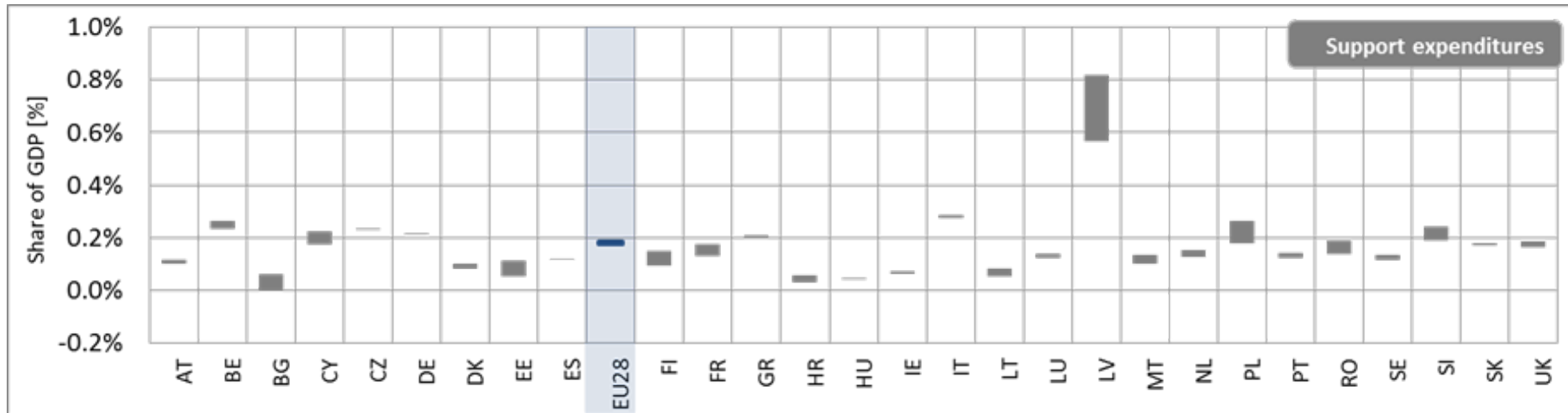


Figure: Range of average yearly support expenditures for new RES installations (2011-2020)

- Looking into **support expenditures**, one can see that spreads as well as shares vary over the different Member States
- Most of the Member States range in the area of 0.1 to 0.2% of their GDP in this cost category
- The EU average lies close to 0.2% of GDP

Cost benefit categories at Member State level

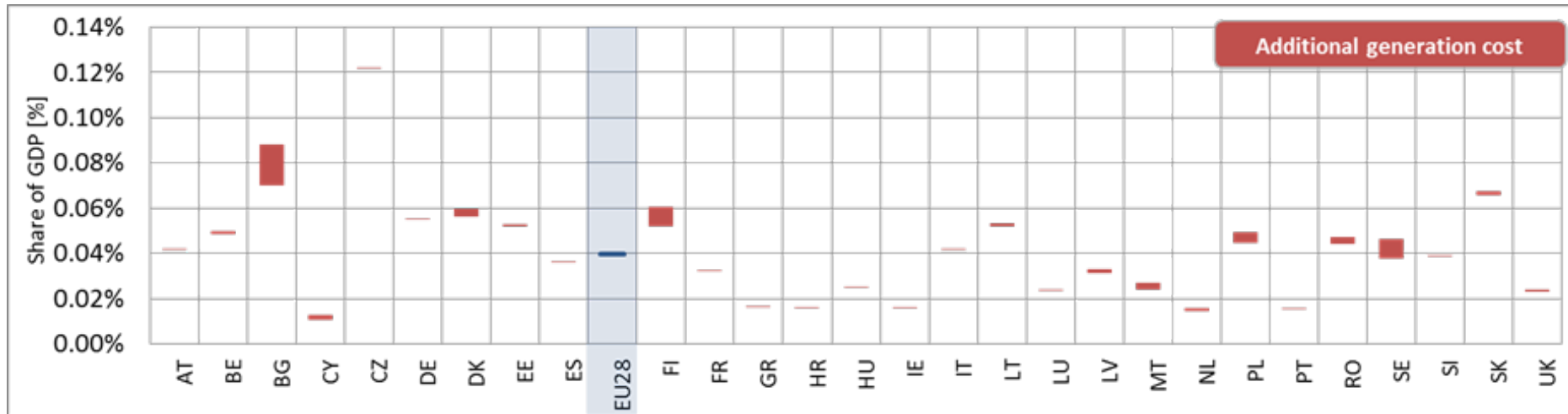


Figure: Range of yearly additional generation costs for new RES installations (2011-2020)

- **Additional generation costs** have a more diverse distribution in the share of GDP of the respective Member States, whereas the share is comparatively small in all countries
- Czech Republic exhibits the highest share in the given range, with around 0.12%
- The EU average lies at 0.04%

Cost benefit categories at Member State level

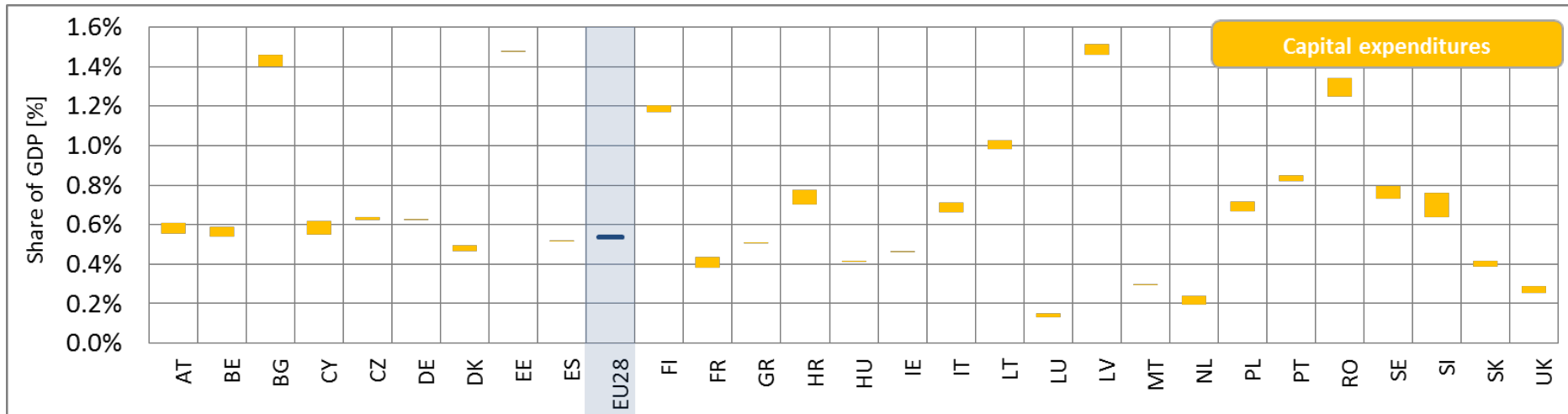


Figure: Range of average yearly capital expenditures for new RES installations (2011-2020)

- **Capital expenditures** show even more variation over the different states and at a much higher level
- An average value over all 28 EU Member States lies around 0.54% of GDP
- Austria, Belgium, Cyprus and Germany, for example, can also be located in this area with their range over the different scenarios

Cost benefit categories at Member State level

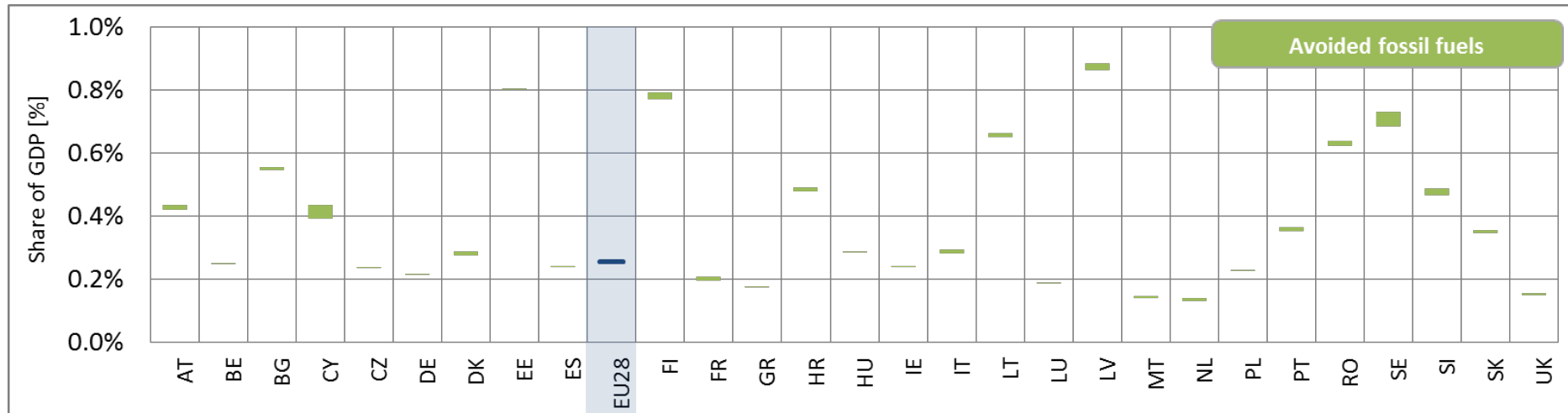


Figure: Range of average yearly avoided fossil fuels for new RES installations (2011-2020)

- Looking into benefits from new RES installations, **avoided fossil fuels** is the first category that has been assessed
- Member States that benefit the most in relative terms are Latvia, Estonia, Finland and Sweden - saving around 0.9, 0.8 and 0.7% of their GDP
- The EU average lies at 0.26% of GDP

Cost benefit categories at Member State level

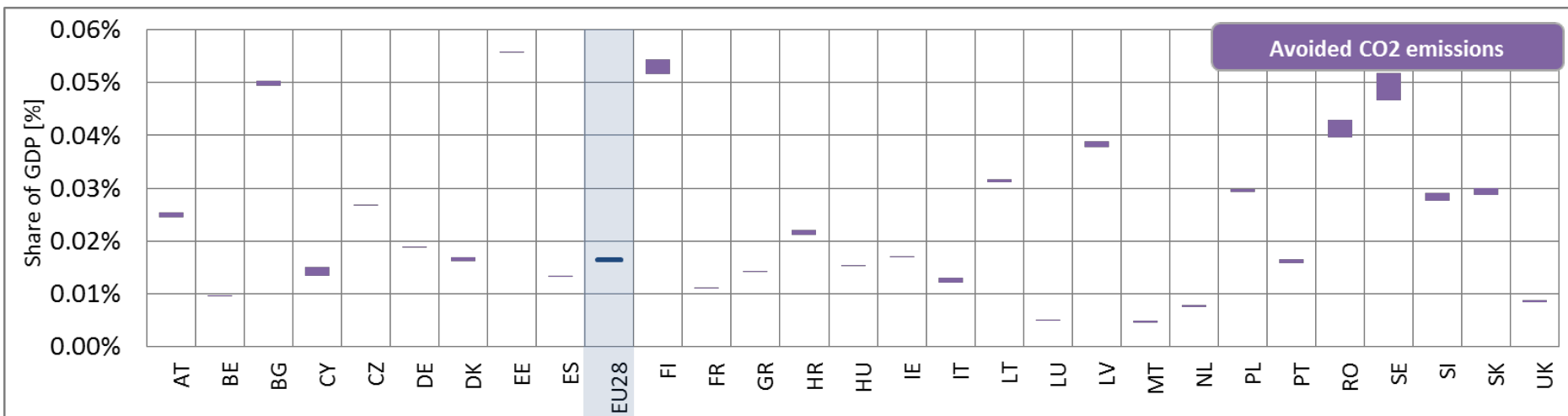


Figure: Range of average yearly avoided CO₂ emissions for new RES installations (2011-2020)

- Finally, savings can be quantified for the **avoided CO₂ emissions** in the different scenarios assessed
- Again variation is quite large in the EU, whereas the share of GDP is significantly smaller than with avoided fossil fuels
- The EU average lies below 0.02% of the GDP in this case

Cost benefit categories in the 2030 perspective



- The scenarios assessed refer to 27 % and 30 % EU wide targets respectively
- The underlying demand assumptions are nevertheless taken from the reference case
- Improving energy efficiency through additional measures would thus lead these targets to increase to a 30 or 33 % RES share in gross final energy demand respectively

Cost benefit categories in the 2030 perspective

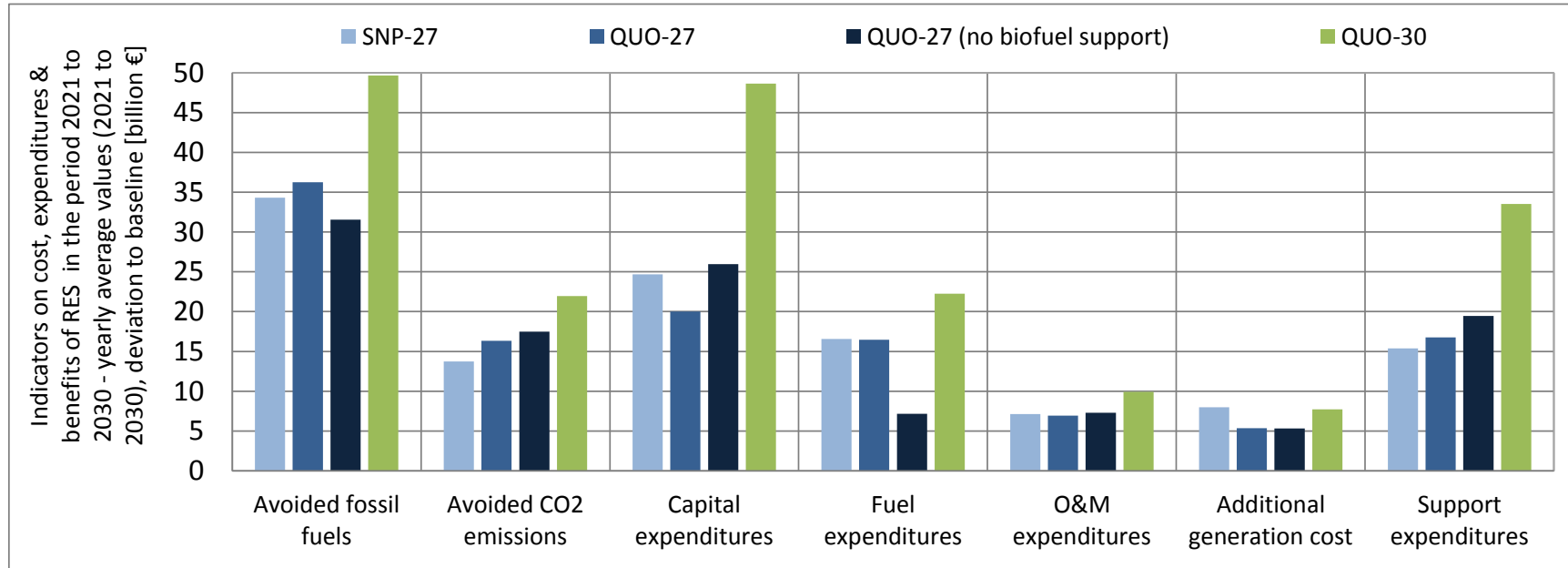


Figure: Indicators on yearly average cost, expenditures and benefits of RES at EU 28 level for all assessed cases, monetary expressed in absolute terms (billion €) per decade (2021 to 2030)

- Scenarios that reach a 27% target lead to overall costs in a comparable order of magnitude
- A 27% quota generally leads to lower capital expenditures as well as lower additional generation costs compared to the case of national policies
- Moving from a 27% to a 30% target comes at a cost
- These extra costs however are also mirrored by increasing benefits

Conclusions

Costs and benefits of RES deployment in the 2020 context

- Intra-European trade in renewable energy through cooperation mechanisms is a key measure
- Costs and benefits of RES targets are rather unevenly distributed among EU Member States; Stronger cooperation between countries will be of mutual benefit
- **System-related benefits** in terms of avoided fossil fuels and avoided CO₂ emissions have a larger effect for those states that substitute more of their fossil generation
- **Support costs** are quite equally distributed and amount to 0.2% of GDP in an EU average
- **Capital expenditures** are quite high overall

Costs and benefits of RES deployment beyond 2020

- Alternative policy scenarios related to 27% RES by 2030 lead to moderate increases in **system costs** and support expenditures at EU level compared to baseline conditions
- At the same time **generation costs** do not increase substantially with a high ambition target for RES deployment
- **System related benefits** would in turn increase, i.e. significantly more fossil fuels and CO₂ emissions would be avoided
- More than 27% RES by 2030 appears feasible but requires additional efforts to be taken

More information:

<http://www.diacore.eu/>

WELCOME TO OUR WEBSITE

We welcome you to the Project "Policy Dialogue on the assessment and convergence of RES policy in EU Member States", started in April 2013 and carried out under the Intelligent Energy – Europe programme.



DIA-CORE intends to ensure a continuous assessment of the existing policy mechanisms and to establish a fruitful stakeholder dialogue on future policy needs for renewable electricity (RES-E), heating & cooling (RES-H), and transport (RES-T). Thus, **DIA-CORE** shall facilitate convergence in RES support across the EU and enhance investments, cooperation and coordination.

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