
Central vs Decentral Policy Making for RES: **the need for both & the role of RES Cooperation** (European & Cross-border RES auctions)

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- ◀ Intro / policy context: the EU's road to glory for 2030 & beyond (climate neutrality)
- ◀ Gap analysis on the need for RES cooperation: NECPs & Green Deal perspective
- ◀ Impacts of RES cooperation exemplified for the electricity sector
- ◀ Conclusions

Intro / Policy context

the road to glory (climate neutrality) at EU level



- ◀ Throughout last years, EU Member States (MSs) have agreed upon 2030 energy and climate targets, aiming in the field of renewables for an **EU RES share of at least 32%*** by 2030 (in accordance with the 40% GHG target). **expected to be revised upwards (40%?)*
- ◀ In this context, by the end of 2019 EU MS's had to provide **National Energy and Climate Plan's (NECPs)** to show how to contribute to 2030 EU targets.
- ◀ As part of the European Green Deal the EU ambition has been raised: the European Union (EU) now aims at full climate-neutrality of all sectors by 2050 and a **40%* reduction of greenhouse gas emissions (GHG)** by 2030 compared to 1990 levels. **expected to be revised towards 50-55%*
- ◀ 2030 energy and climate targets and climate-neutrality will lead to a **(strong) increase in electricity demand (sector-coupling)** and **requires high shares of wind and photovoltaics (PV) in the power system as well as dispatchable (RES) technologies** to balance the fluctuating generation patterns of wind and PV.
- ◀ Since **renewable resources differ by EU Member State, cooperation between them is of key importance**, helping to make promising RES potentials in certain parts/areas also available to neighbouring regions within the EU and facilitating overall energy and climate target achievements.

Gap analysis on the need for RES cooperation: NECP & Green Deal perspective



The role of RES in National Energy and Climate Plans

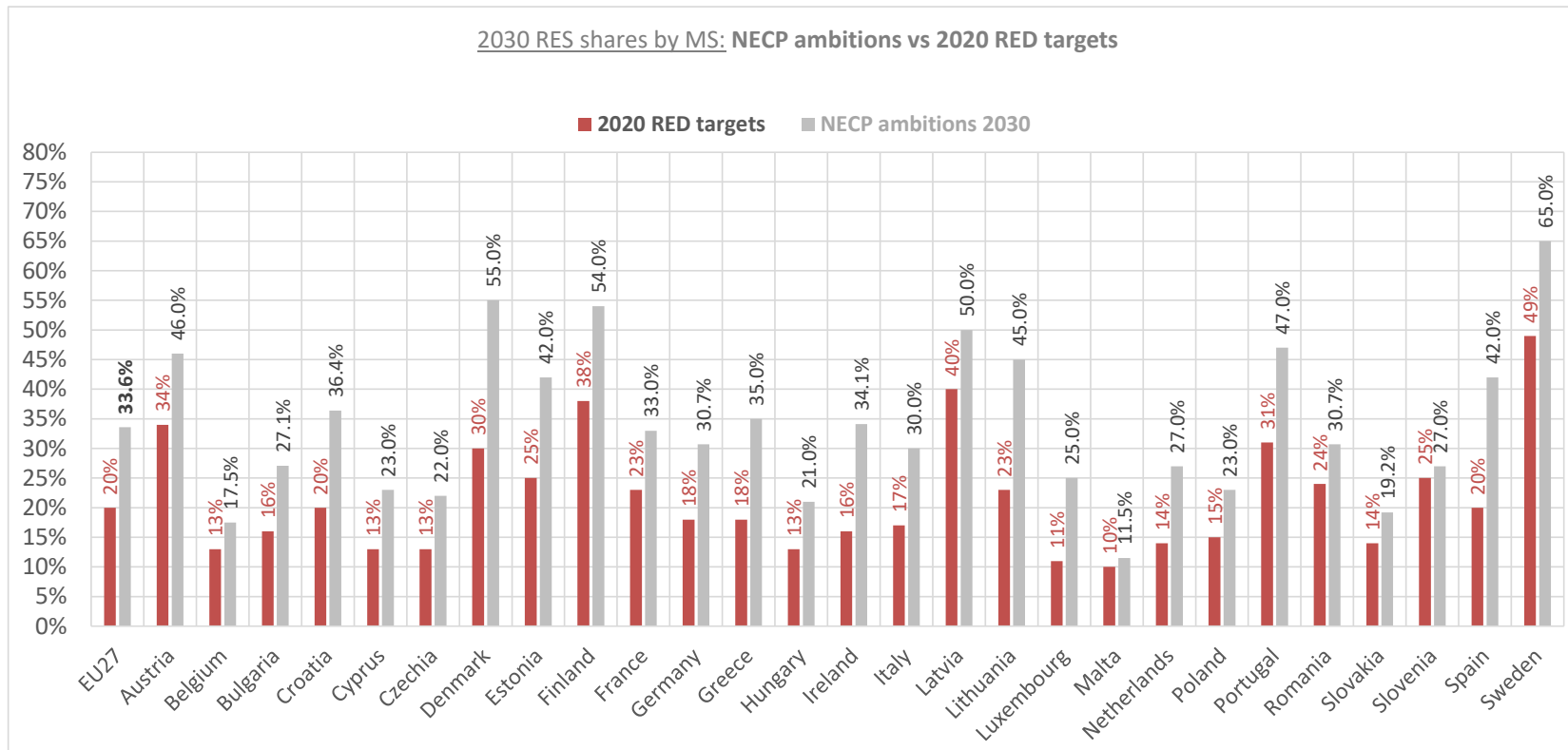


Figure: 2020 RED targets vs. 2030 RES shares by EU MS according to NECPs (Target Scenario)

Source: AURES2 – own analysis

- ◀ By 2030 MSs have to increase their RES shares (well) above 2020 RED targets in order to contribute to the overall EU RES target of (at least) 32% by 2030
- ◀ Summing up the nationally planned RES shares (and where reported demand projections) for 2030 leads to an EU RES share of **approx. 33.6%**
- ◀ The RES ambition however differs to a large extent across MSs

Gap analysis on the need for RES cooperation: NECP & Green Deal perspective



Are NECP RES plans feasible? ... a check-up via modelling

2030 RES shares by MS: NECP ambitions vs modelled deployment (with & w/o RES cooperation)

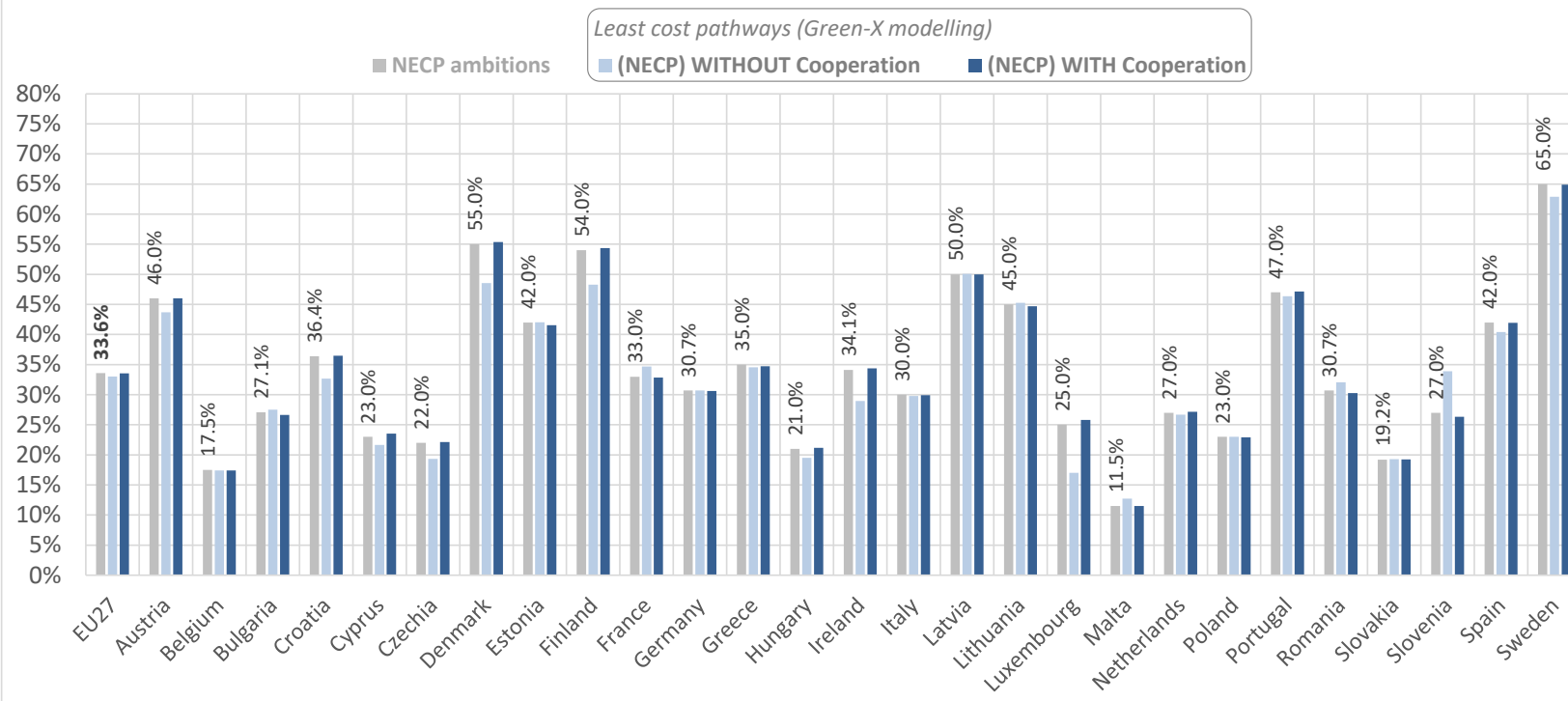


Figure: 2030 RES shares by EU MS according to NECPs (Target Scenario) vs modelled RES deployment (with & w/o RES cooperation)

Source: AURES2 – own analysis

- By use of TU Wien's Green-X model (in combination with Balmorel for the power system analysis) a **feasibility check-up of planned 2030 RES deployment (NECP ambition)** is undertaken
- Least cost pathways are derived from a national and an EU perspective
- Modelling shows that **without RES cooperation** only an EU RES share of **33.1%** appears feasible – but **with RES cooperation** the planned deployment (**33.6%**) can be reached

→ Several MSs would require RES cooperation to reach their planned 2030 RES share

Gap analysis on the need for RES cooperation: NECP & Green Deal perspective



Comparing planned RES deployment (NECPs) with “Green Deal needs”

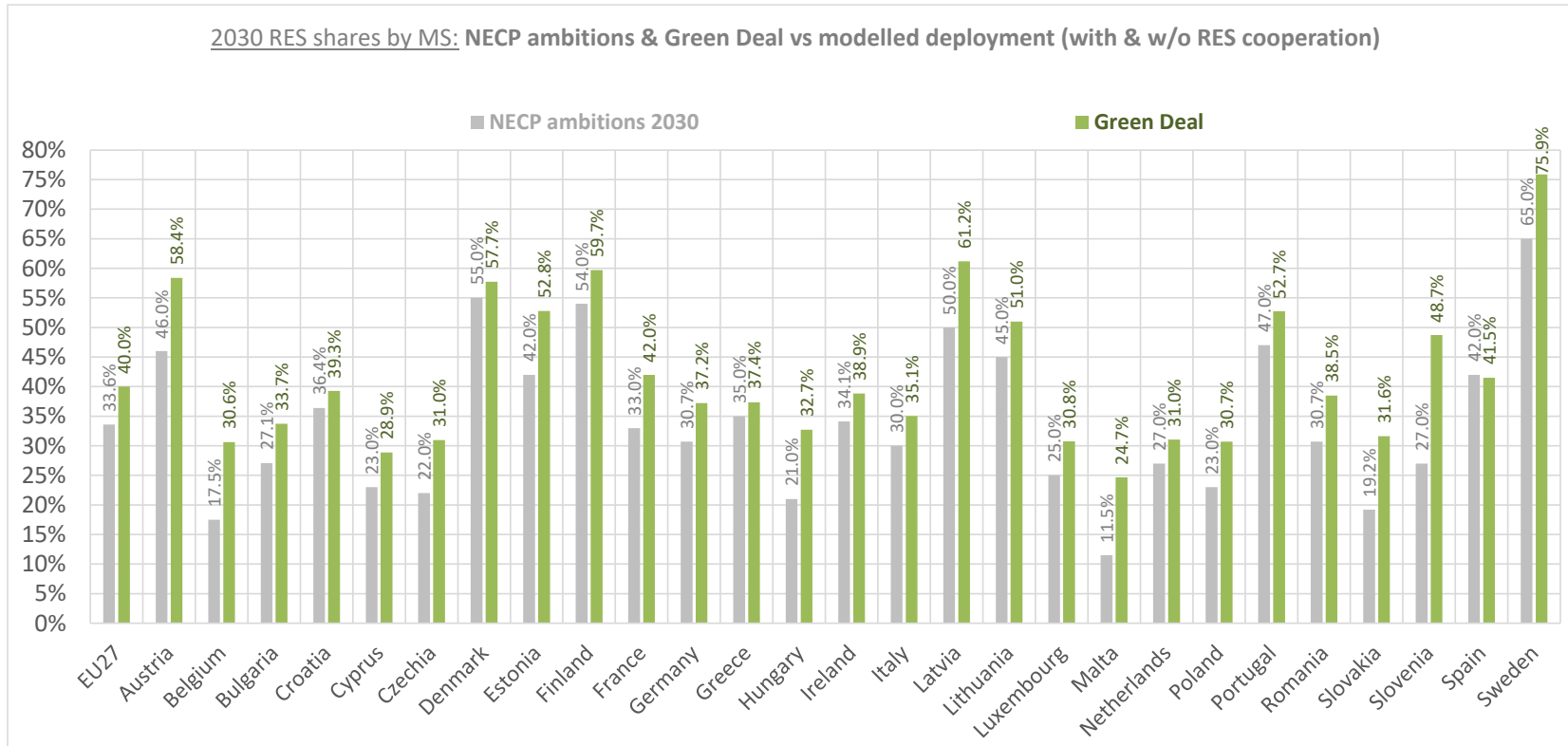


Figure: 2030 RES shares by EU MS according to NECPs (Target Scenario) vs “Green Deal needs”

Source: AURES2 – own analysis

- ◀ The EU Green Deal and the corresponding increase in the 2030 climate ambition (50-55% instead of 40% GHG reduction) raises the need for a stronger uptake of renewables
- ◀ We estimated that the EU 2030 RES target would consequently be increased from (at least) 32% to (at least) 40%
- ◀ We then calculated a “fair” effort sharing across MSs: National Contributions for the EU RES target in accordance with the approach described in the Governance Directive

→ 2030 EU RES share:

33.6% (NECP planning) vs
40% (Green Deal perspective)

Gap analysis on the need for RES cooperation: NECP & Green Deal perspective



Is a stronger RES uptake (Green Deal) feasible? ... a check-up via modelling

2030 RES shares by MS: Green Deal vs modelled deployment (with & w/o RES cooperation)

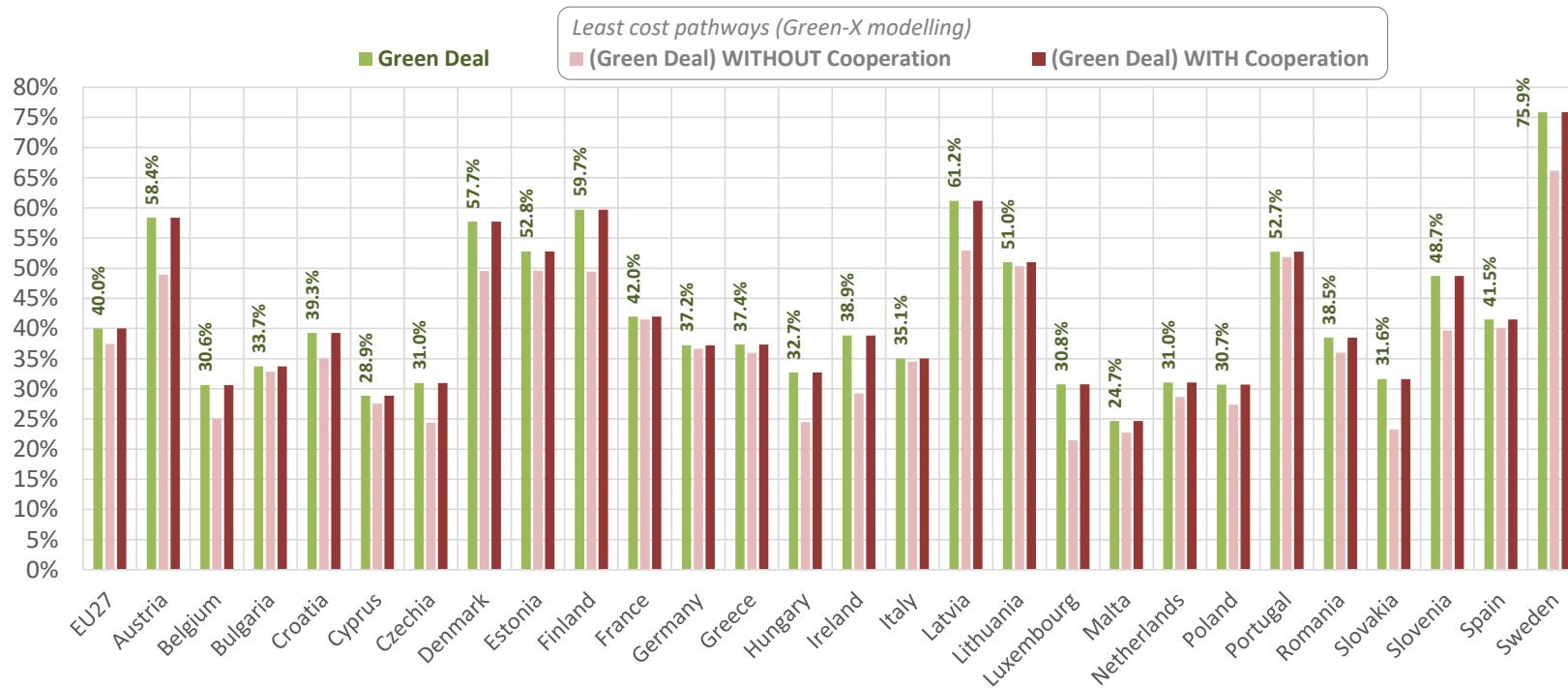


Figure: 2030 RES shares by EU MS according to “Green Deal needs” vs modelled RES deployment (with & w/o RES cooperation)

Source: AURES2 – own analysis

- ◀ Again, by use of TU Wien’s Green-X model (in combination with Balmorel for the power system analysis) a **feasibility check-up** is undertaken
- ◀ Least cost pathways are derived from a national and an EU perspective
- ◀ Modelling shows that **without RES cooperation** only an EU RES share of **37.4%** appears feasible – but **with RES cooperation** the planned deployment (**40%**) can be reached

→ **EU-wide RES cooperation appears essential for achieving a stronger RES uptake at short notice (by 2030)**

Gap analysis on the need for RES cooperation: NECP & Green Deal perspective



Gap analysis: (1) NECP planning vs “Green Deal needs” & (2) the need for RES cooperation (modelling perspective - below)

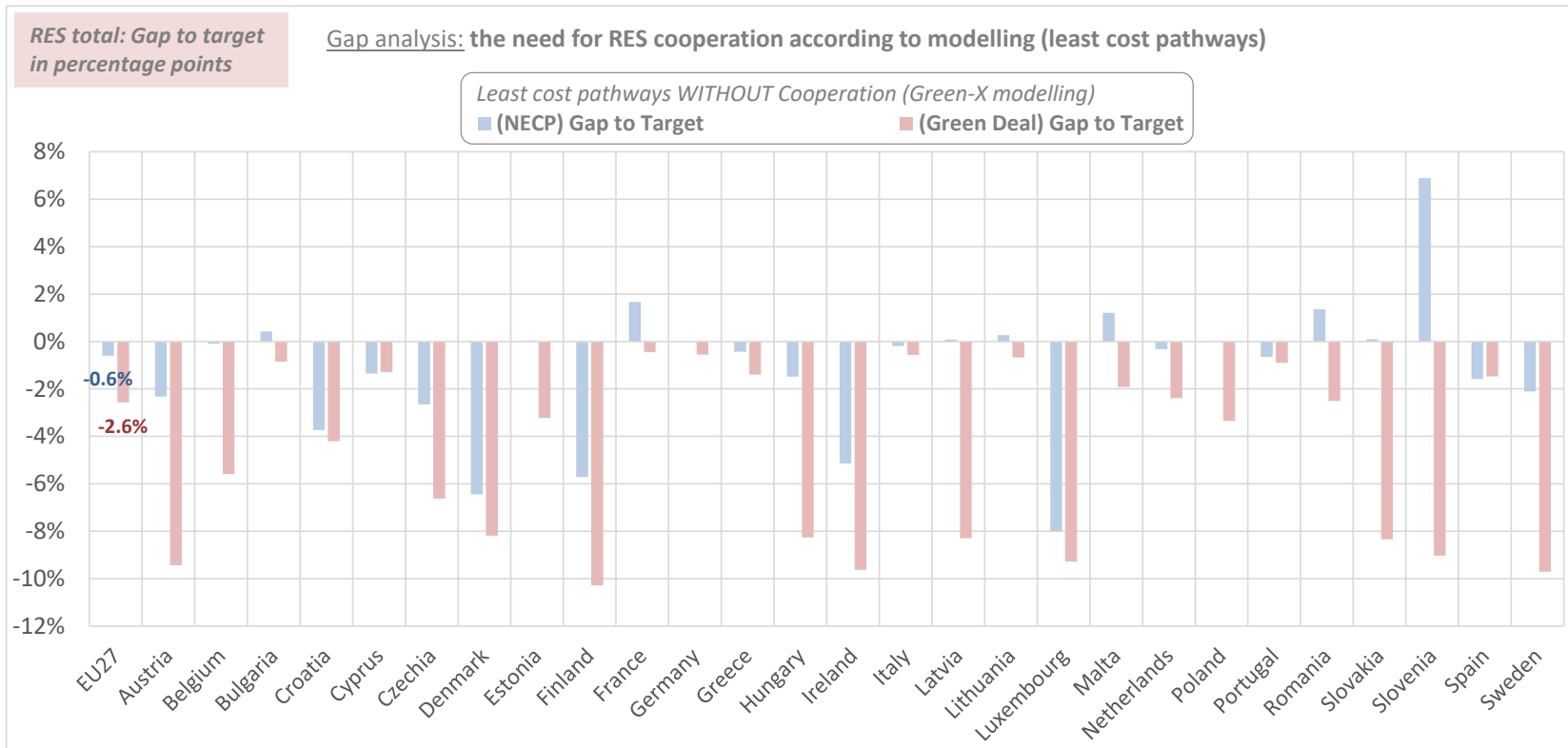


Figure: Gap analysis (2): The need for RES cooperation according to modelling (NECP & Green Deal perspective)
Source: AURES2 – own analysis

- (1) A gap in the 2030 RES share in size of 6.4 percentage points occurs if we compare NECP planning with “Green Deal needs” (33.6% vs 40%)
- (2) A smaller gap can be identified if we assume that MSs will revise their planning in accordance with the Green Deal: 2.6 percentage points would then be the need for RES cooperation

Note: the **Figure on the left** provides the details for the **gap analysis related to RES cooperation in accordance with modelling**, comparing least cost pathways without RES cooperation with corresponding 2030 RES ambitions (NECP vs Green Deal)

Impacts of RES cooperation exemplified for the electricity sector



The future uptake of renewables in the electricity sector

RES & RES-E shares 2030 at EU level:

NECP ambitions vs modelled

deployment, Green Deal impacts

		RES	RES-E
NECP ambitions	%	33.6%	56.7%
(NECP) L.c. pathway WITHOUT Coop	%	33.0%	57.0%
(NECP) L.c. pathway WITH Coop	%	33.6%	56.6%
(Green Deal) L.c. pathway WITHOUT Coop	%	37.4%	66.6%
(Green Deal) L.c. pathway WITH Coop	%	40.0%	73.0%

Derived least cost pathways of RES deployment provide insights on expected/planned/required RES deployment in the electricity sector:

- ◀ For the NECP perspective we modelled RES-electricity in accordance with planning
- ◀ For the Green Deal perspective a cross-sectoral least cost allocation of RES deployment is derived by the model

At EU level we see:

- **A moderate RES uptake in the electricity sector if NECP planning is considered**
(56-57% RES-E share 2030)
- **a strong increase of RES deployment in the electricity sector if the Green Deal perspective is followed**
(66-73% by 2030)

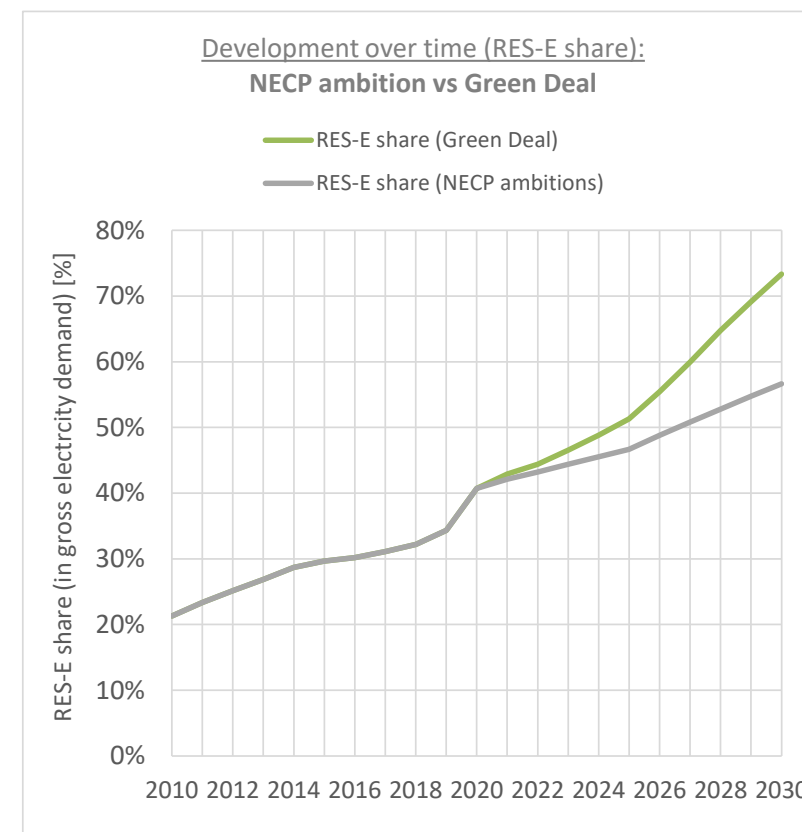


Figure: Development of the EU RES share over time (NECP ambition vs Green Deal)

Source: AURES2 – own analysis

Impacts of RES cooperation exemplified for the electricity sector



Impacts of the future RES uptake in the electricity sector (NECP ambition)

Development over time (Support Expenditures):
NECP ambition

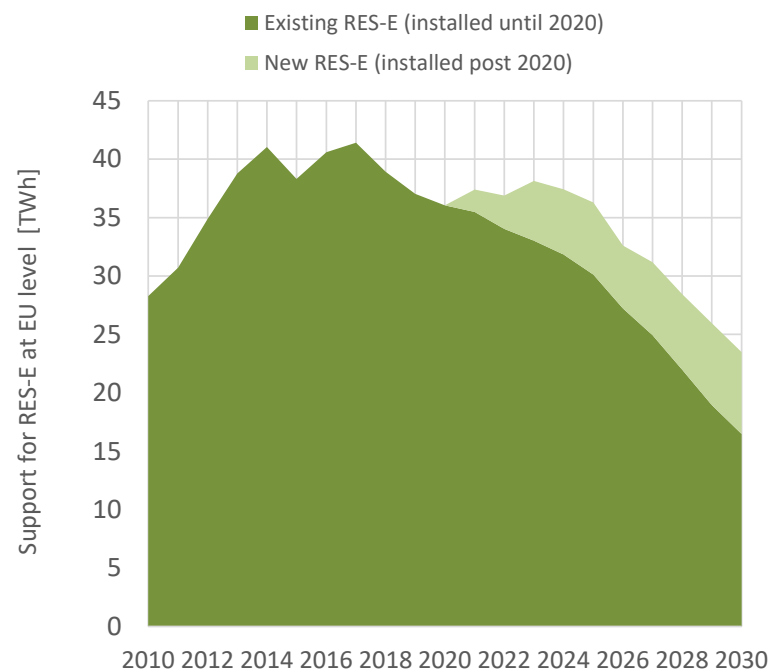


Figure: Development of the required financial support for RES-electricity (NECP ambition)

Source: AURES2 – own analysis

The need for RES support post 2020:

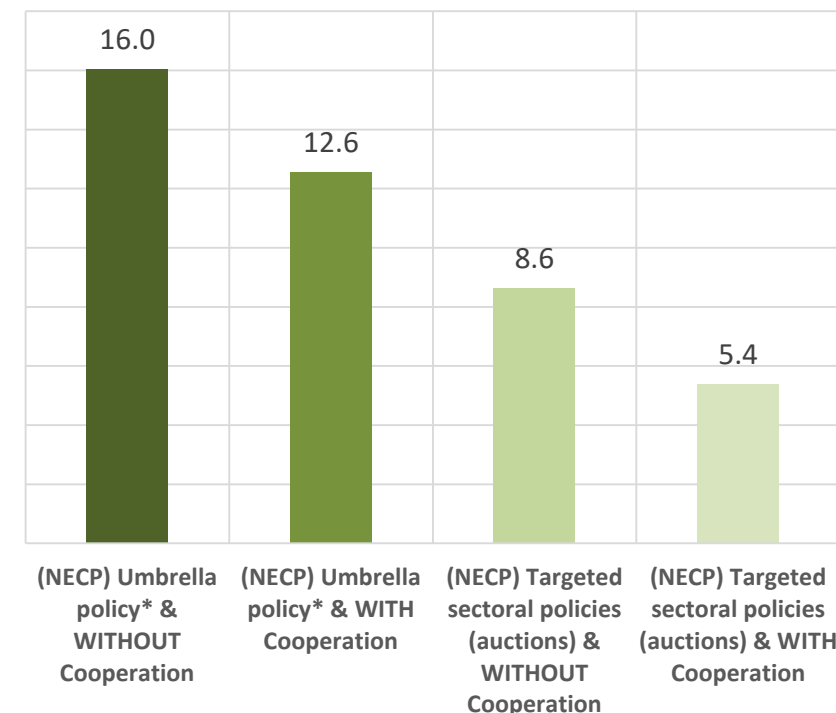
- In the forthcoming decade, the bulk of support expenditures for RES in the electricity will be dedicated to those RES systems installed until 2020
- New RES installations come at lower cost and consequently require less financial support – thanks to technological progress
- **RES cooperation can help to lower these cost burden further** (see Figure on the right)

Figure: Comparison of support needs under distinct policy approaches (NECP ambition)

Source: AURES2 – own analysis

Average (21-30) yearly support Expenditures for new RES-E (installed post 2020) [bn €]:

Impact of policy selection & design



Impacts of RES cooperation exemplified for the electricity sector

Lessons learnt from the H2020 MUSTEC study (RES cooperation for CSP in the EU)

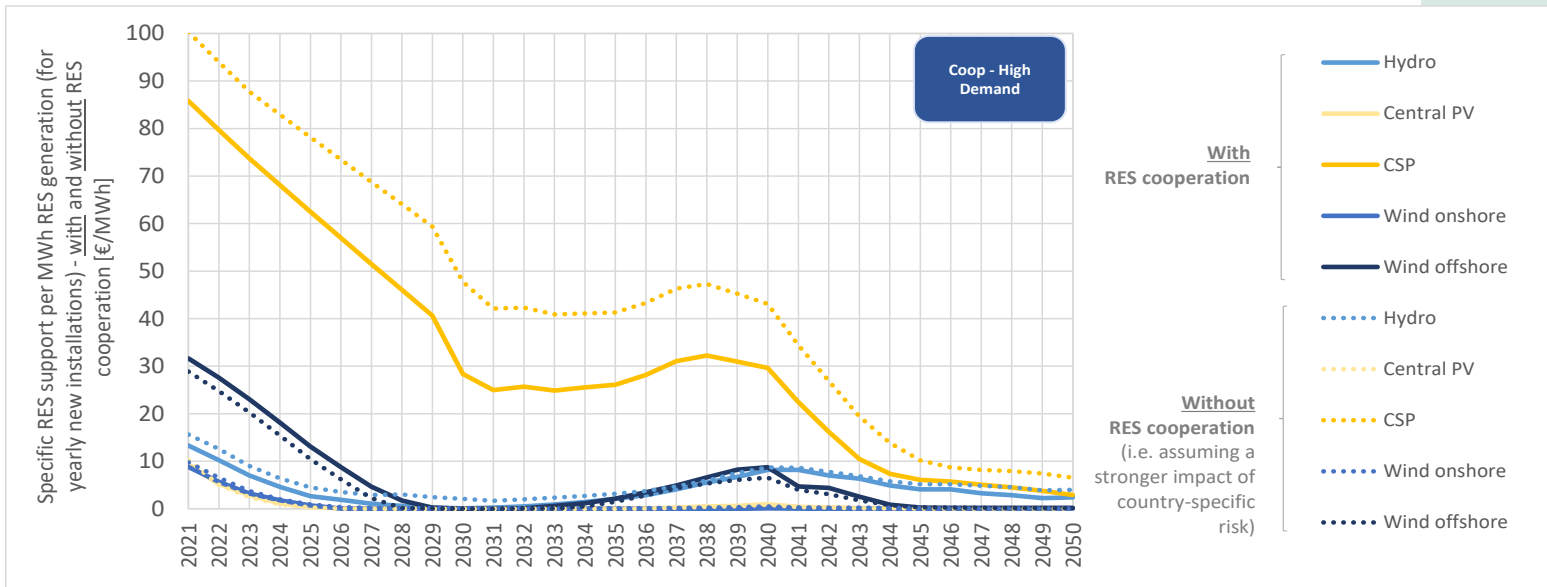


Figure: Specific support per MWh RES generation on average at EU28 level
(Source: Green-X)

There is a need for and positive impact of RES cooperation on the cost for the uptake of CSP and other RES technologies:

- ❖ **RES cooperation facilitates a levelling of country-specific risk for RES investors** and redistributes the cost of the RES uptake across the whole EU, so that host countries for the uptake of CSP and other RES technologies do no longer have to pay the whole bill.
- ❖ **Positive impact for both CSP & total RES on RES-related support expenditures:** Without risk levelling across the EU support cost would increase 5-11%. → This indicates that **strong differences in financing conditions across EU countries** as we still see them today are **less preferential for the decarbonisation of the EU's electricity sector**.
- ❖ **A (more) fair effort sharing can then be triggered** by RES cooperation and the accompanying redistribution of support expenditures across countries, **so that host countries do no longer have to pay the whole bill**.

NECP planning & RES cooperation:

- ◀ Insights from NCEP planning on the future RES uptake until 2030:
Summing up the nationally planned RES shares for 2030 leads to an EU RES share of approx. 33.6%
- ◀ Several MSs would require RES cooperation to reach their planned 2030 RES share

Green Deal impacts:

- ◀ The Green Deal is expected to raise the overall RES ambitions (up to 40%)
- ◀ EU-wide RES cooperation appears then essential for achieving a stronger RES uptake at short notice

There are several benefits of RES cooperation:

- ◀ RES cooperation facilitates a levelling of country-specific risk for RES investors
- ◀ A (more) fair effort sharing can then be triggered by RES cooperation
- ◀ ... and it lowers the overall cost



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