

# AURES II – Auctions for Renewable Energy Support II

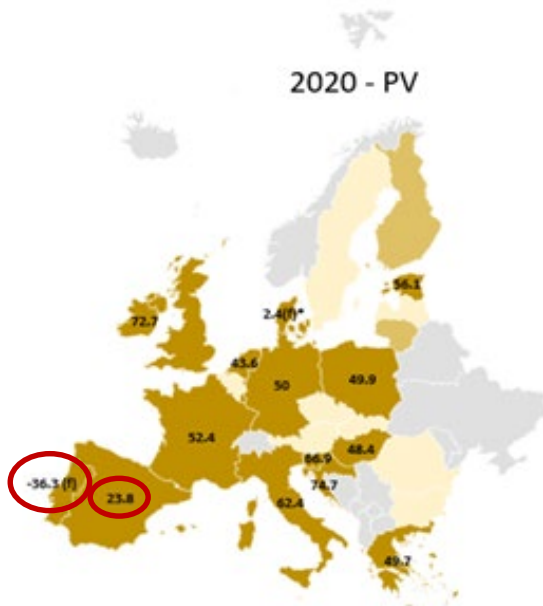
Final conference

Virtual meeting, 28 April 2022

# Zero support auctions / modelling the future of RES auctions

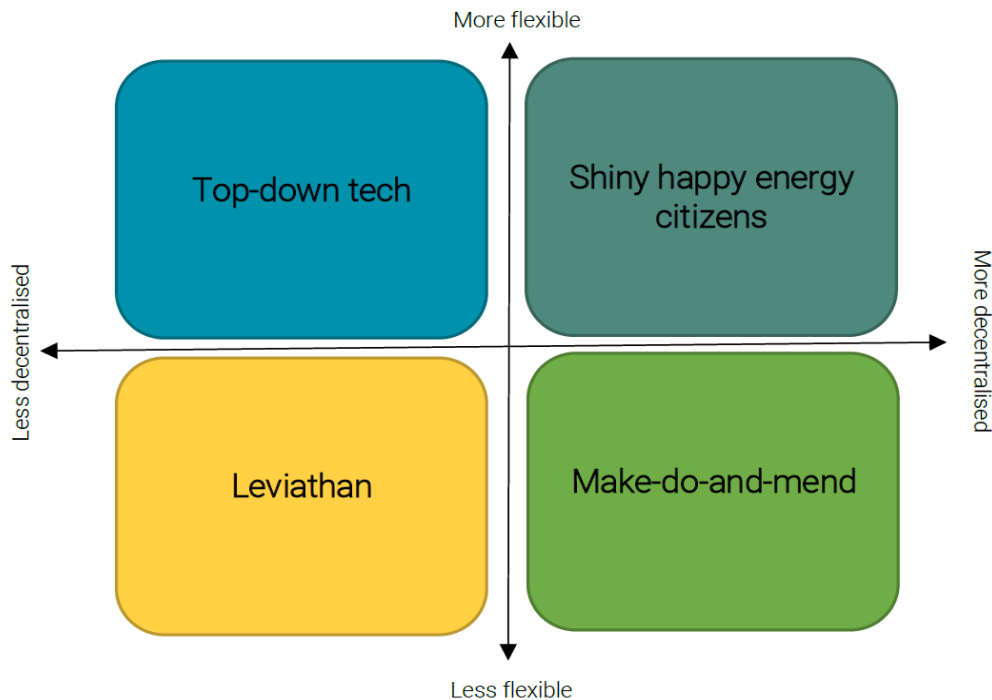
Jasper Geipel, Gustav Resch, Florian Hasengst – TU Wien  
Laszlo Szabo, Maria Bartek-Lesi – REKK

# Auctions in a zero-subsidy environment – first *lessons learnt*



- Portugal already achieved below market price auctions in 2019, Spain and Denmark (offshore wind) in 2021.
- In Spain **PPAs received 14€/MWh higher prices compared to the central auctions**, reflecting the **higher inherent risks** of market based PPAs
- **Scarce network connections get higher attentions** with the increasing deployment of vRES
- If the present **high price environment** is sustained for a longer period it **would support the market based expansion** of vRES (PPAs)
- **Regulatory differences between EU MSs are main drivers of auction price differences** amongst them, plus differences in underlying RES ambitions

# Model-based assessment of long-term trends in a changing electricity system: **Scope & Concept**



## **Current political circumstances and market distortions may cause various impacts in reality**

*(e.g. strongly rising demand for RES / high energy prices and technology cost / change in financing conditions / bottlenecks in supply chains)*

### Scope:

- Model-based analysis complementing the narrative scenarios describing plausible visions of EU electricity markets and networks in the period 2030 to 2050

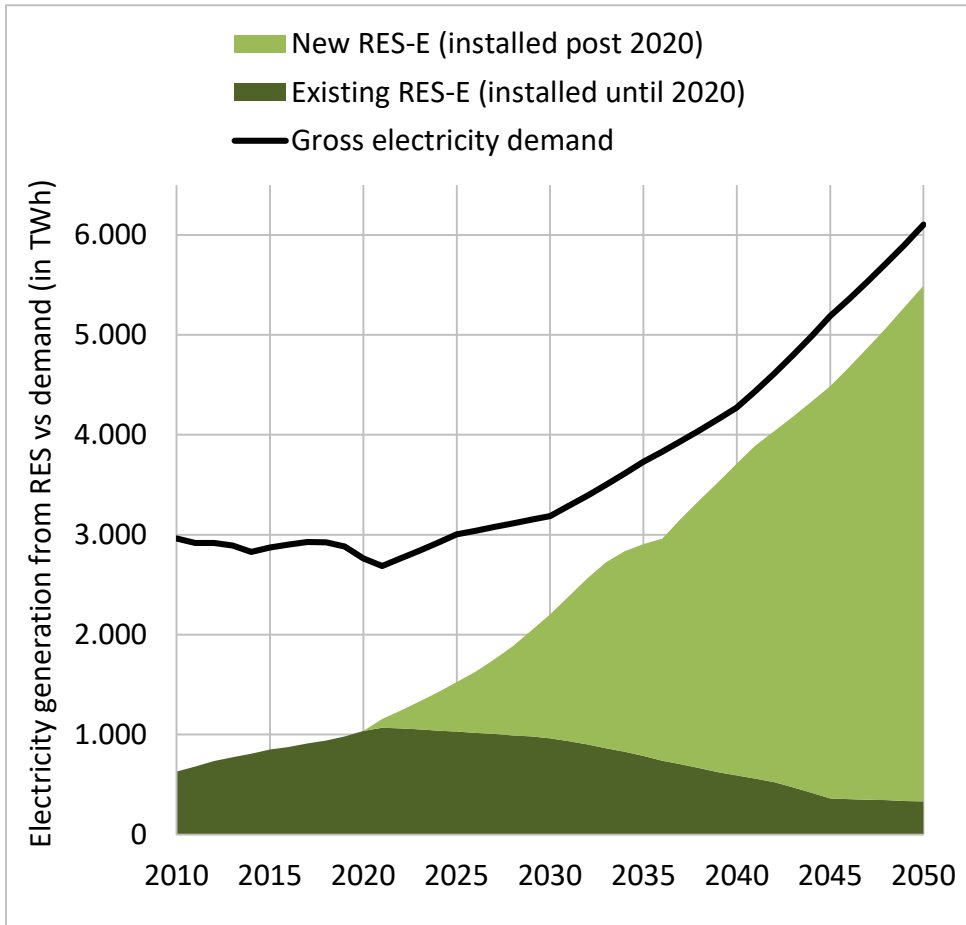
### Concept:

- **Focus on flexibility**  
(Balmorel / power system analysis)  
**vs decentralisation** (Green-X / RES policy analysis)
- **General assumptions:**
  - Green Deal ambition for 2030
  - Climate neutrality by 2050 → carbon-free electricity system (RES + nuclear + some CCS)  
→ **Strong RES uptake required** (with impact on possible phase-out of RES support?)

# Model-based assessment of long-term trends in a changing electricity system: The assumed strong RES uptake at EU level

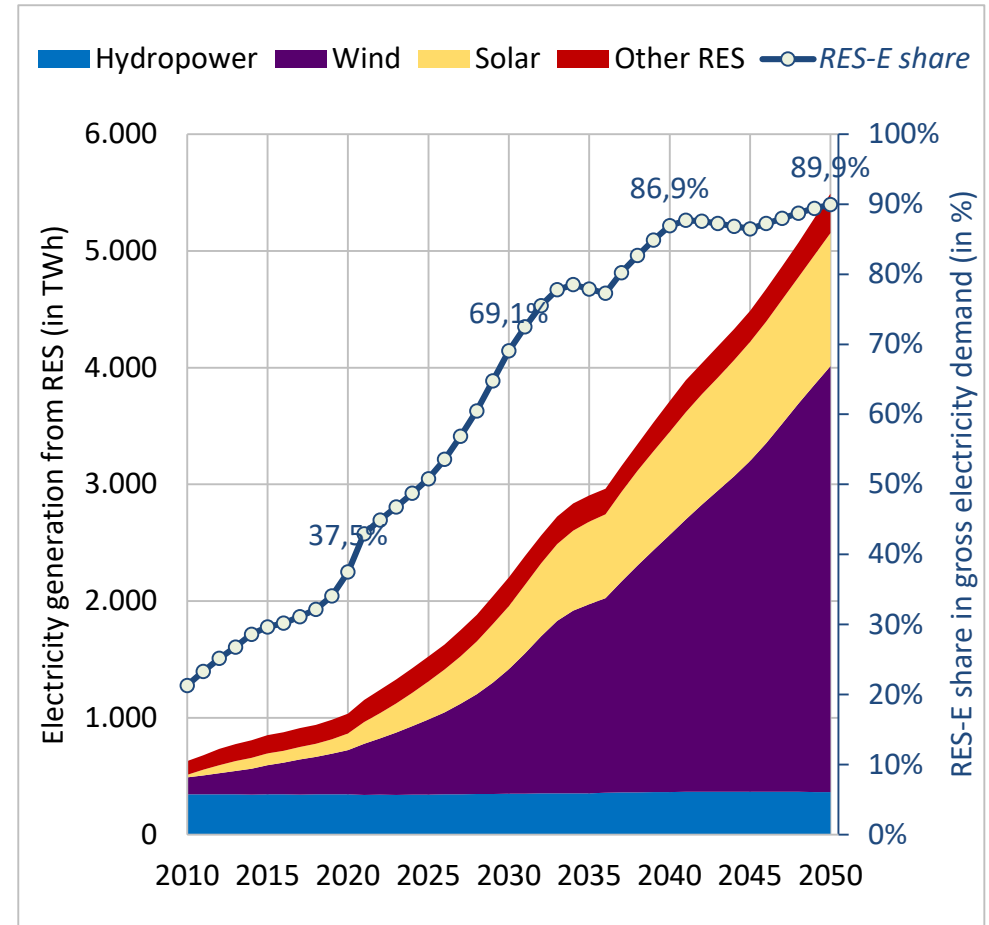


## Electricity demand and RES generation



- Full decarbonization of the whole EU economy leads to a **doubling of electricity demand** and implies a **strong RES uptake**
- The RES share is assumed to reach **ca. 69% by 2030**, and **90% by 2050** at EU level

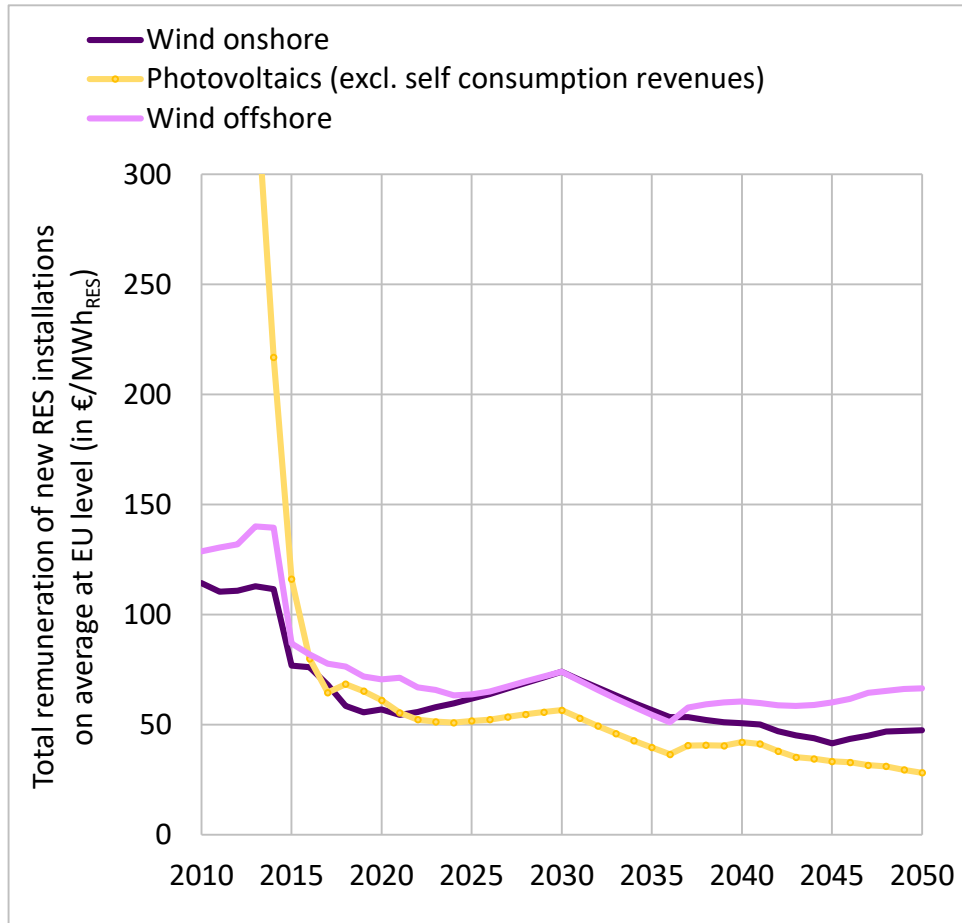
## RES technology mix and the overall RES share



# Model-based assessment of long-term trends in a changing electricity system: Cost & remuneration of key RES technologies at EU level (draft final results)



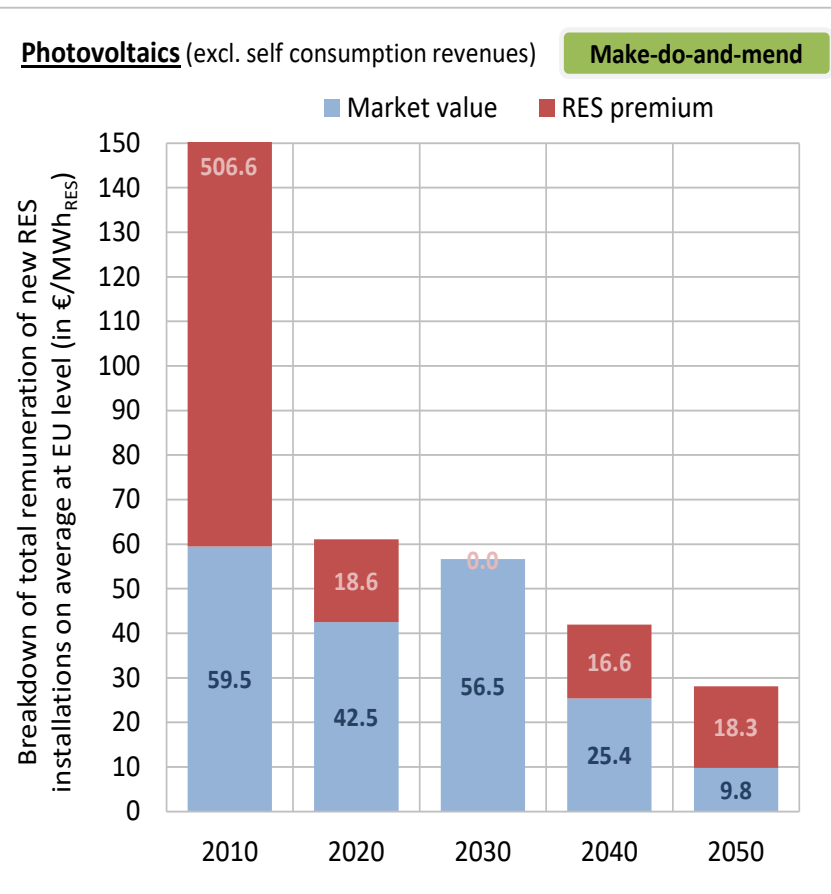
## Total remuneration (“LCOE”) of selected key RES technologies



- A strong decline in RES cost is presumed, in accordance with technological learning trends
  - The imposed strong RES uptake implies to use also less preferable sites, leading to a rise in cost
- In overall terms, **total remuneration of key RES technologies is generally still expected to decline in future years**

# Model-based assessment of long-term trends in a changing electricity system: Remuneration of key RES technologies at EU level (draft final results)

## Breakdown of total remuneration: the case of Photovoltaics



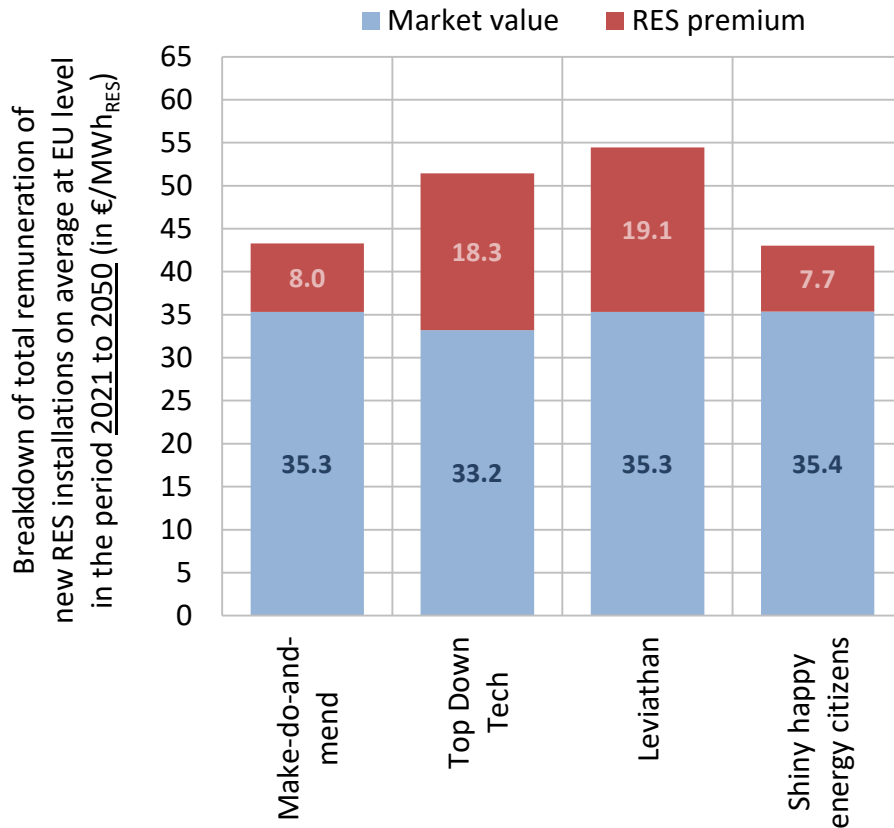
- By 2030, even under default (low) energy price trends, zero-subsidy auctions can be expected
- By 2040 and beyond, RES support is required to fill the remuneration gap, despite declining remuneration levels
  - Reason is the **decline of wholesale prices and, due to self-cannibalism, of market values**  
- as a consequence of the required strong RES uptake in accordance with decarbonization needs
- According to modelling, similar trends are applicable for wind on- and offshore, although market values are higher compared to PV

# Model-based assessment of long-term trends in a changing electricity system: Remuneration of key RES technologies at EU level (draft final results)



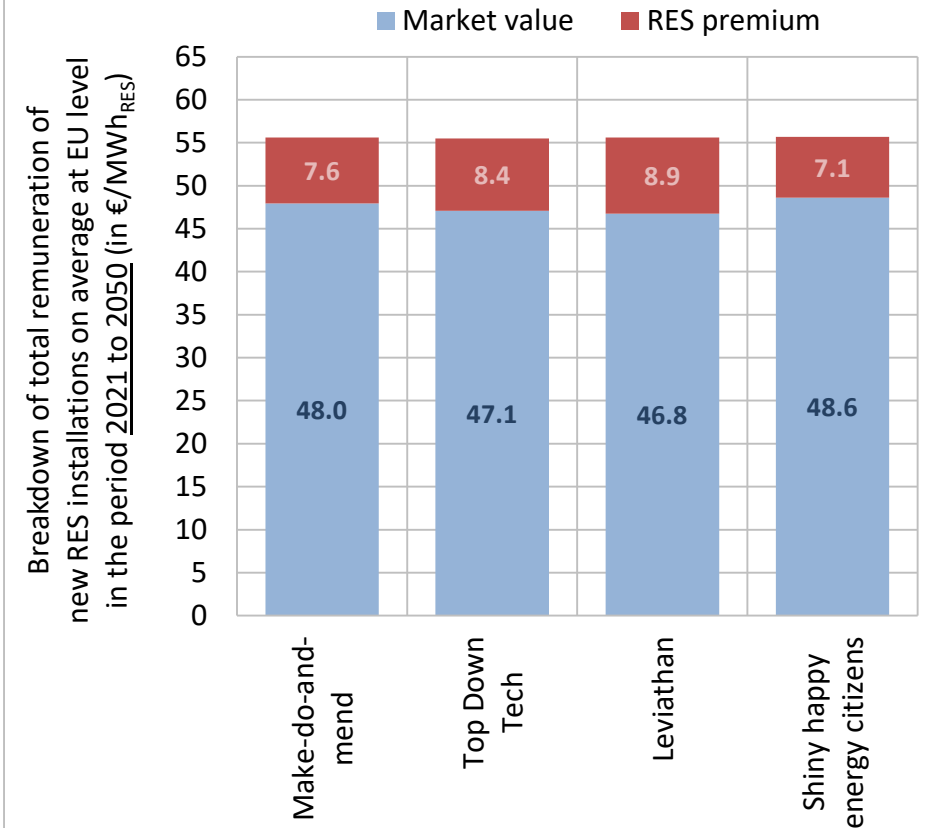
## The impact of long-term trends in a changing electricity system (exemplified for Photovoltaics and Wind onshore)

**Photovoltaics** (excl. self consumption revenues)



- Assessed long-term trends in a changing electricity system influence the remuneration of PV (due to less/more indirect support of self consumption)
- ... but only to a minor extent that of wind energy

**Wind onshore**





# Model-based assessment of long-term trends in a changing electricity system:

## Cost to consumer related to the strong RES uptake at EU level

(draft final results)

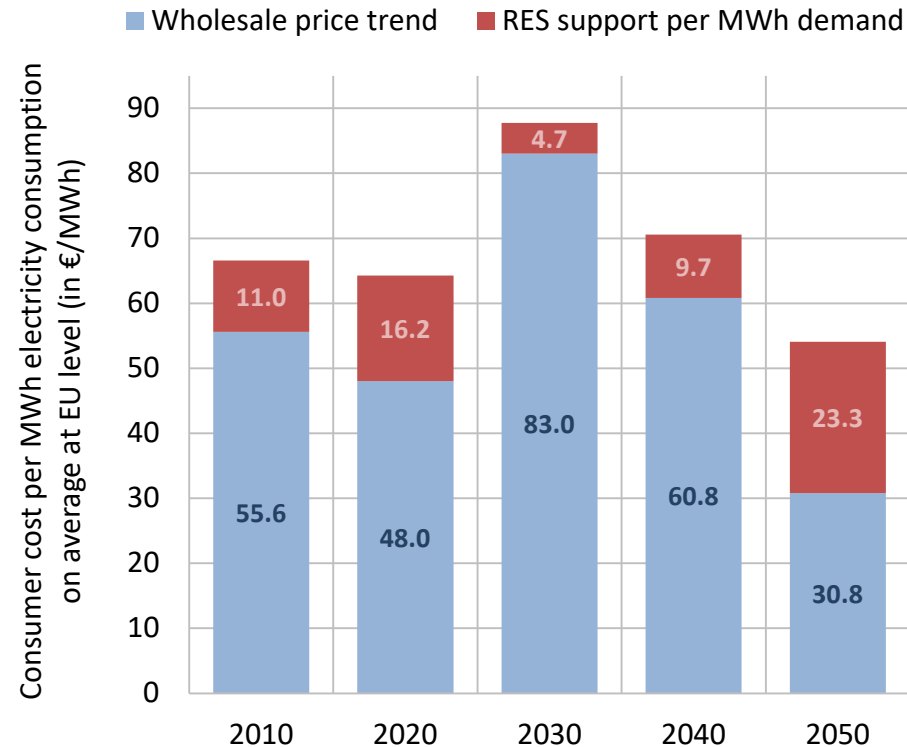


### Direct cost to consumer (incl. wholesale prices and RES support)

#### Cost-to-Consumer

(Wholesale prices + RES support)

Make-do-and-mend

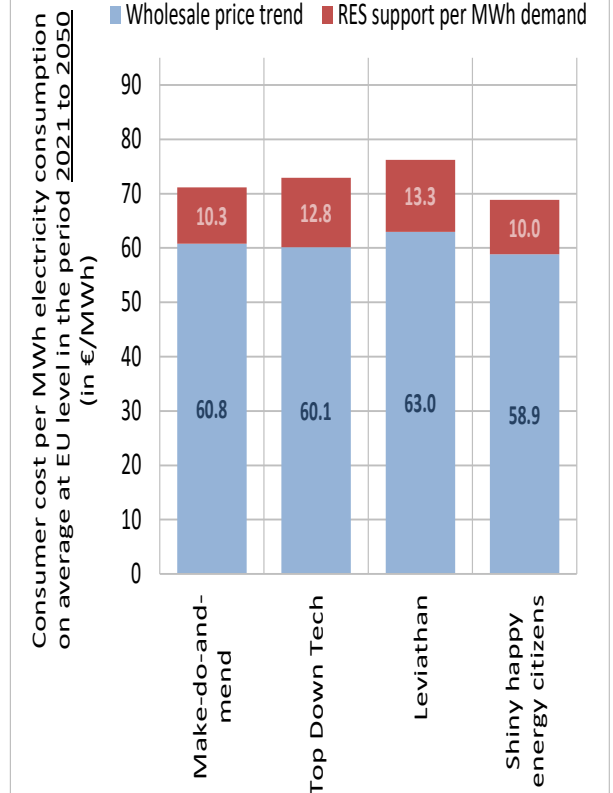


- **Consumer cost related to decarbonization and the corresponding strong RES uptake are expected to peak by 2030**
  - **Later on (post 2030), a strong decline can be expected, despite growing RES volumes and support expenditures**
- **Reason for that long-term trend is again the decline in wholesale prices driven by the strong RES uptake**
- **Sector coupling helps in RES integration (reducing curtailment and providing system flexibility) but hardly changes the picture in consumer cost**

### Impact of long-term trends

#### Cost-to-Consumer

(Wholesale prices + RES support)



WP8 Team:

**Jasper Geipel, Gustav Resch,  
Franziska Schöniger, Florian Hasengst**  
Energy Economics Group, TU Wien

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

Alfa Diallo

Regional Centre for Energy Policy Research (REKK)  
Technical University of Denmark (DTU)

[alfa.diallo@rekk.hu](mailto:alfa.diallo@rekk.hu)

Lena Kitzing, Mak Dukan

Technical University of Denmark (DTU)

[lkit@dtu.dk](mailto:lkit@dtu.dk)

## **AURES II**

Website: <http://aures2project.eu/>

LinkedIn: AURES II

Twitter: @auctions4res

Newsletter: <http://eepurl.com/gd42zz>



AURES has received funds for the years 2018-2021  
from the European Union's Horizon 2020 research and innovation programme  
under grant agreement no. 817629