

Do mature RES-E technologies still need dedicated support towards 2030?

European Parliament Workshop
“The new Energy Union Package: Ambitious Enough?”

Brussels, 07.12.2016

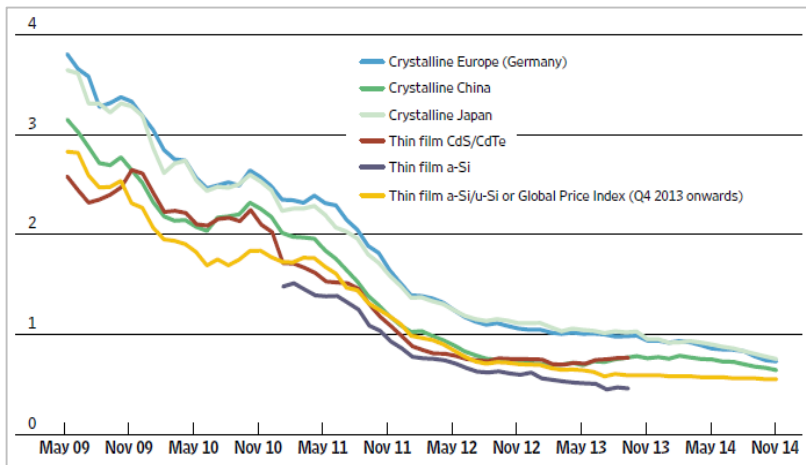
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Background

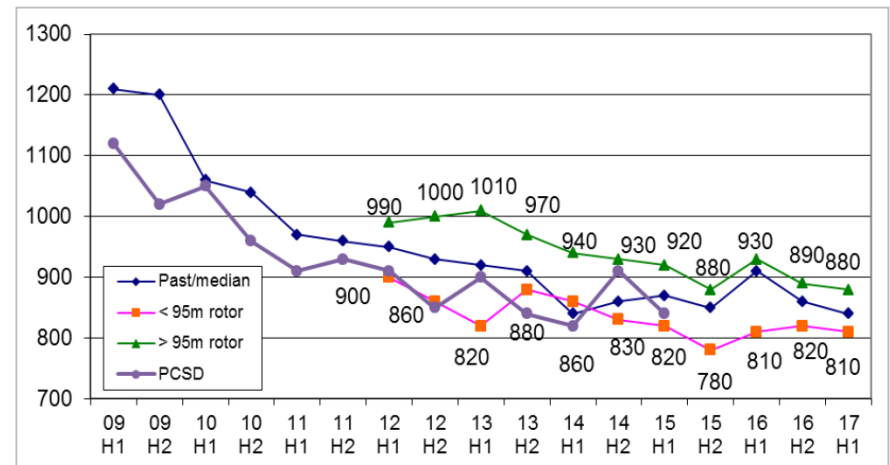
- Recent cost decrease of several RES-E technologies (esp. PV, onshore wind)
- Aim to reduce support costs for consumers
- Several stakeholders call for the phase-out of RES-E support (“ETS only”)

- PV module prices (USD2014/W)



Source: IRENA, 2015. Renewable Power Generation Costs in 2014

- Wind turbine prices (EUR/kW)

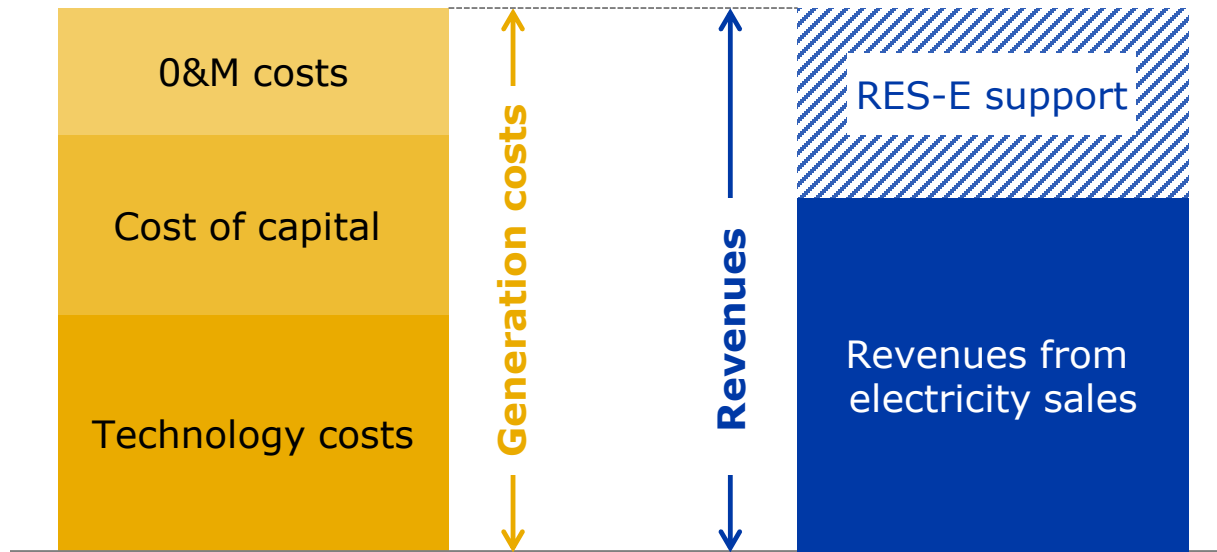


Source: JRC, 2015. Wind status report 2014. Technology, market and economic aspects of wind energy in Europe

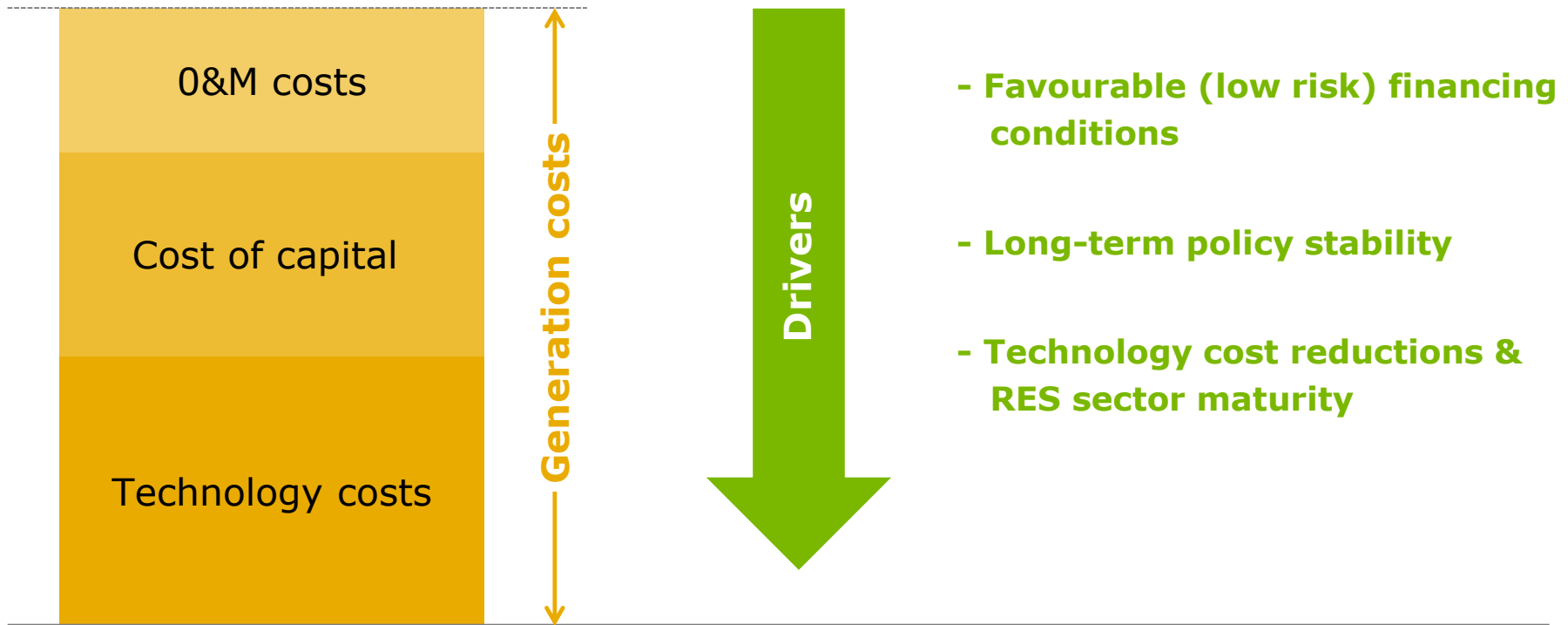


Currently RES-E support is still needed in addition to EU-ETS

- Despite falling technology prices, market revenues for RES-E are currently insufficient to cover generation costs; RES-E support is needed to bridge the gap



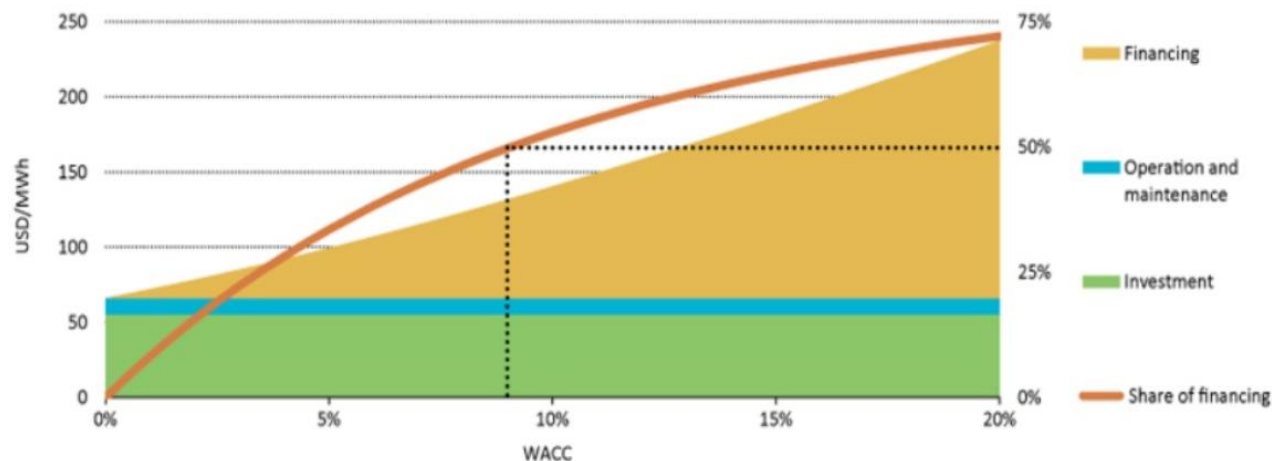
Drivers of RES-E cost reductions



RES-E support instruments can be justified with their ability to reduce cost of capital of RES-E investments

- Cost of capital can dominate the costs for capital-intensive wind and PV
- Cost of capital depends on investment risk (esp. market revenue risk)
- RES-E support allows for proactive risk mitigation by providing reliable revenues

Impact of weighted average cost of capital on the levelised cost of solar PV

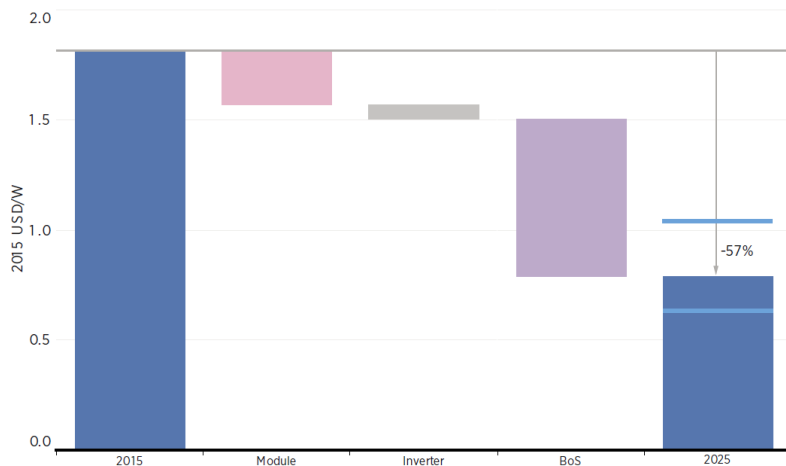


Source: IEA ETP 2015

RES-E support instruments can still be justified with their ability to enable technology cost reductions

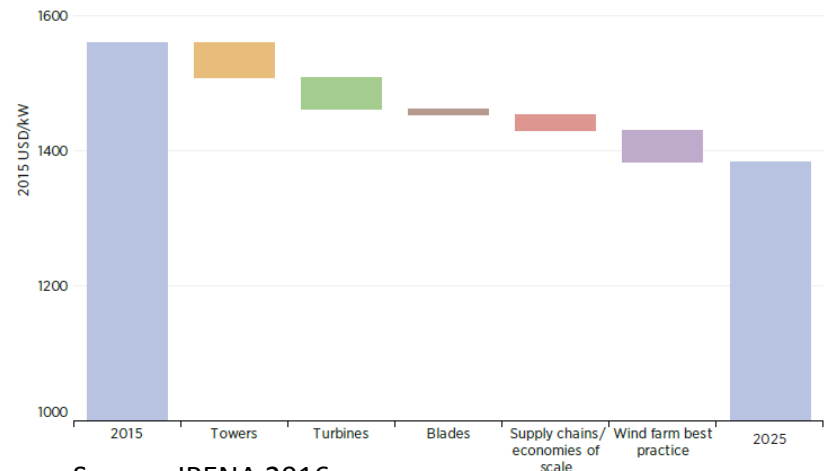
- Costs for Solar PV and onshore wind diverge considerably depending on the location and framework conditions
- Several studies (e.g. IRENA 2016) conclude that there is still room for cost reductions for both technologies

Cost reduction potential for PV up to 2025



Source: IRENA 2016

Cost reduction potential for onshore wind up to 2025



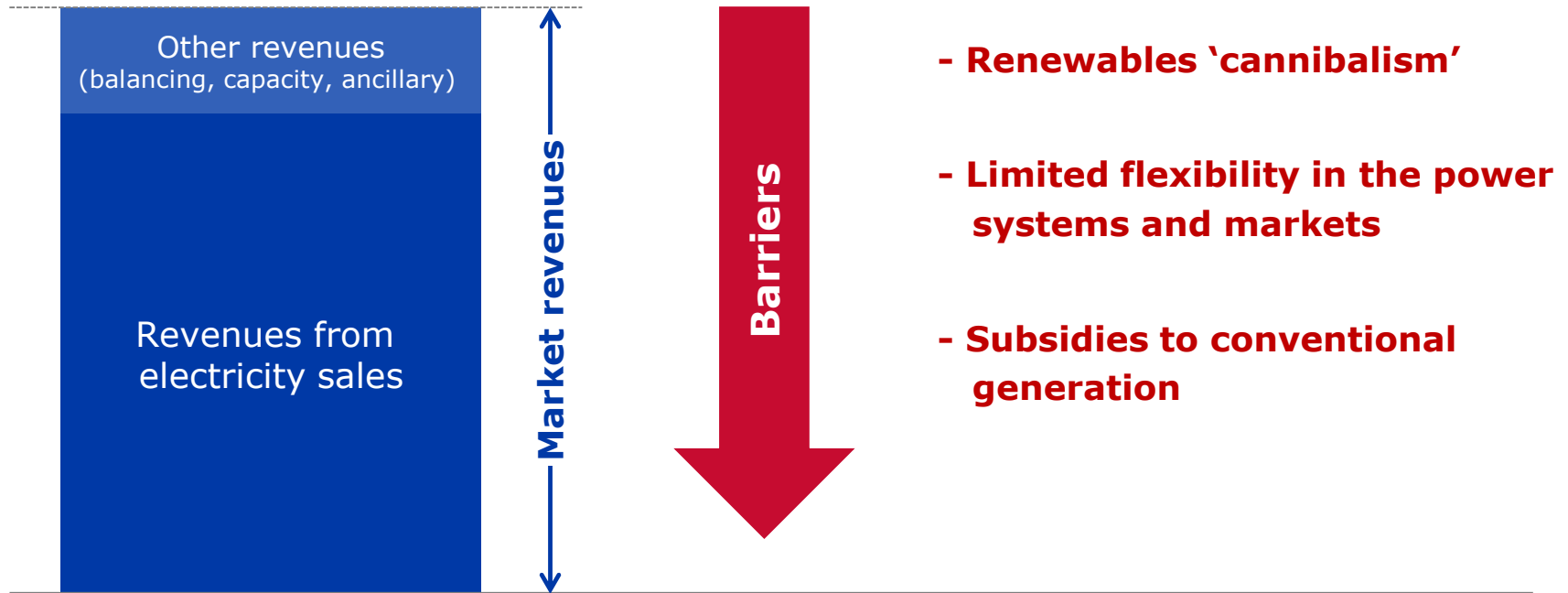
Source: IRENA 2016



Drivers for increased RES-E revenues



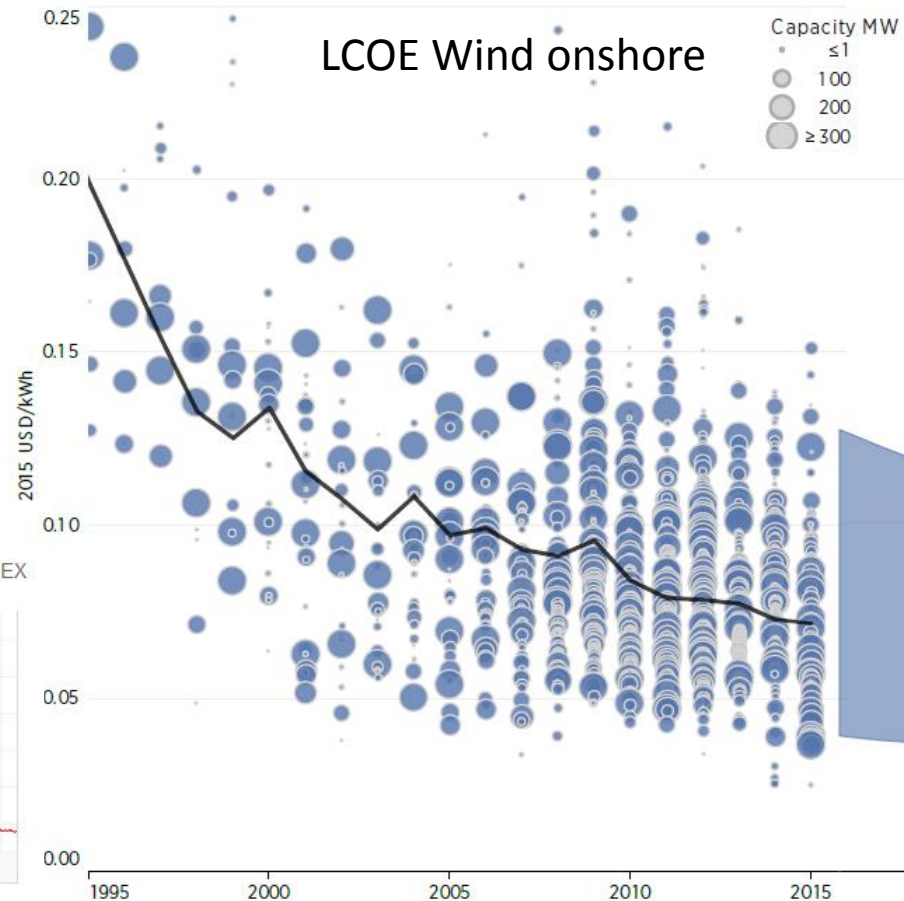
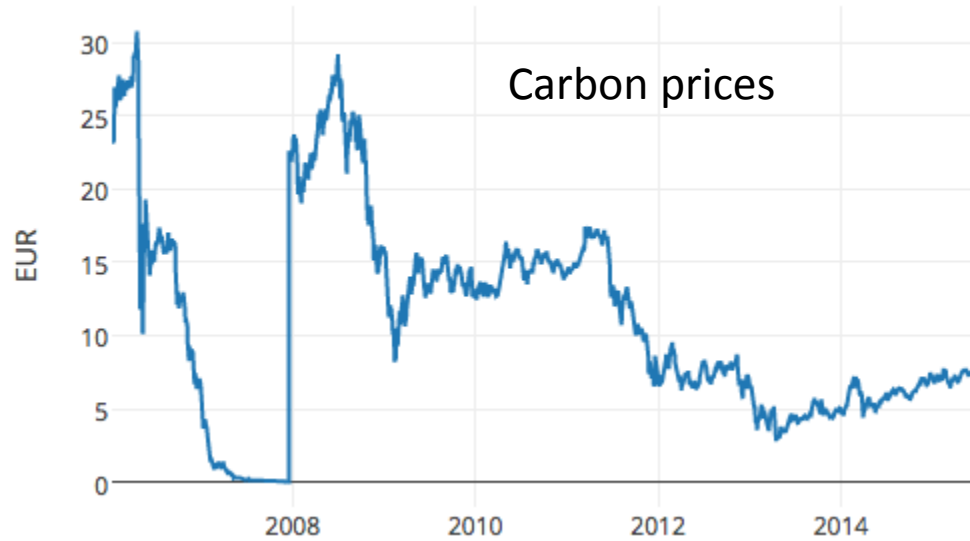
Barriers limiting RES-E revenues



Are RES-E the reason for low power and CO₂ prices?

- Some stakeholders argue that RES-E support has led to low carbon and power prices
- They therefore call for a phase-out of RES-E support in order to bring markets back to equilibrium

Is RES-E support still justified in markets out of equilibrium with low power and CO₂ prices?



Sources: Sandbag, IRENA, Green-X



Co-funded by the Intelligent Energy Europe Programme of the European Union

RES-E development was not the main reason for downward pressure on power prices in the past.

- Various reasons for over-supply: Economic crisis, low carbon prices, lack of coordination between investments in conventional generation capacity , merit order effect of RES-E
- Challenging to identify proportion to which each factor contributes to the price drop experienced in European markets
- Germany: RES-E feed-in only responsible for a reduction of power prices by roughly 10% between 2007 and 2013 (-6.28€/MWh out of 65,69€/MWh)¹.

Measures to get back to equilibrium

- Increase flexibility of power system and interconnection capacity between MSs
- Increase sector coupling between electricity, heating and transport sectors
- Implementation of electricity market reform esp. improved market integration

¹ Kallabis, T.; Pape, C.; Weber, C. (2016): The plunge in German electricity futures prices – Analysis using a parsimonious fundamental model. In: Energy Policy 95, S. 280–290.

RES-E development only had a minor impact on downward pressure on carbon prices assuming a coordination of targets.

- Strong overestimation of effects of RES-E development on ETS prices, since coordination between ETS and RES targets is ignored
- Assuming coordinated targets, only RES-development above the indicative trajectory should lead to reduction in carbon prices
- RES are “on track” for EU in total - substantial overachievement of 2020 RES-target is unlikely
- Ex-post analyses show limited impact of RES on ETS-prices. Other factors such as the economic crisis, fuel switching from coal, lenient targets are main drivers of low CO₂ prices (Ellerman 2013, I4CE et al 2015, EC 2014b).

Measure to get back to equilibrium

- Implement market stability reserve (MSR) to increase prices

Will a reformed ETS and power market design provide sufficient revenues for RES-E investments?

- Market stability reserve within the ETS and improved power market design should provide sufficient revenues by 2030 for most RES investments according to the COM impact assessment (66% of all RES investments financed by market revenues in 2030)

However:

- Revenues from power markets are highly uncertain
- ETS unlikely to provide stable high prices before 2030 (e.g. 2016 survey by the International Emissions Trading Association expects an average price of about 18€/tCO₂ between 2020 and 2030 (IETA/PwC 2016).
- Power markets not yet in equilibrium / not yet fully flexible for RES integration

→ Most analyses show that RES remuneration schemes can achieve a unit of RES investment at lower costs than power markets alone due to risk mitigating nature

The use of RES-E targets and policies does not necessarily imply higher compliance costs than a CO₂-target based on ETS only.

- Dedicated RES-E support allows for proactive risk mitigation and leads to reduced financing costs → high relevance for capital-intensive RES-E
- EC Impact Assessment 2014: Similar total system costs for a scenario without dedicated RES-E support (assuming an energy efficiency target of 30%) and a scenario assuming a 30%-target for RES with RES-E support: 14.45% of GDP
- Specifically total system costs of power sector reduce with RES and EE policies

Annual system costs		2020	2030	2050
GHG40	bill. € ₂₀₁₀	233	221	264
GHG40 EE30 RES30	bill. € ₂₀₁₀	231	219	259

Source: Fraunhofer ISI 2014

In situations of oversupply in power and carbon markets, RES-E support for mature technologies should be **flexible but stable!**

- Dedicated RES-E support allows for proactive risk mitigation and leads to reduced financing costs → high relevance for capital-intensive RES-E
- On the other hand the amount of policy driven RES-investments have an impact on other market participants and need to be predictable
- Compromise between keeping capital costs low and providing stable signals to markets: **RES auctions can be a tool for flexible RES support.**
 - Volume control gives investment stability to all market parties
 - Price will be determined by markets and therefore the premium will be zero when target is reached
 - If auctions are designed correctly, targets can be reached at lowest costs for EU consumers

Summary

- The suitability of different policy approaches to achieve climate and energy policy targets, including targets for renewable energies, depends on
 - the dynamic aspects of technology development
 - the impact of policies on investment risks and financing costs and
 - the specific circumstances in the various market areas
- RES-E support for mature RES-E is still appropriate
 - Cost reduction potential exists and technology not yet fully competitive
 - Dedicated RES-E support lowers capital costs and therefore costs of the energy transition
 - In situations characterised by over-supply, the continuation of RES-support with auctions allows to limit support volumes without endangering investment security

Reasons for using RES-E support in addition to EU-ETS

EU ETS

Cross-sectoral cap
& competition

Focus on static
efficiency

RES-E support

Sector-specific
support

Focus on dynamic
efficiency

Risk reduction
potential