Transition from the feed-in tariff system to the premium model

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Workshop "**Promotion of PV initiatives**"

PROSPECT2030

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1. Uptake of renewable energy sources
2. Feed-in tariffs and their impact
3. Market oriented mechanisms
4. Premium model
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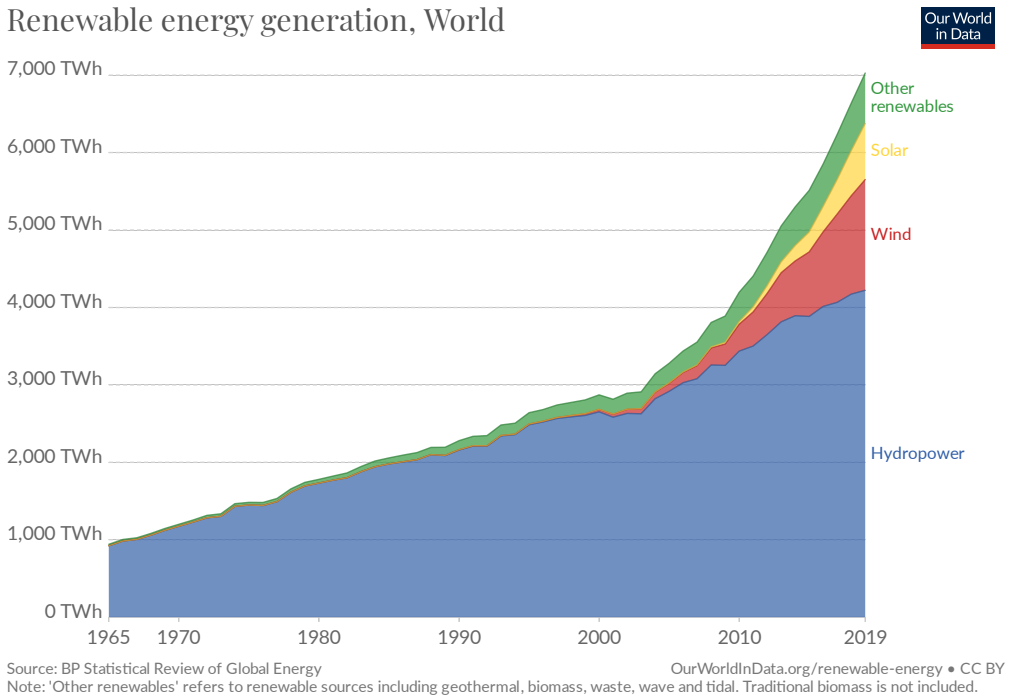
7. Conclusion

Introduction – uptake of renewable energy sources

- Decrease of dependence on fossil fuels
  - Pollution
  - Availability of reserves
  - Geopolitical situation
- High initial cost of undeveloped technologies
  - Lower FLH → Higher LCOE
- Introduction of incentive mechanisms
  - Investment-based
  - production-based



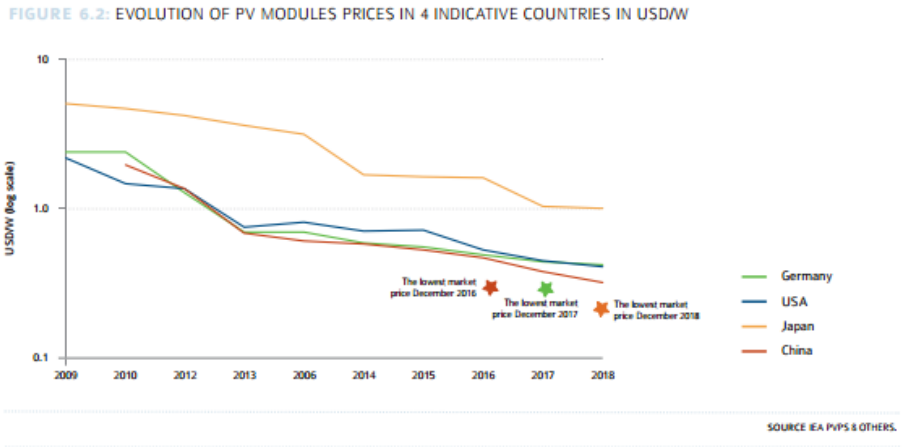
Feed-in tarrifs

- Energy supply policy focused on supporting the development of new RES projects
- Production based subsidy
- **Guaranteed fixed price** for electricity produced in RES plants
  - Guaranteed access to the grid, i.e. all produced electricity must be delivered to the grid
  - Long term power purchase agreement, typically 15 – 25 years
- Based on the actual levelized cost of renewable energy generation
  - Depends on geographical area, resource, technology, size of plant…
  - Should be reduced with technology development
- In general, **higher than market prices**
- Proven to be good for market uptake
  - Increase in installed capacity → decrease of cost of techology

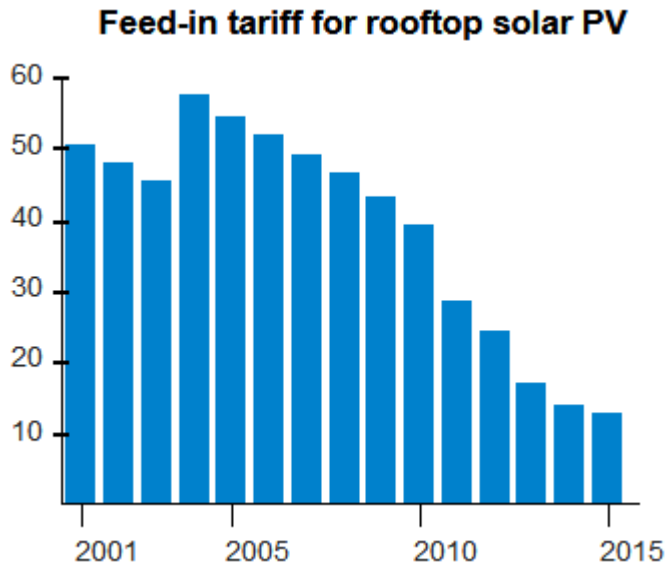
Feed-in tarrifs

- Level of feed-in tariffs could be good mechanism for goals achievement
  - Increase of feed-in tariffs →increase of profitability of projects → accelerate the market
  - Decrease of feed-in tariffs → reduce of profitability of projects → reduce market interest
- Coupled with markets caps, ie. limited capacity in FiT system
  - Decrease impact on consumers
- Independent of the market
- Additional cost for the system, based on the principle "*consumer pays*"

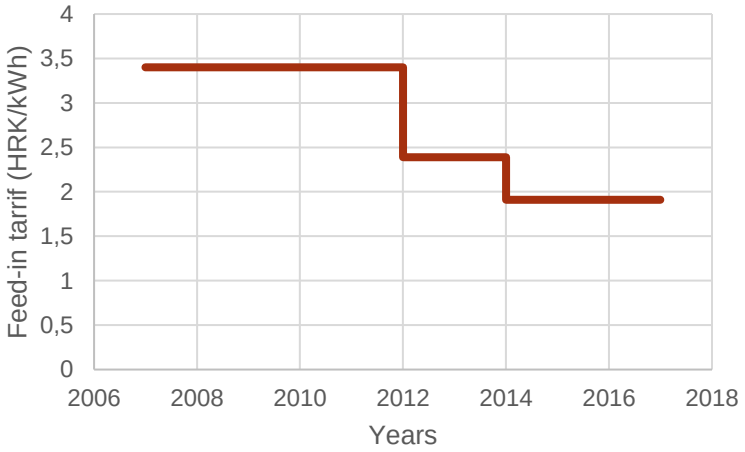
Feed-in tarrifs – decrase over time



Feed-in tariffs for small rooftop PV systems (< 10 kW) in Germany



Feed-in tarrifs for small scale PV plant (< 10 kW) in Croatia



Feed-in tarrifs

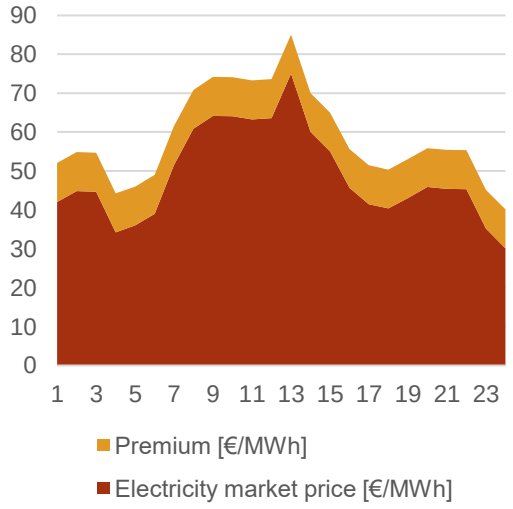
Pros (+)	Contras (-)
• Robust incentive mechanism • Simple and without • Secure and stable income • Reduced risk for project developers • Encouraging technologies at different stages of maturity • Good for emerging markets	• Not market oriented mechanism • Hard to follow technology development (overpayment, underpayment) • High cost for overall system • Can lead to high increase of electricity prices for consumers • Distortion of wholesale electricity prices

Shift towards market

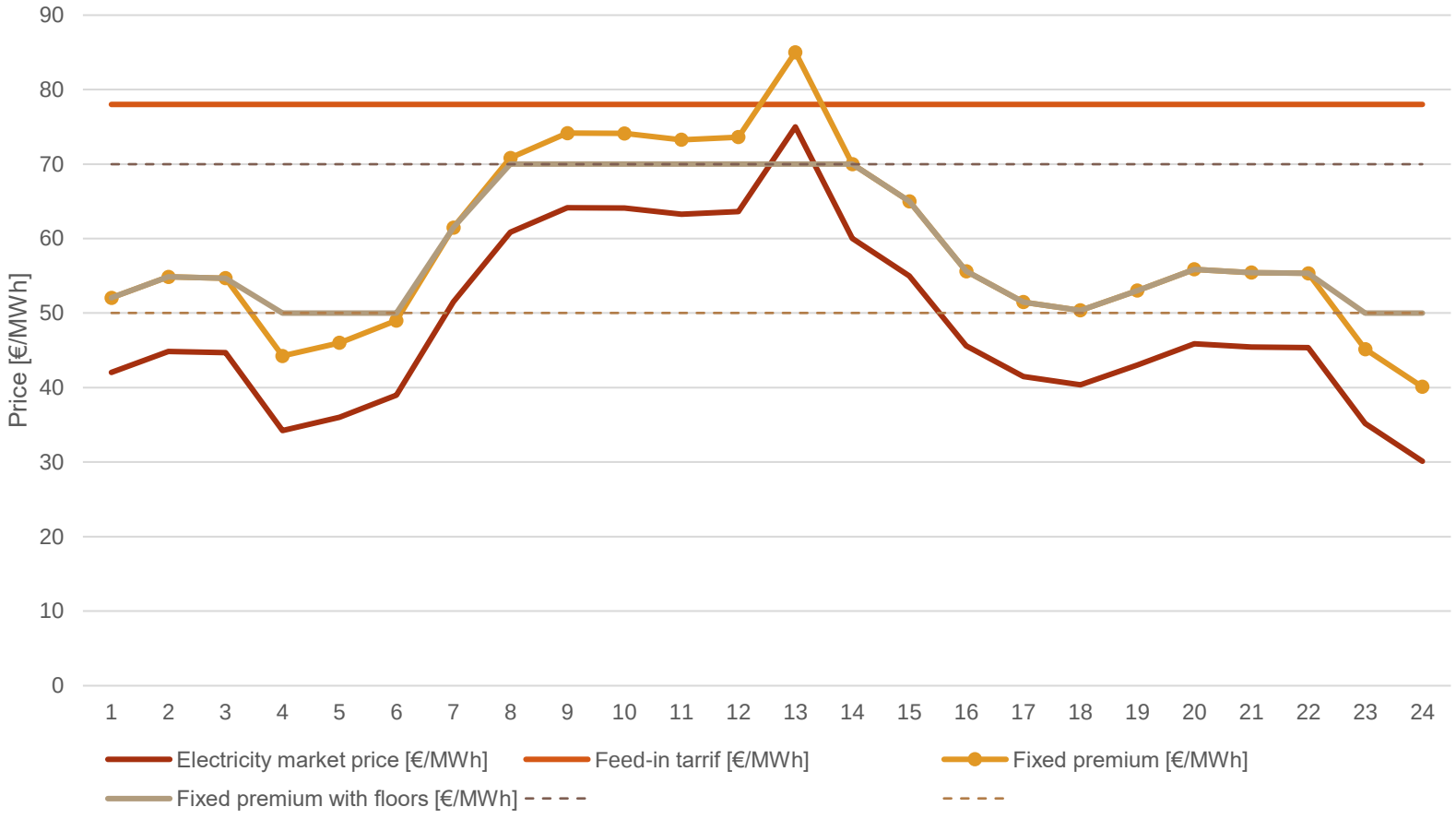
- Guaranteed fixed prices for RES distort market relations
  - RES projects are in privileged position on market
- Mature technology does not need any subsidy for market
  - However, most of RES technologies needed some form of subsidy
  - Depends on the market prices
  - *"Electricity prices will only go up"*
- Green certificates - tradable commodity proving that certain electricity is generated using RES
  - Obliged share of RES in mix
- Market premiums and auctions
  - Further decrease of electricity price
  - Closing the gap to the market

Market premium

- Market premiums
  - premium for RES electricity added over market price
  - RES payment depends on market price!
  - Auction or public tenders for the award of premium
- Risk of price volatility on RES developer
- Lower impact on the system
  - Subsidies independent of market price variations
  - fixed premium – overall level of subsidies can be accurately predicted
- Market operator pays premium as additional income to RES operator
- RES operator can sign PPA with any market player
  - In some cases, higher contracted prices

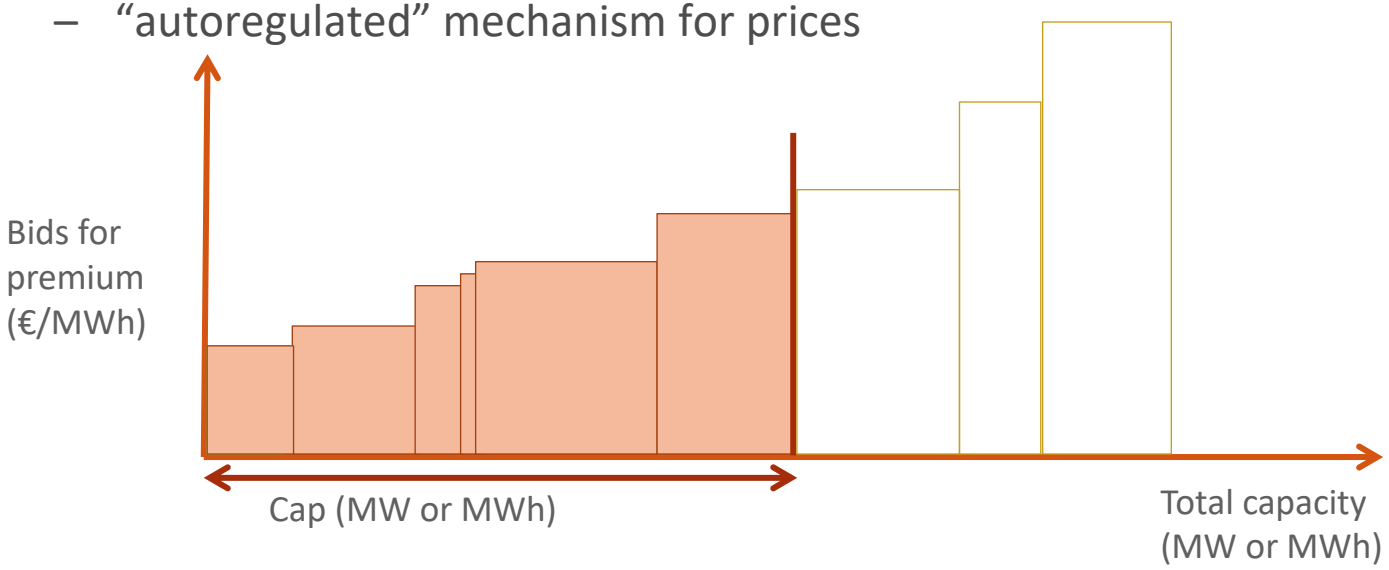


Difference between FIT and FIP



Auctions

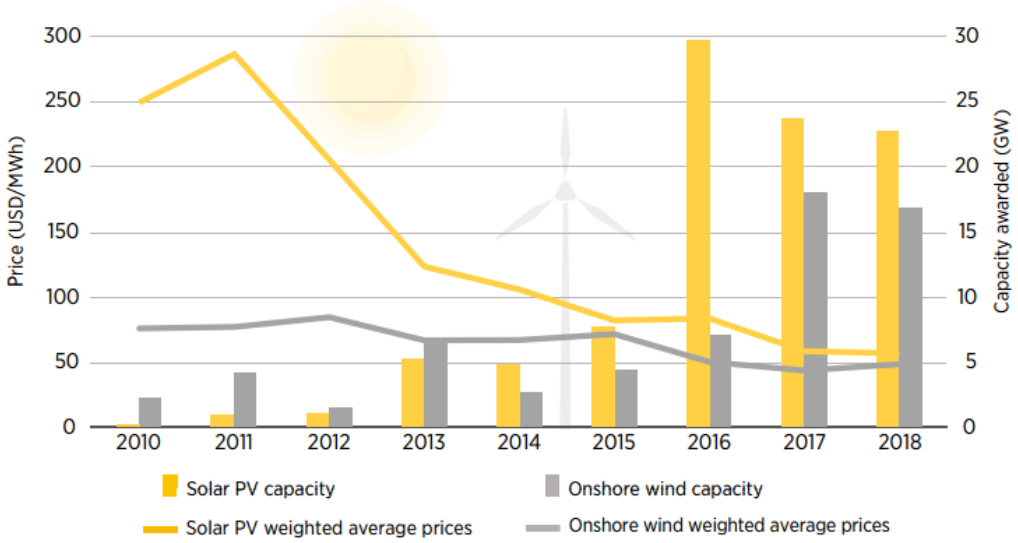
- Auctions (tenders) for the award of premium
- *Pay-as-bid* system – developers place their bids for electricity price or for premium
  - In interest of developers is to achieve highest possible price, but also to be in cap
  - "autoregulated" mechanism for prices



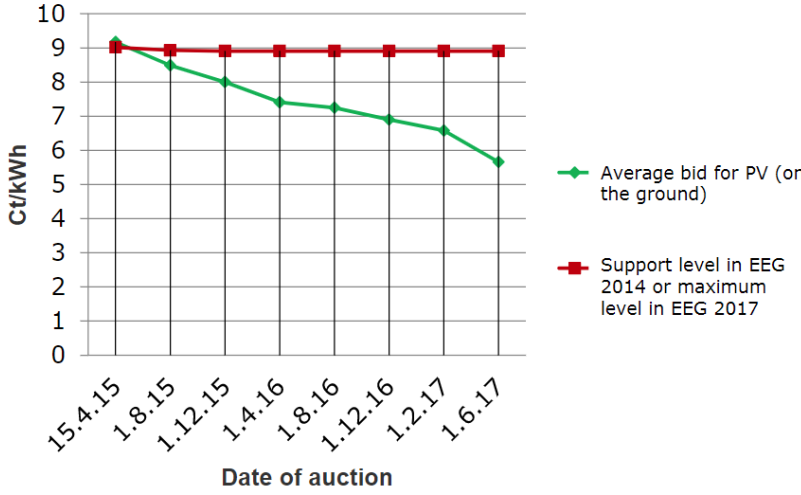
Auctions – impact on price

- Auctions for feed-in premium had decreased average prices for RE projects
  - Impact of bidding process – lowest price wins
  - Reduced cost for the system
  - Economically "*better*" projects go first

Figure 1.2 Global weighted average prices resulting from auctions, 2010-2018, and capacity awarded each year



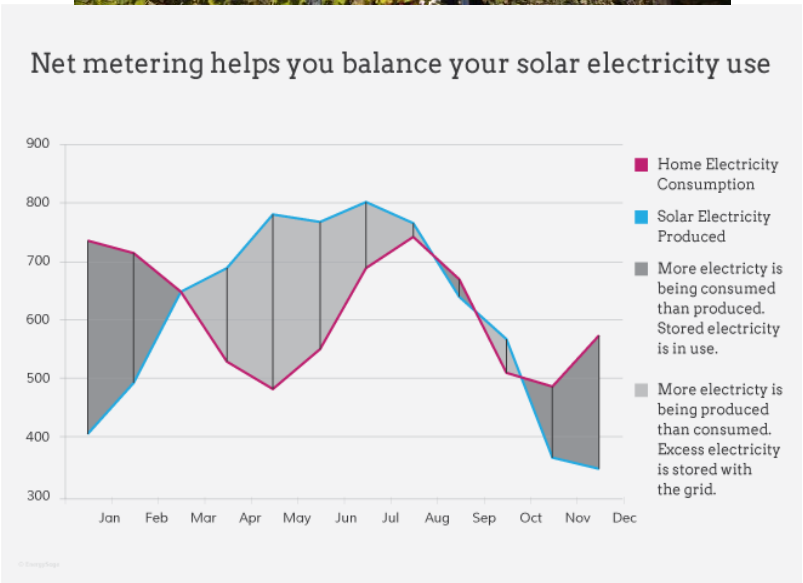
Source: IRENA Database, n.d., based on BNEF, 2019a and PSR, n.d.



IRENA: Renewable energy auctions: Status and trends beyond price

Small scale systems on market?

- Can 10 kW PV plant fit on the market?
- Guaranteed price scheme, limited to capacity cap
- Net metering systems
  - Production and consumption profile
  - Balance of the production and consumption over period
  - For unbalanced production grid acts as temporary storage
- Future: energy communities



Conclusion

- Feed-in tariffs stimulated development of RES market
- Feed-in premiums
  - Closing the gap to electricity market
  - Decrease of prices and overall cost of RES integration
- Small scale systems still need guaranteed price
  - Simplicity of support system over profitability of plant
- Net metering systems
  - Proven for small scale systems
  - Impact on grid operators by reducing grid-fee

THANK YOU FOR YOUR ATTENTION!

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