

New challenges to tariff regulation in the power sector

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What do we have to face?

Change and challenge on all levels

There are several drivers which make the change of the energy system inevitable:

- **Climate & Decarbonization policy**: „reaching the EU objective (...) of reducing greenhouse gas emissions by 80-95% by 2050 compared to 1990 will require **a revolution in energy systems**” (European Council, 2011) – and the revolution has already started!
- **Technological development** – new technologies and energy resources are a necessity and a given at the same time
- **New approach to the access to electricity** – electricity access is already well established within the framework of *human rights*, primarily in the context of energy poverty
- **Market integration** in the EU
- **Changing role and power of the consumers**:
 - Appearance of the prosumer
 - Consumer choice has greater impact: only consumer-centered markets with involved customers can grow, **and consumers are thirsty for innovation answering their needs**



Translating the challenges into new market design

The decarbonization and the new technologies together move the now centralized power system towards a decentralized model, where **roles, interest and responsibilities of the different market players** (especially DSOs and consumers) **will CHANGE.**

The power system has to **adapt to**:

- an increased ratio of intermittent (non – dispatch-able) renewable generation units
- Growing volume of distributed generation, potential appearance of autonomous energy communities
- Increased ratio of generation capacity with special support mechanism (RES, CHP, micro generation, „prosumers”) – out of competition: shrinking national wholesale markets
- Low commodity prices – lack of incentives for new generation investment (with market conditions): Generation adequacy and system flexibility concerns
- More active demand-side response
- New storage technologies + distributed storage (e-mobility)

Possible solutions are offered by a range of new technologies:

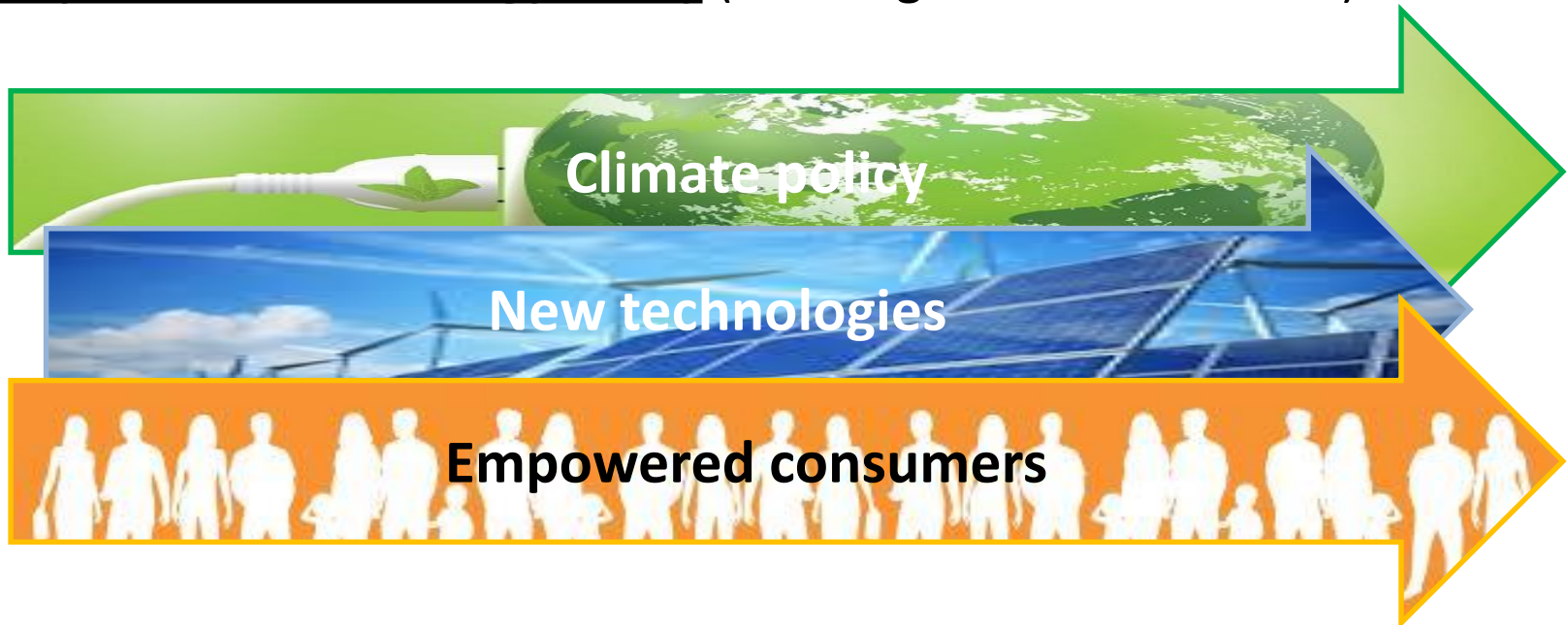
- Distributed Energy Resources
- Demand Side Response
- E-mobility and H-mobility
- Energy storage
- Smart grids and smart metering
- Home Area Network and the Internet of Things

**But these have to be
regulated well to work well!**



The role of the Policy Maker...

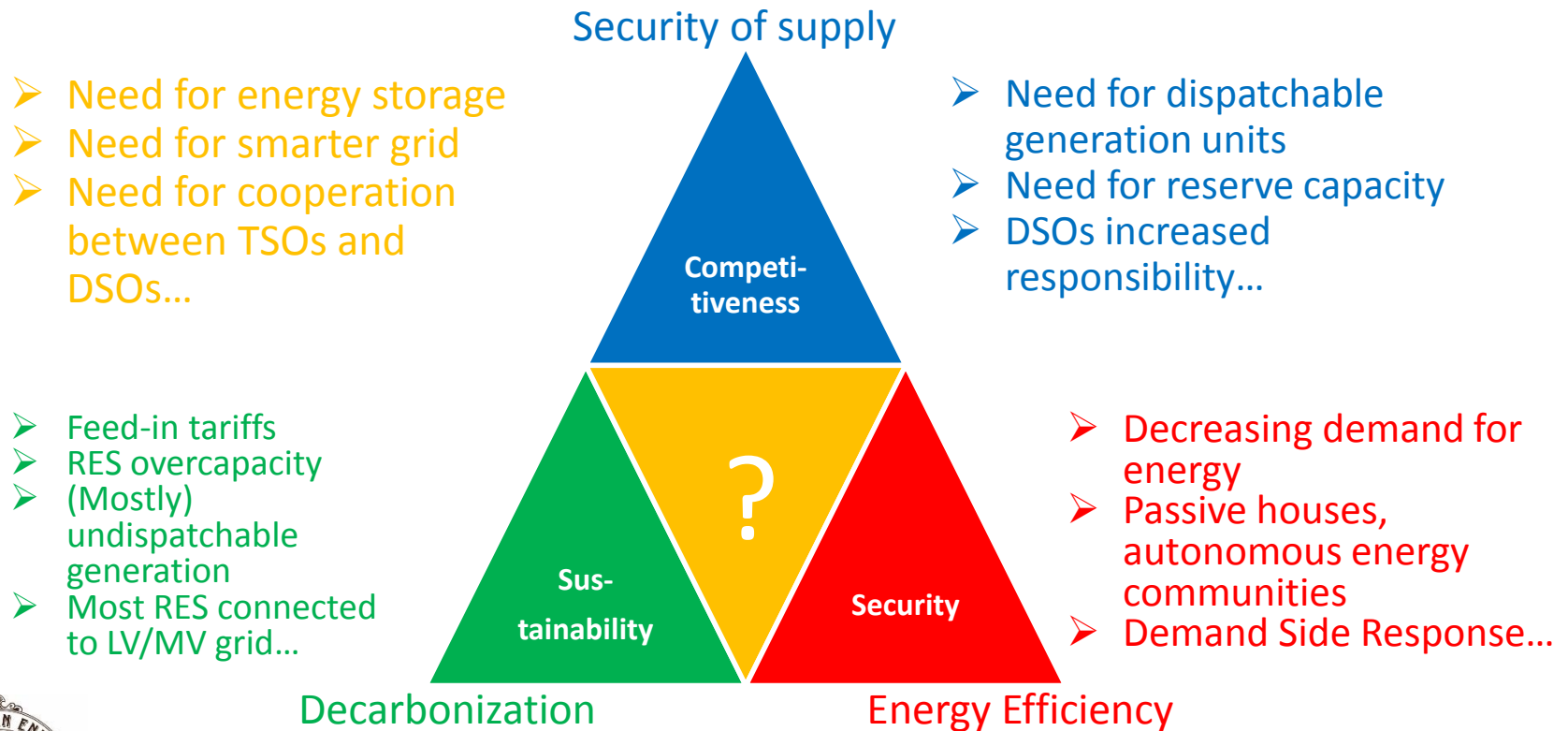
The drivers of change have to be understood and then answered by a **complex but clear Energy Policy** (the longer term the better)



One thing is certain: **the possibilities in innovation**
must be exploited!

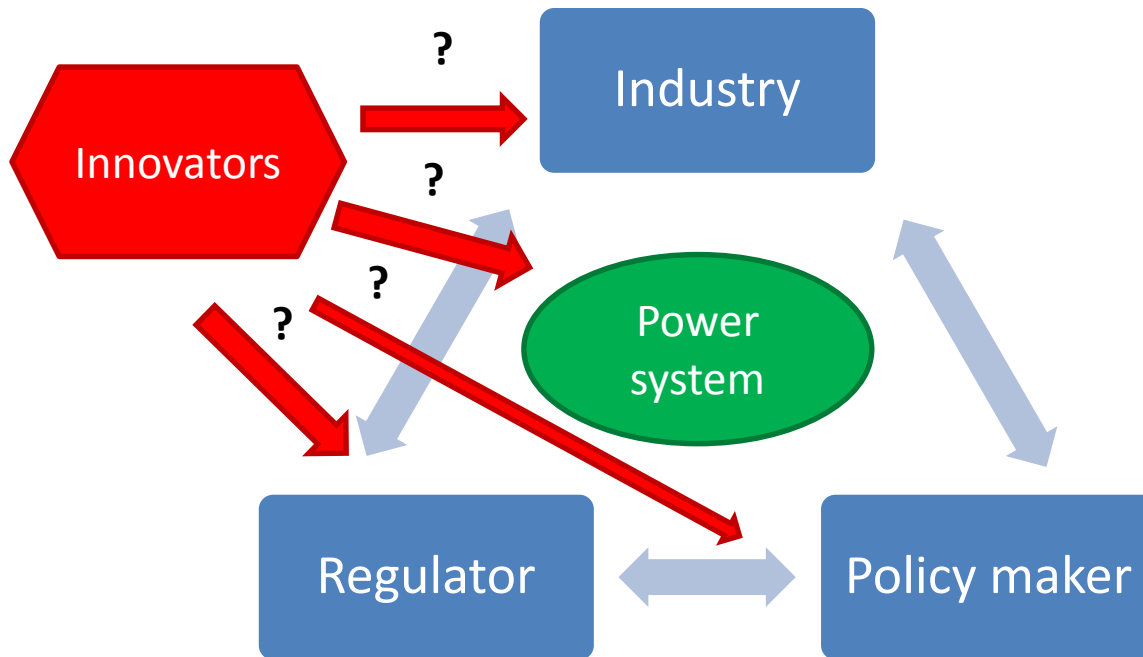


There are several, often conflicting goals to be achieved: decarbonization and RES integration while maintaining security of supply and level of service, thus, increasing the flexibility of the system. Market players aiming for the same goal might have different interests as well. Also, the policy maker has to consider more general aspects like competitiveness and load capacity of the economy and the (vulnerable) consumers. Still, it has to develop **a consistent Energy Policy with clear priorities**, however complex a task that may be.



... and that of the Regulator

The Regulator has to convert the Energy Policy into **good, well-defined, incentivizing regulation.**



- Regulators cannot create innovation, but they can **foster the realization of innovative ideas** – failure to do so affects not only consumers adversely but may lead to the depreciation of the national network assets
- **Innovators have to be channeled into the system** – or else they may challenge the system (e.g. Uber, AirBnB)!



Challenges for the Regulator

Problem	Answer?
Lack of technical/market knowledge on the Regulator's side, unpredictable technological development	Continuous <u>consultation</u> with researchers, industry experts, technology developers and customer representatives
Unpredictable direction of innovation, market development, customer needs	<u>Flexible regulation</u> to allow for the creation of new markets; not yet market mature technologies could be developed by the regulated companies („DSO grey zone”)
Low willingness to invest in the energy industry because of strict regulation (prices included) and low supply and demand side incentives	Regulators should develop <u>incentivizing regulatory methods</u> for R&D and innovative investment
Investment in new technologies is risky	Analyze and consider <u>risk sharing</u> methods between regulator/regulated industry/consumers



Problem	Answer
In certain cases, lack of regulation may prevent market entry or create disadvantage for newcomers	Exploring and analyzing such situations; developing <u>regulation</u> where it is required (e.g. storage technologies); create <u>level playing field for new technologies</u>
Market players with opposing interests: DSOs vs. Energy efficiency measures/solutions or RES	Regulated companies/DSOs should be <u>actively incentivized to promote and support the prioritized policy option</u> (E-mobility/DSR/RES integration/etc.), e.g. by decoupled rates
Uncertain benefits on new technology investments	Prepare CBA and develop pilot projects to test; invest where the pilot projects show positive results
Consumer habits and needs may change drastically quickly	Continuous <u>monitoring of consumer expectation, satisfaction and needs</u> and developing quality standards and incentives for regulated companies to meet the needs



Challenges that may be tackled by tariff regulation and incentives

Since regulation is a mean to realize Energy Policy goals, and tariff regulation is only a part of the regulatory toolkit, there are no general solutions fit for every purpose. However, when aiming for innovation there seem to be some generally valid approaches:

1. Optimally, for setting a DSO tariff regime, regulators should have a technical reference network model serving as a basis for the costs of efficient network operation.
2. Tariffs preferring active network management could result in cost saving on the long run in case of higher e-mobility and end energy efficiency solutions penetration.
3. Classics: transparency, predictability, regulatory credibility. Network investments (and building energy storage) are capital intensive and rather slow. Without regulatory commitment (e. g. shown through costs being recognized as justified costs), regulated companies will not invest in new technologies with high risk.



4. Ex ante cost recognition: preferable for high risk investments
5. Examination of costs: do they have an OPEX or CAPEX nature? In certain cases, in a RoR type of tariff regulation, TOTEX based incentives may best fit the regulatory purpose.
6. Relating to IT based innovation, higher depreciation rates may work better
7. „Price cap” regulation: may be better for situations where technological change is rapid and/or unpredictable and the information on demand is scarce
8. Cost plus pricing in relation to innovative technologies is able to minimize the risks of the regulated entity
9. Tariffs:
 - a) should be cost sensitive
 - b) should be set coherently on all voltage levels
 - c) should be set for a relatively longer term (4 years), but the possibility of correction should be granted regularly (yearly)
 - d) should support prosumers and encourage demand side response
 - e) should not discourage energy efficiency solutions
 - ^ should always consider policy priorities!



Thank you for your kind attention!



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