

Energy Trilemma



What hinders and what benefits electricity market?

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Storyboard

Energy Trilemma - an assessment tool for energy sector

Objectives of Electricity Market

Interconnections/international trade

State Aid in the EU power market

ENERGY TRILEMMA

Energy Trilemma

Balancing the 'Energy Trilemma'

Energy Security

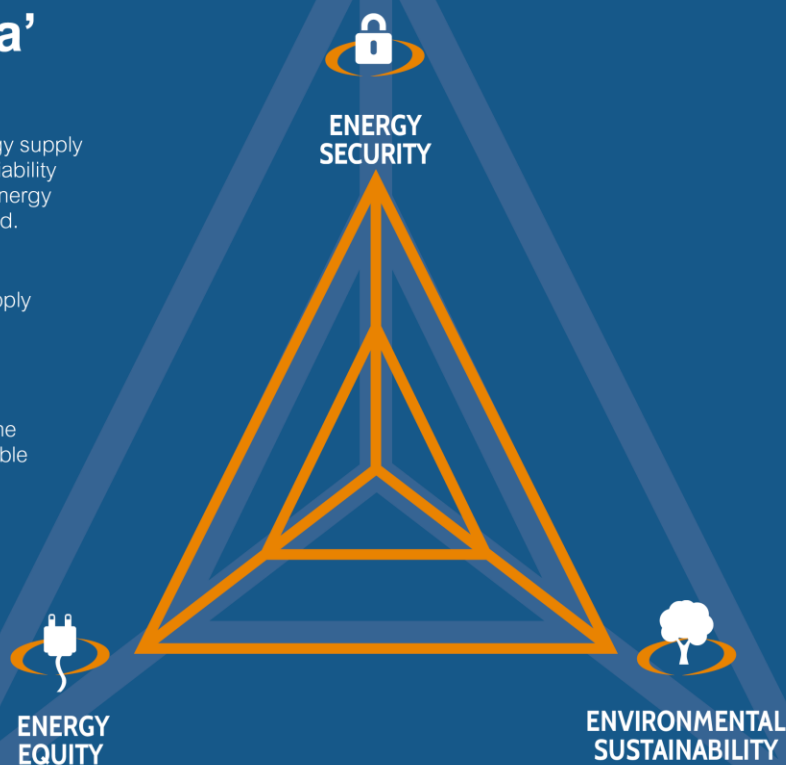
The effective management of primary energy supply from domestic and external sources, the reliability of energy infrastructure, and the ability of energy providers to meet current and future demand.

Energy Equity

Accessibility and affordability of energy supply across the population.

Environmental Sustainability

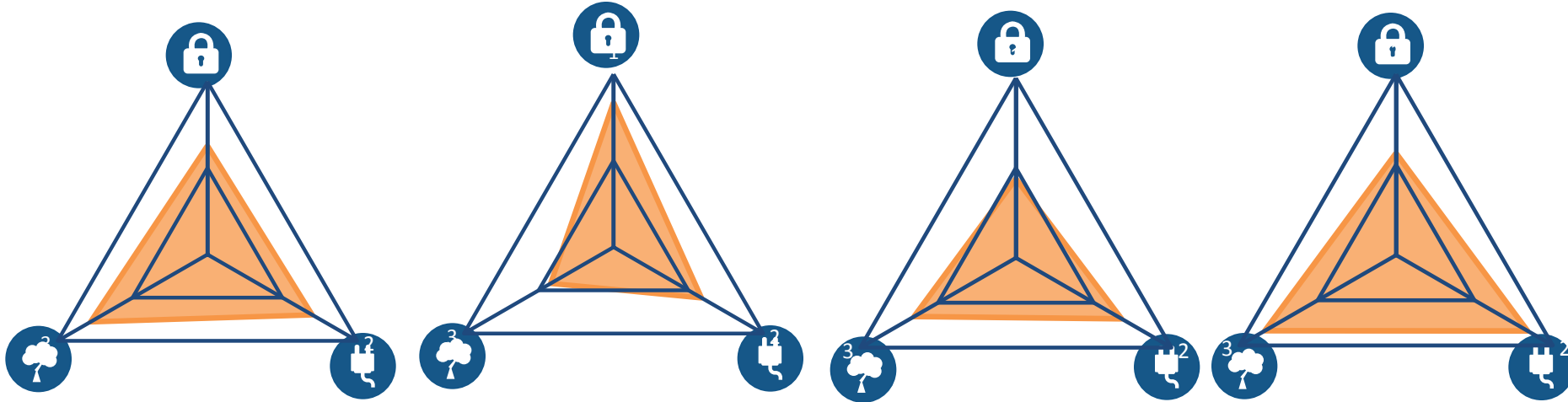
Encompasses the achievement of supply and demand-side energy efficiencies and the development of energy supply from renewable and other low-carbon sources.



Why Energy Trilemma is important?

- ▶ Describes the balance between contradictory objectives of energy policy
- ▶ Identifies priorities for energy policy
- ▶ Provides assessment about investment climate in countries' energy sector
- ▶ Can identify upcoming challenges for energy sector

Performance of EU-28 countries



Northern Countries

- 5 Denmark

- 2 Sweden

- 4 United Kingdom

- 8 Finland

- 22 Ireland

- 37 Lithuania

- 43 Latvia

- 75 Estonia

Eastern Countries

- 17 Slovakia

- 28 Czech Republic

- 33 Hungary

- 42 Poland

- 54 Romania

- 67 Bulgaria

Southern Countries

- 15 Spain

- 24 Slovenia

- 25 Portugal

- 29 Italy

- 32 Croatia

- 51 Greece

- 63 Cyprus

- 65 Malta

Western Countries

- 7 Austria

- 9 France

- 11 Germany

- 14 Netherlands

- 21 Belgium

- 18 Luxembourg

OBJECTIVES OF ELECTRICITY MARKET

What to follow in terms of **Energy Security** in Electricity Market ?

- ▶ Production to Consumption Ratio (energy)
- ▶ Reserve Margin (capacity), including capacity available through interconnections
- ▶ Diversity of capacities (flexibility)

But also:

- External and internal political influence to energy policy
- Available resources
- Operations of networks (SAIDI, number of TSO interventions, bottlenecks)
- Investment level in networks and in production

What to follow in terms of **Sustainability** in Electricity Market ?

- ▶ CO2 emissions per kWh
- ▶ SO2, NOx, ash, fly ash, nuclear waste per kWh
- ▶ Water consumption per kWh

But also:

- Emissions from external electricity supplies
- Efficiency indicators of electricity consumption (avoid per GDP indicators!)

What to follow in terms of **Affordability** (Energy Equity) in Electricity Market ?

- ▶ Affordability of power prices to households (compared to average income)
- ▶ Competitiveness of power prices for large industries

But also:

- Total electricity cost for consumers (including networks, subsidies, taxes)
- Accessibility of electricity to people, fair treatment of customers
- Competition situation (diversity of market players, efficiency of unbundling, abuse of dominant position, fair rules, etc)
- Operations of the power exchange (transparency, potential manipulations etc)

INTERCONNECTIONS/ INTERNATIONAL TRADE

Interconnections create international power markets

- ▶ European Union strives towards more integrated power market (Energy Union Strategy)
- ▶ Interconnections should be economically viable decisions, can be justified with price differences between two markets (but „it takes two to tango“)
- ▶ International power market should ideally have fully harmonised rules (based on EU directives), but there is always „evil in details“

Different electricity trade rules hinder new interconnector investments

- ▶ As there are no detailed international rules for power market operations, one can see a lot of international disputes (EU Grid Code under development)
- ▶ Electricity transit and trade of ancillary services can create even more difficult trade disputes
- ▶ Incomplete rules may hinder new investments in interconnectors

STATE AID IN THE EU POWER MARKET

Challenges in the EU electricity market

- ▶ **Problem in principle: power market sometimes needs also power plants that are less competitive.**
- ▶ RES subsidies have delivered distorted investment signals:
 - Subsidy schemes have not reflected the changes in technology prices, costs, sometimes created additional technical issues
 - Volatile, sometimes even negative electricity prices ruined investment signals to all other capacities
 - Adjustments to regulatory environment created confusion among the investors (retrospective changes)
- ▶ Negative remuneration signals: unpredictability of income for reserve capacities

State aid measures applied to improve situation

- ▶ Capacity Markets should provide neutral investment signals to capacities that are required for needed power capacities, however:
 - No detailed common rules for power capacity remuneration mechanisms (only EC Communication)
 - Regional approach to capacity markets is preferred, but it requires high level of political trust and agreement among the states
- ▶ Therefore all capacity remuneration mechanisms under development are subject to State Aid approval from the European Commission DG Competition
- ▶ This makes the investment decisions in new electricity capacities in the EU very cumbersome (add here also social activism).

Conclusions

- Energy Trilemma concept provides good framework for assessment of energy policy quality
- EU countries and regions have different energy triangles – different approaches needed for Energy Union Strategy
- Electricity sector regulation in the EU is not complete: for example details of electricity trade and capacity remuneration mechanisms need further development
- Market-based investments in electricity sector are hindered due to incomplete regulations and contradictory investment signals

Thank you!

Questions?

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