Market design – What changes the winter package brings?

László Szabó

Sofia RES workshop
17-19 January 2017
Overview

- SEERMAP project introduction
- Agenda of the RES training
- Winter package: proposed changes in Market Design:
  - Wholesale electricity markets
  - Capacity mechanisms
  - Retail market changes
### Basic SEERMAP project data

<table>
<thead>
<tr>
<th>Project title</th>
<th>South East European Electricity Roadmap</th>
</tr>
</thead>
<tbody>
<tr>
<td>Country/region of implementation</td>
<td>Albania, Bosnia and Herzegovina, Kosovo*, Montenegro, Macedonia, Serbia, Romania, Bulgaria, Greece</td>
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<td>Project cycle:</td>
<td>July 2016</td>
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<tr>
<td>Donors:</td>
<td>Austrian Federal Ministry of Agriculture, Forestry, Environment and Water Management</td>
</tr>
<tr>
<td>Web:</td>
<td><a href="http://www.seermap.rekk.hu">www.seermap.rekk.hu</a></td>
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</tbody>
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Goals of the project

- Analyse the impact of the transition to a low carbon and energy secure pathway the electricity sector until 2050 in line with EU 2050 Roadmap (*Long Term Electricity Roadmap for the SEE region*) that highlights the potential synergies beyond the limited confines of national assessments

- Application of state of the art energy sector models of the participating consortia partners (electricity and gas sector market models of REKK, Green-X of Technical University of Vienna and the regional electricity network model of EKC)

- Effectively distribute the findings of this roadmap to the high level decision-makers in the energy administration of the countries

- Build up capacities – in the form of training courses - amongst policy makers, TSO members, energy regulators and local think tanks in the field of renewable energy deployment and transmission network planning issues

- Build up a network of regional think tanks capable of contributing to the debate on the long term decarbonisation pathways in the SEE region

- Trigger discussions on electricity scenarios at a national level
## Consortia and Local Partners

<table>
<thead>
<tr>
<th>Consortium partners</th>
<th>Task</th>
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<tbody>
<tr>
<td>Regional Centre for Energy Policy Research (REKK) Budapest, Hungary</td>
<td>Overall coordination, electricity and gas sector modelling</td>
</tr>
<tr>
<td>Technical University (TU Wien) Vienna, Austria</td>
<td>Renewable deployment modelling with GREEN-X model</td>
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<tr>
<td>Electricity Coordinating Centre (EKC) Belgrade, Serbia</td>
<td>Network modelling</td>
</tr>
<tr>
<td>OG Research (Czech Republic)</td>
<td>Macroeconomic assessment</td>
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<tr>
<td>Energy Regulators Regional Association (ERRA)</td>
<td>Trainings</td>
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<thead>
<tr>
<th>Country</th>
<th>Local partner organisation</th>
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</thead>
<tbody>
<tr>
<td>Serbia</td>
<td>RES Foundation</td>
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<tr>
<td>Albania</td>
<td>POLIS University</td>
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<tr>
<td>Macedonia</td>
<td>MACEF – Macedonian Center for Energy Efficiency</td>
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<tr>
<td>Montenegro</td>
<td>IPER - Institute for Entrepreneurship and Economic Development</td>
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<tr>
<td>Kosovo*</td>
<td>INDEP – Institute for Development Policy</td>
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<tr>
<td>Bosnia</td>
<td>Enova</td>
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<tr>
<td>Romania</td>
<td>Energy Policy Group</td>
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<tr>
<td>Bulgaria</td>
<td>Center for Democracy</td>
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<td>Greece</td>
<td>FACETS</td>
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## Agenda of the course

<table>
<thead>
<tr>
<th>Time</th>
<th>Day 1: RES challenges</th>
<th>Day 2: Auction design</th>
<th>Day 3: RES modelling issues</th>
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</thead>
<tbody>
<tr>
<td>8.30-9.00</td>
<td>Introduction to the workshop</td>
<td>Tendering – lessons learnt in the European RES auction schemes, (G. Resch –TUV)</td>
<td>Electricity market modelling in SEERMAP:</td>
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<tr>
<td>9.00-9.30</td>
<td>Implications of EU Winter package on RES-E (L. Szabó - REKK)</td>
<td>9.00-10.30</td>
<td>-The EEEM model (A. Mezősi -REKK)</td>
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<td>9.30-10.30</td>
<td>Coffee break</td>
<td></td>
<td>- Scenario design and main assumptions in SEERMAP (L. Szabó-REKK)</td>
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<tr>
<td>11.00-12.30</td>
<td>Implications of EU Winter package on RES-E (Zs. Pató - REKK)</td>
<td>11.00-12.30 Country presentations 1: Introductions to national RES-E support schemes/plans and long term energy vision (2 countries: RO, GR) (Moderator: L. Szabo - REKK)</td>
<td>-The GREEN-X model:</td>
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<tr>
<td></td>
<td>Coffee break</td>
<td></td>
<td>– RES potential in the SEE to be used in GREEN-X in the SEERMAP project (G. Resch/L. Liebmann -TUV)</td>
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<tr>
<td>12.45-14.15</td>
<td>Lunch break</td>
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<td>Closing of Workshop</td>
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<tr>
<td>13.30-15.00</td>
<td>Benefits of market integration on RES-E deployment (Ch. Redl - Agora)</td>
<td>13.30-15.00 Country presentations 2: Introductions to national RES-E support schemes/plans and long term energy vision (2 countries: BG, TR) (Moderator: G. Resch - TUV)</td>
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<tr>
<td>15.30-17.00</td>
<td>Exercise 1: Where to invest in electricity generation in the in the future? Investment game (P.Kotek-REKK)</td>
<td>15.30-17.00 Exercise 2: At what level RES technologies break even? LCOE calculation of wind generators (P. Kotek - REKK)</td>
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<td>19.00-</td>
<td>Joint dinner</td>
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EU Winter Package

The 2016 November EU winter package, motivated by:

- Commission wants the EU to lead the clean energy transition
- Cut CO2 emissions by at least 40% by 2030
- Modernise the EU's economy and delivering on jobs and growth

The three main goals:

- putting energy efficiency in focus,
- achieving global leadership in renewable energies
- empower consumers in electricity markets
What the Package proposes to change?

- Empowering consumers (information, easy switch, become prosumer.)
- Job creation through increased investments in new and innovative technologies
- Reduce energy poverty
- Renewables and bioenergy sustainability
- Enforce energy efficiency
- Energy efficient buildings
- Improve energy markets:
  - At both wholesale level (price formation…)
  - And at retail levels
  - Increase connectivity
  - Regulate capacity mechanisms
- Governance
- And also: Ecodesign, Funding, Innovation and Transport
The main challenges

Higher RES-E penetration results in higher volatility (in quantities and in prices):
  ▪ Need for more flexible markets, but still ensure security of supply

Competition must be further enhanced:
  ▪ More competitive price formation
  ▪ Trade flows to reflect more market rules

Change in consumer’s roles:
  ▪ High shares of prosumers
  ▪ New technologies change market and market rules: smart grids, metering, storage
Price formation 1

Price Duration Curve, DE:

Source: ACER MMR 2015
Price formation 2

Price convergence in EU markets

- Decreasing or stagnating price convergence process
- High geographical differences

Source: ACER MMR 2015
Increasing interconnectivity? (1)

Ratio of NTC versus thermal capacity

- High differences in thermal capacity and NTC
- High regional differences

Source: ACER MMR 2015
Increasing interconnectivity? (2)

Average annual level of commercial use of NTC (European average)

Nomination against price differentials at border %

Source: ACER MMR 2015
Proposed improvements in market design
Wholesale markets – legal steps

Which acts will be changed?

- Electricity Directive of the internal electricity market.
- Electricity Regulation of the internal electricity markets.
- Also revise Regulation on ACER.
- Propose new Regulation on Risk Preparedness.

Target entry date: 1st January 2020

- Gives 3 years to complete the legislative process and elaborate the detailed rules
Wholesale markets 1

• Remove price caps:
  ‣ Maximum value at VOLL
  ‣ Minimum value at -2000 Euro

• Harmonisation of network tariff setting rules

• Removal of price regulation – vulnerable consumers must be protected with other tools – but derogations are possible

• Remove priority dispatch for bigger (RES) capacities (over 0.5 MW) – provide level playing field for all technologies, also all technologies will be responsible for their imbalances

• Exceptions:
  ‣ Demonstration projects
  ‣ Below 500 kW capacity, after 2026: under 250 kW capacity
Wholesale markets 3

- Reduction of network bottlenecks – reinvest congestion rents to network investments
  - Only implicit or explicit auctions are allowed
  - Congestion rents must be reinvested to network

Use of congestion rent (2015)

Source: ACER MMR 2015
Regional Operational Centres

• ROCs must be established within 1 year after entry to force

• Roles:
  ‣ Coordinate capacity calculations
  ‣ Coordinate security analysis, restoration plans
  ‣ Regional sizing of reserve capacities
  ‣ Facilitate regional procurement of balancing…
  ‣ Outage planning
  ‣ Optimisation of compensation mechanisms
  ‣ …

• Will it help to speed up the otherwise very lengthy procedures?
Capacity Mechanisms

- ENTSO-E carries out a European Resource Adequacy Assessment
- MS can only apply capacity mechanism – if:
  - It is non-discriminatory, does not limit cross-border trade
  - It was consulted with neighbours
  - If the EU Resource Adequacy Assessment does not indicate adequacy problems – no capacity mechanism can be applied
  - Must be open to non-domestic capacities!
- No fossil plant with emission over 550 gCo2/kWh can get capacity payment – no coal plant without CCS (5 years derogation after entry to force)
What will be the future of existing CMs?

After 2020 – existing CMs must adapt to the new Regulation!
Retail markets

Focus on the empowerment of consumers:

• Access to information
• Right to dynamic price contract – also right to smart meters
• Right to barrier free switch
• Right to offer demand response
• Contracting right with aggregator, who enjoys similar right as consumer
• Rights of setting up local energy communities – that can operate under fair, cost reflective charges
All these changes in consumer rights will put higher focus on DSO operation, which will get new tasks:

- They will become responsible not only for their core activity (grid operation – monopoly activity) but for some competitive ones.
- Become responsible for system flexibility
- They will be able to use flexibility services. E.g. they will be eligible to use and own storage facilities (under certain conditions)
- They will use energy efficiency measures to improve operations on their territories
- DSO entity will also be created

In summary: DSO will be more incentivised to actively participate in providing flexibility to the market core-not core
Does it answer the core challenges?

- Overcapacity vs RES?
- CMs versus energy only markets?
- Long term contracts vs tendering FIPs?

What is a good strategy in an environment of overcapacities and increasing RES deployment?
- CMs vs higher competition?
• Improve flexibility and responsiveness of the electricity markets, but…
  ‣ High number of Institutional measures
    • New functions of ENTSO-E, ACER, ROCs, DSO entity, aggregators, local energy communities ….
  ‣ Hard measures – more limited number:
    • Capacity mechanisms – exclusion of coal, hard constraints
    • No priority dispatch to RES
    • DSO incentives
  ‣ Soft measures – high number:
    • E.g. on consumer empowerment
    • On price formation
Could drive markets to quite many directions
Thank you for your attention!

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