Regional energy integration

Effective strategies and project support as key success factors
The energy market is currently undergoing changes worldwide – Key drivers are climate change, digitalization and new technologies

Source: Roland Berger

<table>
<thead>
<tr>
<th>Change in the energy landscape</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Climate change</strong></td>
</tr>
<tr>
<td>&gt; Reconstruction of the international energy system</td>
</tr>
<tr>
<td>&gt; More and more renewable energies conquer the market</td>
</tr>
<tr>
<td>&gt; Total international <strong>installed capacity of renewables</strong> has increased by <strong>300%</strong>, from 437 GW in 2010 to 1,236 GW in 2017</td>
</tr>
</tbody>
</table>

| **Digitalization** |
| > Digitalization enables **higher networking**, automation and integration of different systems |
| > Energy data can be exchanged more quickly |
| > Digitalization enables a **holistic energy system**/market approach that functions across national borders |

| **Technology** |
| > The **GreenTech** market has shown growth in the last 10 years |
| > Product innovations that improve the energy **efficiency** as well as promote the **integration** of regenerative energies are developed |
| > Innovations in the fields of energy storage, electromobility and innovative PV demonstrate growing **importance of electricity** for energy system |
Countries in the south of the Balkans are net importers of electricity, and depend on two types of electricity: HPP and TPP

Electricity generation and export – import in the Balkans [TWh]

Source: EIHP, www.impactlab.org/map/, Roland Berger
Regional energy integration offers many advantages for energy efficiency but also CO\textsubscript{2} savings by leveraging synergy effects.

Regional energy integration – Recent example

<table>
<thead>
<tr>
<th>REH case study focus</th>
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</thead>
<tbody>
<tr>
<td>Bulgaria</td>
</tr>
<tr>
<td>Greece</td>
</tr>
</tbody>
</table>

**REH costs before and after transmission investment**

<table>
<thead>
<tr>
<th>REH Cost (USD/hour)</th>
<th>Generation</th>
<th>CO\textsubscript{2}</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Peak</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Before</td>
<td>1,893,075</td>
<td>602,672</td>
<td>2,495,747</td>
</tr>
<tr>
<td>After</td>
<td>1,895,451</td>
<td>603,445</td>
<td>2,498,896</td>
</tr>
<tr>
<td>Difference</td>
<td>2,376</td>
<td>772</td>
<td>3,149</td>
</tr>
<tr>
<td>Change</td>
<td>0.13 %</td>
<td>0.13 %</td>
<td>0.13 %</td>
</tr>
<tr>
<td><strong>Mid</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Before</td>
<td>1,070,841</td>
<td>341,451</td>
<td>1,421,292</td>
</tr>
<tr>
<td>After</td>
<td>1,050,841</td>
<td>334,951</td>
<td>1,385,792</td>
</tr>
<tr>
<td>Difference</td>
<td>- 20,000</td>
<td>- 6,500</td>
<td>- 26,500</td>
</tr>
<tr>
<td>Change</td>
<td>- 1.87 %</td>
<td>- 1.90 %</td>
<td>- 1.88 %</td>
</tr>
<tr>
<td><strong>Base</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Before</td>
<td>785,927</td>
<td>275,273</td>
<td>1,061,200</td>
</tr>
<tr>
<td>After</td>
<td>759,090</td>
<td>266,551</td>
<td>1,025,641</td>
</tr>
<tr>
<td>Difference</td>
<td>- 26,837</td>
<td>- 8,722</td>
<td>- 35,559</td>
</tr>
<tr>
<td>Change</td>
<td>- 3.41 %</td>
<td>- 3.17 %</td>
<td>- 3.35 %</td>
</tr>
</tbody>
</table>

In order to realize all potentials of a regional energy integration, systemic thinking as well as interfaces have to be optimized.

Regional energy integration – Benefits of cooperation and obstacles to overcome

**Geographic**
- Increased connectivity and flexibility or energy trading
- Increased competition and financial liquidity

**Environmental**
- Lower carbon footprint and mitigation of air emissions
- Integration of RES and distributed generation
- Exchanging for cleaner form of electricity generation

**Economic**
- Lower costs and consequently lower prices
- Flexible power generation with lower generation costs
- Optimized utilization of generation sources

**Financial**
- Filtering the best investment alternative
- Cost/benefit analyses, timing of project alternatives

**Benefits**

**Challenges**
- Overcoming market design issues preventing coordination among countries
- Increasing energy trading among countries by connecting markets
- Overcoming congestion problems
- Deciding on investment and/or replacement in generation
- Integrating RES and storage into the system

An efficient strategy and active project support are decisive for the success of regional energy integration

Key success factors

- **International view** of the energy market
  - Location and depth of value creation
  - Energy market development and sustainability
  - Maintenance and further development of the transmission and distribution system infrastructure
- **Country-specific** targets must be taken into account
  - Emission targets and efficiency of the energy system
  - Energy prices

**Overarching Strategy**

**Project Management**

- **Coordination** of national and international stakeholders
- **Integration** of potential investors and financiers
- Reliable project management based on national targets (common benefit)
- **Independent** strategic management with long-term objectives within the international regional energy community

Source: Roland Berger
A holistic strategy must take into account both national and international goals – New disruptive way of thinking presupposed

Regional energy hub – Virtual and physical approaches

**Background check**

> **Analysis** of the existing situation including national and international energy strategies and existing and planned interconnectors

> **Simulation and scenario planning** for the energy requirements in the regions

> **Concept development** for the establishment or expansion of a regional energy hub

> **Establishment** of a virtual or physical regional energy hub

**Focus topics**

- **Energy strategies**: It must be ensured that the national energy strategies are aligned

- **Interconnectors**: The strategic expansion of interconnectors has top priority for all forms of energy transmission

- **Prosperity**: All regional actors must be able to profit from the added value, for which SPV must be created

- **Funding**: Efficient financing with existing funding programmes should be considered

**SPV** – Special purpose vehicle

Source: Roland Berger
At the core of project management needs to be a comprehensive, interdisciplinary methodology to get a grip on complex issues.

Integrated, holistic approach

1. Cross-disciplinary task forces with flexible adaptation of management focus
2. Reporting and monitoring structures to guarantee "one truth" in all management reporting
3. Holistic de-risking and risk mgmt. approach that mitigates typical interface risks
4. Stakeholder management as integrated part of project organization in all phases
5. Regular re-focus of management, review and adaptation of organization, timeline, budget
6. World class tools to create a strong, agile team and a high performance culture

Source: Roland Berger
Roland Berger has been active in Albania for more than 5 years accelerating developments in the domestic energy market.

Projects approach and success factors for energy project development

**Capacity building approach**

**Trans Adriatic Pipeline**
With the support of the project team, GoAL was able to **negotiate a substantial increase in the level of financial benefits** provided by TAP consortium to the GoAL under the HGA.

**Albgaz**
Albgaz has been **conceptualized and formed** with the support of the project team. Albgaz is now in the process of being officially recognized as the Albanian gas TSO/DSO on a European level and by TAP.

**Oil and Gas Institute**
Together with the Ministry and other relevant stakeholders the project team has developed a **detailed concept** for an oil and gas institute.

**Legislation adaption**
Energy regulator ERE and the project team has developed a **full set of legislation** for future gas market in accordance to European law.

**Our key success factors**

- **International experience** and in-depth industry knowledge
- **Integrated project team**
- **Close cooperation** with all stakeholders (State Authorities, Donor Community, International Investors)
- **Independent** economic calculations

Source: Roland Berger
If you have any questions or suggestions, please do not hesitate to contact me at

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