Session 2: Implementation, Economic Impact and Challenges

Challenges the Power Utility is Facing - M. Ćosić (Croatian utility HEP)
Implementation, Economic Impact and Challenges

Challenges the power utility is facing

Marko Ćosić, CFO of Hrvatska elektroprivreda d.d.
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Financial market expectations
Global Challenges

- Energy transition
- Stiff competition
- High churn
- Energy partnerships
- Digital transformation
- Climate change
- Energy responsibility
- Digital transformation
- CO2 emissions reduction
- Efficient IVR systems
Global Challenges... Climate change and energy responsibilities

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<th>Challenge</th>
<th>Remedy</th>
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<td>CO2 reduction</td>
<td>Sustainable energy value chain</td>
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<tr>
<td>• Time to green full value chain</td>
<td>• Sustainable system of pre- and post- operational logistics curbing emissions across the value chains for renewable and traditional energy infrastructure</td>
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<td>• Battery storage for EV (lithium ion) suitable for stationary power storages?</td>
<td>• Lithium phosphate and aqueous batteries perhaps as solution</td>
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<td>Resiliency of the electrical system</td>
<td>3 pillars: Generation, storage, efficiency</td>
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<td>• Incorporation of renewables into grid price impact</td>
<td>• Prosumers, client-centric solutions based on service models</td>
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<td>• Biogass and circular economy</td>
<td>• Evolution of smart cities, energy efficiency in buildings and electromobility</td>
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Source: McKinsey & Company, Rodolfo Maciel and Peter Safarik
# Global Challenges... Digital Transformation

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<th>Challenge</th>
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<td>Power Plant 4.0.</td>
<td><strong>ML &amp; AI</strong>&lt;br&gt;• Machine learning solutions and artificial intelligence for optimized decision making, increased flexibility&lt;br&gt;• Data → organization’s most valuable assets - 4 step approach</td>
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<td>• Next-generation technologies for optimized decision making, increased flexibility&lt;br&gt;• Demand for improvement of unit efficiency and increase of optimisation resilience&lt;br&gt;• Transformation of data into actionable insights&lt;br&gt;• Fact based &amp; data driven culture&lt;br&gt;• Cyber security</td>
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Local Challenges

Financial market expectations
Local challenges…

Croatian EES- current footprint

Installed capacities in Croatia > 5.000 MW\(^1\)
- HEP 4.105 MW\(^2\) in Croatia
- 766 MW in RES capacities outside HEP
- 165 MW of cogeneration

\(\text{CO}_2\) emissions
- Croatia 23 mil. m/t annually
- HEP 2,7 mil. m/t annually

Challanges

Climate change goals
- Change of generation capacities structure
- Increase of RES capacities
- Decrease of \(\text{CO}_2\) footprint

Legal Framework
- Syncronisation of Legal Acts
- Efficient administration behind procedures

Integration of RES into system

Technical/Technological challenges in transportation
- Electrical vehicles

\(^1\)Source: Energija u RH, 2017
\(^2\)Total installed capacities operated by HEP is 4.453 MW if 50% of NPP Krško capacities is included
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Financial market expectations
### Financial market expectations

#### Climate change imperative

- ESG rating demand
- Investors expectation of companies to analyze the impact of climate change policies on their business
- Companies’ response to climate change as a part of investment strategies by investors
- Credit rating agencies are signaling that they may increasingly incorporate **climate risk into credit assessments**
- Climate change/carbon- “the top ESG [environmental, social, and governance] criterion for money managers representing $3 trillion in assets and the third-biggest issue for institutional investors with a collective $2.24 trillion in assets

#### Capital markets supportive of climate change demand

- High liquidity limited to applicable projects
- Green and sustainable financing
- Financial institutions leaving coal & gas project financing

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1. Policies consistent with limiting the global average temperature rise to no more than 2 degrees Celsius