Euro – CASE Annual Conference 2020 ONLINE

"DEALING WITH CHALLENGES OF THE EUROPEAN ENERGY TRANSITION"

Session 2: Implementation, Economic Impact and Challenges

- Challenges the Power Utility is Facing - M. Ćosić (Croatian utility HEP)

Euro-CASE

ZAGREB
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WITH SUPPORT

Implementation, Economic Impact and Challanges

Challenges the power utility is facing

Marko Ćosić, CFO of Hrvatska elektroprivreda d.d.

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Global Challanges

Stiff compatetion

Climate change

Digital transformation

Energy transition

High churn

Energy responsibility

Digital transformation

Energy partnerships

CO2 emissions reduction

Efficient IVR systems

Global Challanges… **Climate change and energy responsibilities**

Challange

CO2 reduction

- Time to green full value chain
- Battery storage for EV (lithium ion) suitable for stationary power storages?

Resiliency of the electrical system

- Incorporation of renewables into grid→ price impact
- Biogass and circular economy

Remedy

Sustainable energy value chain

- Sustainable system of pre- and post- operational logistics→ curbing emissions across the value chains for renewable and traditional energy infrastructure
- Lithium phosphate and aqueous batteries perhaps as solution

3 pillars: Generation, storage, efficiency

- Prosumers, client-centric solutions based on service models
- Evolution of smart cities, energy efficiency in buildings and electromobility

Source: McKinsey& Company, Rodolfo Maciel and Peter Safarik

Global Challanges… **Digital transformation**

Challange

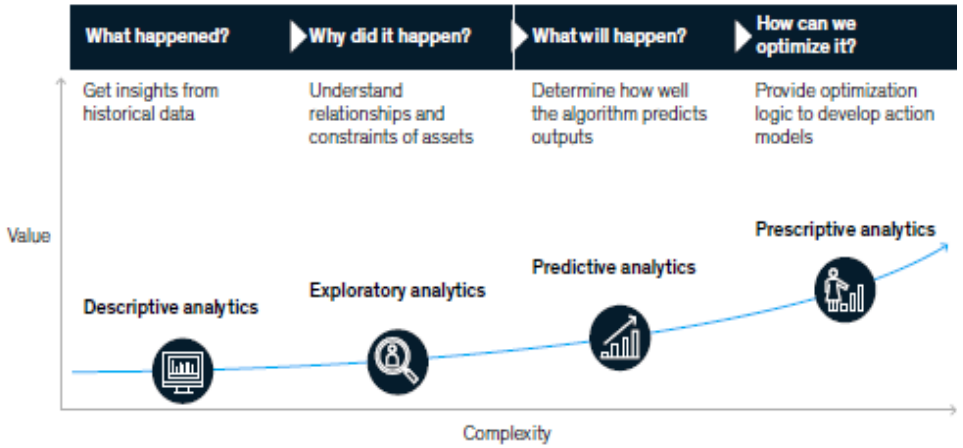
Power Plant 4.0.

- Next-generation technologies for optimized decision making, increased flexibility
- Demand for improvement of unit efficiency and increase of optimisation resilience
- Transformation of data into actionable insights
- Fact based& data driven culture
- Cyber security

Remedy

ML & AI

- **M**achine **l**earning solutions and **a**rtificial **i**ntelligence for optimized decision making, increased flexibility
- Data→ organization's most valuable assets- 4 step approach



Source: McKinsey& Company, Rodolfo Maciel and Peter Safarik

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Local challanges…

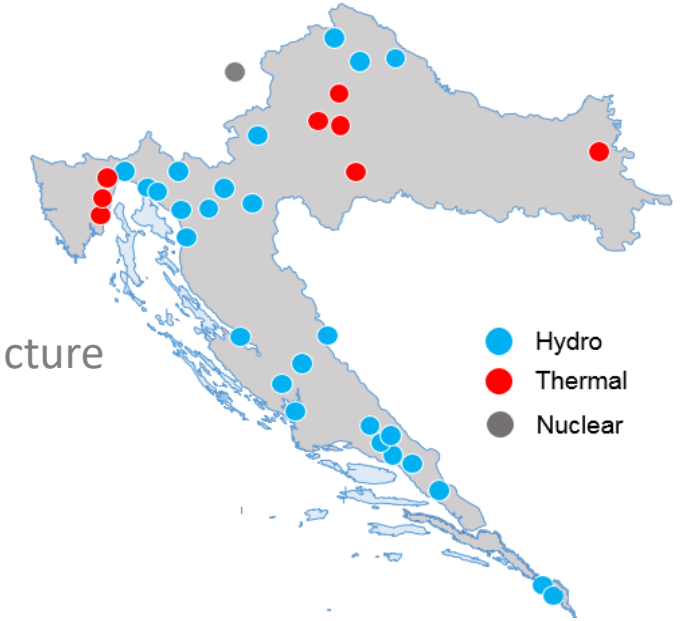
Croatian EES- current footprint

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

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
- Decrese of 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*

Contents

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

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