



Energy market in 2022. Facts and trends

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Content

- **About Horváth**
 - Facts and trends
 - Your contact person

Horváth at a glance

Values

Entrepreneurship, Competence, Innovation, Openness and Trust

Mission

Eager to support our clients in transforming their organizations to become unbeatable in a changing world – leveraging our DNA in performance management

Offices

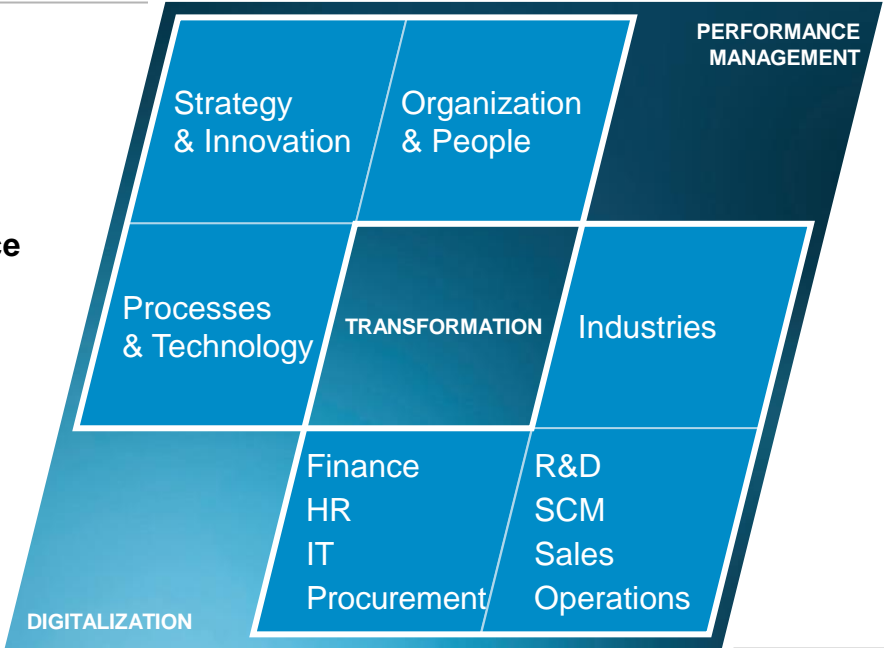
- Abu Dhabi
- Atlanta
- Berlin
- Bucharest
- Budapest
- Dubai
- Düsseldorf
- Frankfurt
- Hamburg
- Milan
- Munich
- Riyadh
- Rome
- Stuttgart
- Vienna
- Zurich

Employees

1,000+

Global Delivery Competence

Cordence Worldwide Alliance with 3,500+ consultants



Industry Expertise

- Automotive | Aviation |
- Banking & Financial Institutions |
- Building & Construction |
- Chemicals | Consumer
- Electronics & High Tech |
- Consumer Goods | Health Care |
- Industrial Services | Industrial Goods & Machine Industry |
- Insurance | Life Science |
- Logistics | Media | Medical Devices & Technology | Metals & Mining |
- Oil & Gas | Paper & Packaging |
- Public Sector | Rail | Retail |
- Telecommunication | Travel |
- Utilities

Creating sustainable benefits for our clients by outstanding concepts and excellent delivery

PERFORMANCE MANAGEMENT

At the heart of performance management is holistic corporate performance management, consisting of analysis, planning, reporting as well as measures to ensure that corporate targets are met and corporate performance is increased sustainably.

With its core competence in strategic and operative steering, Horváth is the specialist for performance management in all business areas.

TRANSFORMATION

Global megatrends and a changed competitive environment require the right strategic and operative responses to further develop their business model, organizational structures and employees, as well as processes and technologies, in a holistic way and align them sustainably.

With our integrated transformation approach of expertise and change management, we work with you to define the right target picture with the potential for your company and implement it successfully.

DIGITALIZATION

Today, digitalization represents the transformation potential of rapidly developing software technologies, ranging from the automation and optimization of corporate processes through to the digitalization of existing and new business models. Digital platforms, cloudification, data analytics, machine learning and artificial intelligence are examples of modern technologies which create data-driven companies.

A consistent digital strategy which can be implemented in a suitable operating model using the latest technologies enables your company to take advantage of arising opportunities.

Horváth value proposition – Five points that make the difference

Our Collaboration

Trustful and appreciative client collaboration from C-level to work force

Our Perspective

Idea, concept, implementation and change

Our Client Value

We create sustainable value in transformation processes



Our DNA

Excellent delivery, high client satisfaction, real impact and outstanding return on consulting

Our Strengths

Leadership in performance management, deep professional expertise, broad industry experience and a highly motivated consulting team

Sustainable business and action is an integral part of our corporate strategy



Horváth Purpose

“Here to make an impact on the sustainable success of our economies!”
Making a decisive contribution to sustainable economic, ecological and social success (Sustainability Report with DNK Standard)



UN Global Compact

Horváth is supporter of the United Nations Global Compact, the world's largest corporate sustainability initiative



Net Zero

Since 2020, we are climate neutral by off-setting all emissions in accordance with the Greenhouse Gas Protocol.
We focus on “smart” office spaces, green power and on reduction and recycling



EcoVadis Silver Rating

Horváth is among the top 25% of companies evaluated by EcoVadis and is proof for our efforts in environment, labor and human rights, ethics, and sustainable procurement

How the market sees us

Most Innovative Companies



2022, 2021 | Capital/Statista Study

Best Management Consultants



2022, 2021 | Customer review by industries and expertise

Top 100 Innovator



2018, 2015, 2010, 2005

Top Consulting Company



2022, 2021

Industries
Automotive, Banking & Financial Institutions, Chemicals, Health Care/Pharma, Industrial Goods, Consumer/Retail, Public Sector, Infrastructure, Insurance

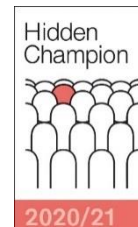
Expertise
Strategy/Organization development, Marketing/Sales, Procurement/SCM, Compliance/Risk Management

Best of Consulting



2019, 2018, 2015, 2014, 2013, 2012, 2010

No. 1 in Controlling & Finance



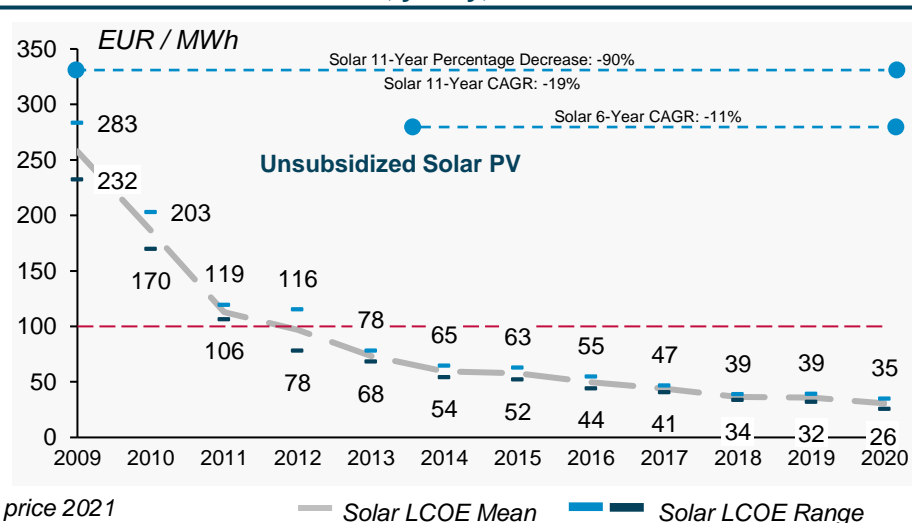
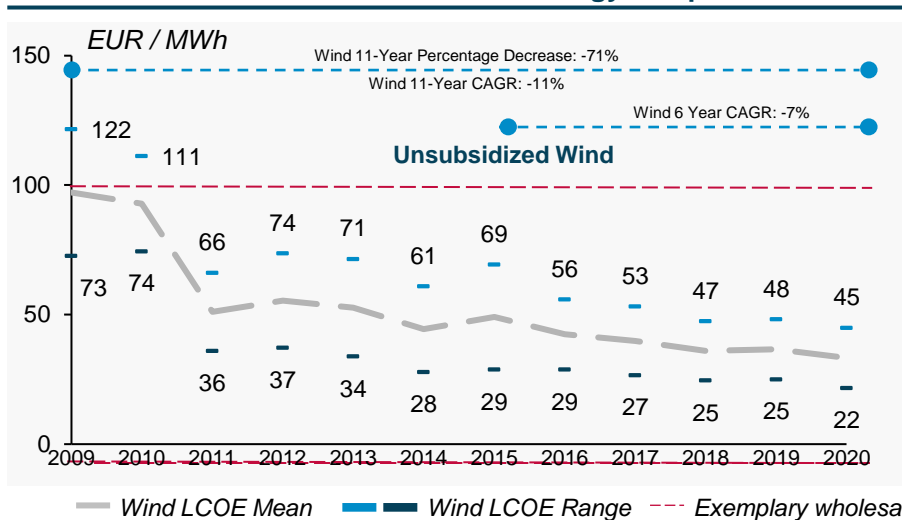
2020, 2018, 2015, 2012, 2009, 2006, 2003 | WGMB Study

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Penetration of renewables will significantly change merit order

Levelized Cost of Energy comparison – Historical Renewable LCOE Declines, yearly, EUR/MWh

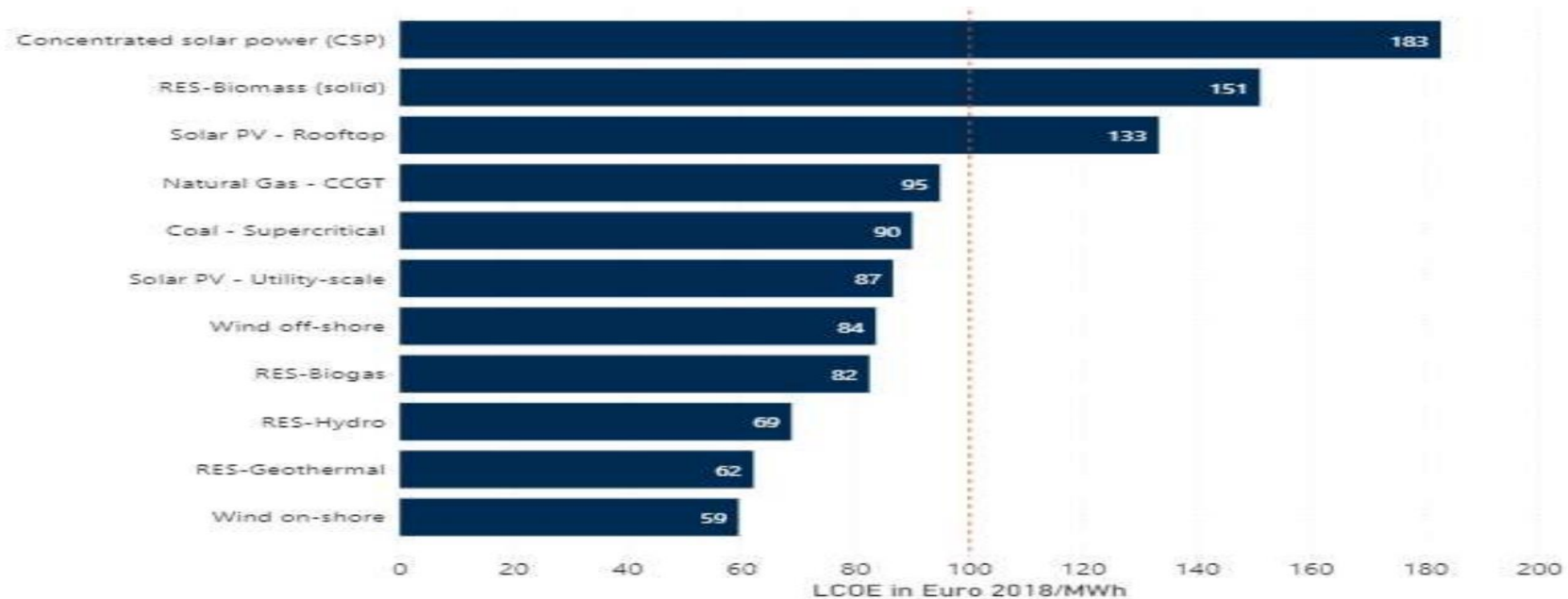


Comments

- Due to significant declines in technology costs and improvements in efficiency, wind and solar PV LCOE declined sharply
- Difference between wholesale prices and LCOE range shows a very strong incentive for massive investments in renewables. A large number of projects are expected to commence in the next years, not only with public support schemes (CfD, Modernisation Fund, NRRP) but also funded by private equity

Sources: Lazard LCOE study 2020, Horváth analysis

Penetration of renewables will significantly change merit order



- Due to significant declines in technology cost RES become best in class technology
- Lower LCOEs leading to stabilization of market price and increased competition
- Fossil fuels technologies heavily affected by both CO2 and NG/coal international price

In Romania, coal & gas power generation are here to stay at least for the mid term mainly due to insufficient new commissioning of (RES) capacities

Forecast hypotheses for 2023

Forecast hypotheses for 2025

Model
Methodology

- The “merit order effect” offers insights on the mechanism by which the market price is set, if used ex-post; The forecasted merit order can only provide a **rough indication** of the technology and marginal cost interval that will close the merit order
- The high-level estimation can be used only to determine the general trend in the market by comparison with the current prices
- The forecasted merit order does not provide an indication of future prices**

Assumptions

Macro

Market

Costs

Price index: 1,094
(2021 base year)

€ Fx rate: 5,05
(EUR/RON)

CO₂ CO₂ price: 63,28
(EUR/tCO₂)

Production by technology:
(TWh)

Hydro	16.7	29%
Nuclear	10.4	18%
Wind	7.9	13%
Solar	3.0	5%
Biofuel	1.4	2%
Net impor	1.7	3%

Demand: 57,10
(TWh)

Gas	12.0	21%
Coal	5.4	9%

Hydro cost: 4,5
(EUR/MWh)

Lignite cost:
18,9 (EUR/t)

Gas cost: 28,9
(EUR/MWh)

Hard coal cost:
135,5 (EUR/t)

Nuclear fuel cost:
3,3 (EUR/MWh)

Biofuel cost: 35,5
(EUR/MWh)

Price index: 1,155
(2021 base year)

€ Fx rate: 5,10
(EUR/RON)

CO₂ CO₂ price: 65,25
(EUR/tCO₂)

Production by technology:
(TWh)

Hydro	17.0	29%
Nuclear	9.8	17%
Wind	8.9	15%
Solar	3.5	6%
Biofuel	1.7	3%
Net impor	1.5	3%

Demand: 59,40
(TWh)

Gas	10.5	18%
Coal	6.5	11%

Hydro cost: 4,8
(EUR/MWh)

Lignite cost:
19,8 (EUR/t)

Gas cost: 18,6
(EUR/MWh)

Hard coal cost:
138,2 (EUR/t)

Nuclear fuel cost:
3,4 (EUR/MWh)

Biofuel cost: 35,3
(EUR/MWh)

We simulated a scenario of additional RES production required to push the last technology of the merit order and decrease prices for 2025 (RES+)

Romania merit order forecast, direct production costs per tech., EUR/MWh

2023

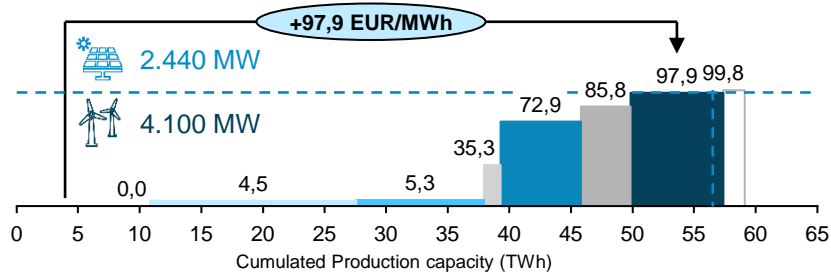
2025

Legend: Wind Solar Hydro Nuclear Biofuel Gas - CCGT Gas - Conventional Lignite Net imports Hard Coal Available Margin

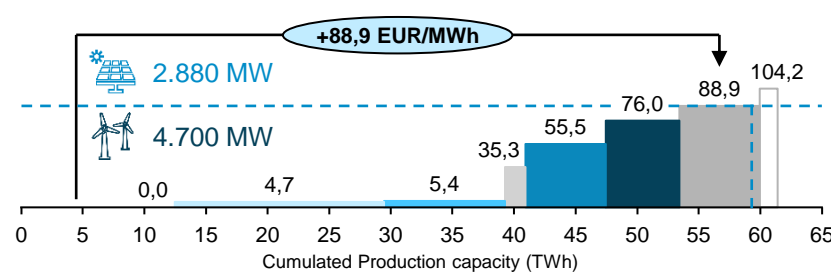
Demand: 57,1 TWh – Merit order closed by Lignite in 2023

Demand: 59,4 TWh – Merit order closed by Lignite in 2025

Initial Scenario



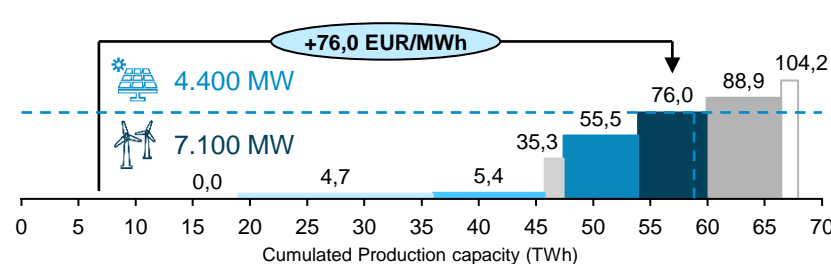
Initial Scenario



Details

Tech.		2021	2023	2025	2025 RES+
Solar	Installed capacity (MW)	558	2.440	2.880	4.400
	Production (TWh)	1,29	2,98	3,52	5,36
Wind	Installed capacity (MW)	2.897	4.100	4.700	7.100
	Production (TWh)	6,49	7,88	8,93	13,60

RES+



Legend: Solar Installed Capacity Wind Installed Capacity

Sources: REKK Electricity wholesale price forecast for Romania until 2040, Horváth analysis

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HORVÁTH

Steering Business

Successfully