A SHORT GUIDE TO THE 9th INTERENEFA PANELS

I. Useful information about the first panel

First panel

Challenges and opportunities for energy corporations in the new energy order

Croatian and European companies and their experiences

1. Leading energy companies in Europe

There are many leading energy companies in Europe, some of the most famous include:

• Électricité de France (EDF): French electricity company, one of the largest in the world.

• E.ON: German energy company, one of the largest in Europe.

• ENEL: Italian energy company, one of the largest in Europe.

• Iberdrola: Spanish energy company, one of the largest in Europe.

• RWE: German energy company, one of the largest in Europe.

• TotalEnergies: French oil and gas company, one of the largest in the world.

• BP: British oil and gas company, one of the largest in the world.

These companies operate in various segments of the energy sector, including the production, transmission, distribution and sale of electricity, gas and oil. Many of them are also active in the development of renewable energy sources, such as wind farms and solar power plants.

In addition to these large companies, there are many smaller, specialized companies in Europe that operate in specific niches of the energy sector.

2. Leading energy companies in Croatia and agencies

Several energy companies operate in Croatia, the most significant of which are:

1. Adriatic Oil Pipeline (JANAF)

JANAF is an oil pipeline system located in Croatia. It is an oil pipeline that connects Omišalj on the island of Krk with refineries in the interior of Croatia, but also with other countries. JANAF is of strategic importance for the Republic of Croatia because it provides oil supplies.

JANAF was built in the 1970s and has been in use since 1979. Its total length is 759 kilometers and its capacity is 27 million tons of oil per year.

JANAF is managed by the company of the same name Jadranski naftovod d.d., headquartered in Zagreb.

2. INA - Industrija nafte, d.d.

Activity: Integrated oil company engaged in oil and gas exploration and production, oil refining, distribution of petroleum products and lubricants production.

Status: Majority owner is MOL (Hungary).

Significance: The largest energy company in Croatia, with a major influence on the Croatian economy.

3. Hrvatska elektroprivreda d.d. (HEP)

Activity: Production, transmission and distribution of electricity. It also trades in electricity and gas.

Status: Owned by the Republic of Croatia.

Significance: A key player in the Croatian electricity system, with a dominant share in the production and supply of electricity.

4. Plinacro d.o.o.

Activity: Transport of natural gas through pipelines.

Status: Owned by the Republic of Croatia.

Significance: Operator of the natural gas transmission system in Croatia.

5. Međimurje-plin d.o.o.

Activity: Gas distribution.

Status: Privately owned.

Significance: One of the gas distributors at the local level.

6. E.ON Croatia

Activity: Trade and supply of gas and electricity.

Status: Part of the German energy group E.ON.

Significance: Significant energy supplier on the Croatian market.

7. RWE Energija d.o.o.

Activity: Trade and supply of electricity and gas.

Status: Part of the German energy group RWE.

Significance: Significant energy supplier on the Croatian market.

8. GEN-I Hrvatska d.o.o.

Activity: Trade and supply of electricity.

Status: Part of the Slovenian GEN-I.

Significance: Significant energy supplier on the Croatian market.

9. Prvo Plinarsko Društvo (PPD)

PPD is a Croatian company engaged in the trade, supply and distribution of natural gas. It was founded in 2001 and is headquartered in Vukovar.

PPD is one of the largest gas distributors in Croatia and plays a significant role in the gas market in the region. The company also imports gas and cooperates with numerous suppliers from Europe and the world.

PPD is known for its wide network of business partners and clients, and supplies households, industry and other gas consumers. The company also actively participates in the development of gas infrastructure in Croatia.

PPD is privately owned, and the founder and owner of the company is Pavao Vujnovac. The company is known for its successful business results and continuous growth.

10. Petrol Hrvatska

Petrol Hrvatska is a Croatian oil and gas company. It is a subsidiary of the MOL Group, a Hungarian multinational oil and gas company. Petrol Hrvatska is the second largest oil company in Croatia, after INA. It has a network of over 400 gas stations throughout the country.

The company is engaged in the exploration, production, refining and distribution of oil and gas. It also has a retail network of petrol stations and grocery stores. Petrol Croatia is headquartered in Zagreb.

Here are some additional details about Petrol Croatia:

The company was founded in 1948.

It is a member of the Croatian Chamber of Economy.

Petrol Croatia is a socially responsible company and supports a number of community projects.

If you are looking for more information about Petrol Hrvatska, you can visit their website or contact them directly.

11. Hydrocarbon Agency

The Hydrocarbon Agency (AZU) is a public institution in Croatia that plays a key role in the management and development of hydrocarbon resources. Here is some key information about AZU:

Competencies and scope:

• Hydrocarbon exploration and exploitation: AZU is responsible for conducting concession procedures for the exploration and exploitation of oil and gas.

• Geothermal waters: AZU also has jurisdiction over the exploration and use of geothermal waters for energy purposes.

• Underground gas storage: AZU participates in underground gas storage projects, which is important for the security of energy supply.

• Sustainable carbon dioxide management: AZU also deals with issues of sustainable carbon dioxide management, which is important in the context of reducing greenhouse gas emissions.

• Oil and oil products market: AZU monitors the situation on the oil and oil products market.

Role in the energy transition:

AZU plays an increasingly important role in Croatia's energy transition towards renewable energy sources. In this context, AZU is implementing projects to research geothermal potential and develop hydrogen technology.

Projects and initiatives:

• Geothermal projects: AZU is actively working on the development of geothermal projects in Croatia, with the aim of using geothermal energy for heating and electricity generation.

• Hydrogen: AZU has been appointed as the National Coordination Body for Hydrogen, which demonstrates the importance that Croatia attaches to the development of hydrogen technology.

Organization:

AZU is a public institution, and the founding rights and duties on behalf of the founder are performed by the Ministry of the Economy and Sustainable Development. AZU is headquartered in Zagreb.

More information:

For more information about the Hydrocarbons Agency, you can visit their official website: https://www.azu.hr/

II. Useful information about the second panel

Second panel

Modernization of energy corporations, use of new technologies and artificial intelligence in the new energy order

1. Leading theorists in Europe in the field of the use of artificial intelligence in energy (I)

There are many leading theorists in Europe in the field of the use of artificial intelligence in energy.

• Wolfgang Ketter from the University of Cologne, Germany. Ketter is an expert in artificial intelligence in energy, with a focus on the application of machine learning and deep learning for the optimization of energy systems.

• Pierre-Louis Martineau from the French Institute of Petroleum and New Energies (IFPEN). Martineau is an expert in artificial intelligence in energy, with a focus on the application of machine learning for the forecasting of energy production from renewable sources.

• Alberto Leonardi from the University of Bologna, Italy. Leonardi is an expert in artificial intelligence in energy, with a focus on the application of machine learning for the optimization of smart grids.

• Ralf Seifert from the University of Stuttgart, Germany. Seifert is an expert in artificial intelligence in energy, with a focus on the application of machine learning to predict energy consumption.

• Sven Tomić from the University of Zagreb, Croatia. Tomić is an expert in artificial intelligence in energy, with a focus on the application of machine learning to optimize energy management in buildings.

These are just a few examples of the leading theorists in Europe in the field of the use of artificial intelligence in energy. Many other experts also make significant contributions to this field

2. Leading theorists in Europe in the field of the use of artificial intelligence in energy (II)

Of course, these are some of the leading theorists in Europe in the application of artificial intelligence in energy:

• Dr. Andreas Müller: Head of the research department for artificial intelligence in energy at the Fraunhofer Institute. His research focuses on the development of AI algorithms for the optimization of energy production and consumption in smart grids.

• Prof. Dr. Gabriela Hug: Professor at ETH Zurich and expert in the application of AI in energy systems. Her research focuses on the development of AI solutions for predicting power grid failures and optimizing energy management.

• Dr. Dirk Wewering: Head of the Research Department for Artificial Intelligence in Energy at Siemens. His research focuses on the development of AI solutions for optimizing the operation of power plants and predicting energy consumption.

• Prof. Dr. Carlo Alberto Nucci: Professor at the University of Bologna and expert in the application of AI in smart grids. His research focuses on the development of AI solutions for optimizing energy distribution in smart grids and predicting energy consumption.

These are just some of the leading theorists in Europe for the application of AI in energy. Their research has a significant impact on the development of AI solutions for optimizing energy production, distribution and consumption, and contributes to the creation of sustainable energy systems.

3. EU institutions, the development of artificial intelligence and its application in energy

EU is investing significantly in research and development of artificial intelligence (AI), including projects focused on the energy sector. Here are some of the leading European researchers and institutions working on the application of AI in energy:

Institutions:

• Leading European researchers in the field of AI discuss the future of excellence “AI Made in Europe”: This initiative brings together experts from across Europe to discuss the future of the development and application of AI in Europe, including in the energy sector.

• European research, development and deployment of AI: The EU is investing significantly in research and development of AI, including projects focused on energy.

• Application of AI in the electricity system: This study explores the possibilities of applying AI in the electricity system, including improving efficiency, reliability and security.

Research areas:

• Smart grids: Artificial intelligence is used to develop smart grids that can automatically manage the production, distribution and consumption of energy, optimising the entire system.

• Predictive maintenance: AI is used to predict failures in energy plants and equipment, enabling timely maintenance and reducing costs.

• Energy efficiency: AI is used to develop systems that can optimize energy consumption in buildings and industrial plants, reducing costs and greenhouse gas emissions.

• Renewable energy integration: AI is used to predict energy production from renewable sources such as the sun and wind, enabling their better integration into the electricity system.

Examples of AI applications in energy:

• Hydropower plant operation optimization: AI is used to predict water inflow into reservoirs and optimize electricity production.

• Smart home energy management: AI is used to automatically control household appliances, optimizing energy consumption and reducing electricity bills.

• Development of autonomous energy systems: AI is used to develop autonomous energy systems that can manage energy production and consumption on their own, without human intervention.

Artificial intelligence has great potential to transform the energy sector, making it more efficient, reliable and sustainable. I believe that in the future, AI will be increasingly researched and applied in the energy sector, which will lead to significant benefits for society as a whole.

4. Leading companies in Europe for the application of AI in the energy sector

Several leading European companies stand out in the application of artificial intelligence (AI) in the energy sector, each contributing in its own way:

• Siemens AG (Germany): Siemens is a global leader in energy technology, and their application of AI covers a wide range of areas, including predictive maintenance, network optimization and energy management.

• Schneider Electric (France): This company is known for its energy management and automation solutions. By using AI, Schneider Electric helps companies improve energy efficiency and reduce costs.

• Enel (Italy): Enel is one of the largest European energy companies. Their use of AI includes optimizing energy production from renewable sources, as well as improving the efficiency of energy distribution.

• EDF Energy (France): This company uses AI for predictive maintenance of its nuclear plants, increasing safety and reliability.

• Statkraft (Norway): Statkraft is the largest renewable energy producer in Europe. They use AI to optimize the operation of their hydroelectric power plants and other renewable energy facilities.

These companies are just a few examples of how AI is being used in the energy sector in Europe. This technology is expected to continue to develop and play an increasingly important role in the future of energy.

5. Leading companies in Croatia for the application of AI in the energy sector

Artificial intelligence (AI) is playing an increasingly important role in the energy sector, and Croatia is no exception. Companies recognize the potential of AI to improve the efficiency, reliability and sustainability of energy systems. Here are some of the leading companies in Croatia that are engaged in the application of AI in the energy sector:

• KONČAR - Elektroindustrija d.d.: As one of the largest power companies in the region, KONČAR is actively researching and implementing AI technologies in its solutions. Their focus areas include smart grids, predictive maintenance, and energy generation optimization.

• HEP - Hrvatska elektroprivreda d.d.: HEP, as the national electricity company, is also investing in the development and implementation of AI solutions. Their projects include using AI for forecasting energy consumption, distribution network management and optimization of production from renewable energy sources.

• Ericsson Nikola Tesla d.d.: This company is known for its telecommunications solutions, but also has a significant presence in the energy sector. Their solutions use AI for smart energy management, network optimization and integration of renewable energy sources.

• Microblink: Although primarily known for its document recognition solutions, Microblink also has experience in applying AI in the energy sector. Their technology can be used to analyze data from meters and other devices, which allows for a better understanding of energy consumption and system optimization.

In addition to these companies, there is a growing number of startups and smaller companies that are developing innovative AI solutions for the energy sector in Croatia.

It is important to note that this area is rapidly developing, and the list of companies and their activities may change over time.

6. Scientific institutions and energy companies in Croatia dealing with the application of artificial intelligence in energy (I)

Artificial intelligence (AI) is playing an increasingly important role in the energy sector, and Croatia is not lagging behind in this trend. Here are some of the leading researchers and institutions dealing with the application of AI in energy in Croatia:

University of Zagreb, Faculty of Electrical Engineering and Computing (FER): FER is the leading institution in Croatia for research and development of AI. Their Center for Artificial Intelligence (CAI) conducts numerous researches in the field of AI, including applications in energy.

Ruđer Bošković Institute (IRB): IRB is another important research institution in Croatia dealing with AI. Their researchers work on various projects related to the application of AI in energy, such as energy consumption forecasting, optimization of energy systems and development of smart grids.

Croatian Electric Power Company (HEP): HEP, as the largest energy company in Croatia, is also investing in the development and application of AI in its business processes. They use AI to predict energy consumption, optimize electricity production and improve the efficiency of their systems.

Private companies: In Croatia, there are a growing number of private companies engaged in the development and application of AI in the energy sector. These companies offer various solutions, such as smart energy management systems, predictive maintenance and optimization of energy consumption.

Some of the prominent researchers in this field are:

• Prof. Dr. sc. Zdenko Kovačić (FER)

• Prof. Dr. sc. Tomislav Capuder (FER)

• Dr. sc. Ivan Petričević (IRB)

7. Scientific institutions and energy companies in Croatia engaged in the application of artificial intelligence in the energy sector (II)

These are just a few examples of leading researchers and institutions engaged in the application of AI in the energy sector in Croatia. This area is developing rapidly and AI is expected to play an increasingly important role in the energy sector in the future.

There are several leading theorists and researchers in Croatia who are engaged in the application of artificial intelligence (AI) in the energy sector. Their work focuses on various aspects, including network optimization, demand forecasting, renewable energy integration, and the development of smart energy systems. I will highlight some of the key figures and institutions:

Institutions:

Faculty of Electrical Engineering and Computing (FER) of the University of Zagreb: FER is the leading institution in Croatia in the field of electrical engineering and computing, and a large number of researchers are engaged in the application of AI in energy.

Ruđer Bošković Institute: This institute also has a significant contribution to AI research and its application in energy.

University of Rijeka: Research in the field of energy and AI is also conducted at the University of Rijeka.

Key researchers (examples):

Professors and researchers from FER: Numerous professors and researchers from FER actively participate in projects related to the application of AI in energy. Their work includes the development of machine learning algorithms for energy consumption forecasting, optimization of energy systems, and the development of smart grids.

Researchers at the Ruđer Bošković Institute: Researchers at the Ruđer Bošković Institute are working on the application of AI in the development of new energy technologies and the optimization of existing systems.

Research areas:

Energy consumption forecasting: Using AI, especially machine learning algorithms, to predict energy consumption in different time periods.

Energy grid optimization: Developing algorithms and systems for optimizing the operation of energy grids, including load balancing, reducing losses and improving efficiency.

Renewable energy integration: Applying AI to integrate renewable energy sources (solar energy, wind energy) into the power system.

Smart energy system development: Working on the development of smart energy systems that use AI to manage, monitor and optimize energy consumption.

Smart cities: Implementing AI solutions in smart cities to optimize energy efficiency and energy management.

Note:

This is only an overview and is not an exhaustive list of all researchers and institutions.

The field of AI and energy is developing rapidly, so both researchers and their interests are changing.

For more detailed information, I recommend searching scientific databases (e.g. Scopus, Web of Science) using keywords such as "artificial intelligence", "energy", "machine learning" and "Croatia".

III. Useful information for the third panel

The third panel

The energy market in the new energy order and geopolitical turmoil

1. Leading EU experts on energy market issues

Of course, here are some of the leading experts in Europe on energy market issues:

• Simone Tagliapietra is a senior fellow at the Bruegel Research Institute and an expert on EU energy policy.

• Alberto Pototschnig is the Director of the Agency for the Cooperation of Energy Regulators (ACER).

• Leonor Callado is the President of the Portuguese energy regulator ERSE and the President of the Council of European Energy Regulators (CEER).

• Marie-Pierre Fauquembergue is director of European affairs at the French energy giant EDF.

• András György Deák is a senior associate at the Bruegel Research Institute and an expert on the energy policy of Central and Eastern Europe.

This is just a small selection of some of Europe's leading experts on energy market issues. Many other experts also make valuable contributions to this field

2. European experts for energy markets and their role

European energy market experts are key players in shaping and functioning of the energy sector. Their expertise covers a wide range of areas, including:

• Regulation and policy: Understanding and interpreting EU regulations, laws and directives, as well as national policies that affect the energy market.

• Energy trading: Knowledge of electricity, gas and other energy trading mechanisms, including spot markets, futures and bilateral contracts.

• Market analysis: Monitoring and forecasting price movements, supply and demand, as well as identifying trends and opportunities in the energy market.

• Renewable energy sources: Understanding the technologies, costs and integration of renewable energy sources into the power system.

• Energy efficiency: Understanding measures and programs to improve energy efficiency in different sectors.

European energy market experts often work in the following organizations:

• Energy companies: Producers, distributors and traders of energy.

• Regulatory bodies of the Agency that supervise and regulate the energy market.

• Consulting firms: They provide advice and expertise on energy issues.

• Research institutions: They are engaged in research and analysis of energy trends and technologies.

• Non-governmental organizations: Promote sustainable energy and energy efficiency.

Some of Europe's leading energy market experts include:

• Simone Tagliapietra: Researcher at Bruegel, expert on EU energy policy.

• Alberto Pototschnig: Director of the Agency for the Cooperation of Energy Regulators (ACER).

• Klaus-Dieter Borchardt: Former official of the European Commission, expert in energy law.

These experts, like many others, play a key role in shaping the future of the energy market in Europe.

3. Energy Market Experts in Croatia and Their Role

Energy Market Experts in Croatia are individuals who have expert knowledge and experience in the field of energy, and in particular in relation to the functioning of energy markets. Their role is crucial in understanding the complexity of the energy sector, analyzing trends, forecasting future developments, and advising on energy-related strategies and policies.

Key roles and responsibilities of energy market experts:

• Market Analysis: Monitoring and analyzing supply, demand, prices, and other relevant factors in energy markets.

• Trend Forecasting: Forecasting future market developments, including energy prices, technological changes, and regulatory impacts.

• Strategy Development: Advising on strategy development for companies and organizations operating in the energy sector.

• Regulatory Affairs: Monitoring and understanding regulations and laws that affect energy markets.

• Consulting: Providing advice on energy policies, investments and risk management.

Areas of activity of energy market experts:

• Power industry: Production, transmission, distribution and consumption of electricity.

• Energy trading: Buying and selling of electricity and other energy sources on the market.

• Renewable energy sources: Development and integration of renewable energy sources (sun, wind, water, biomass) into energy systems.

• Energy efficiency: Promoting measures to reduce energy consumption and increase energy efficiency.

• Oil and gas industry: Exploration, production, processing and distribution of oil and gas.

Skills and competences of energy market experts:

• Expertise: Deep understanding of the energy sector, markets and technologies.

• Analytical skills: Ability to analyze data, identify trends and predict future developments.

• Communication skills: Ability to communicate clearly and effectively with different stakeholders.

• Problem solving: Ability to identify problems, develop solutions and make decisions.

• Teamwork: Ability to collaborate with other experts and stakeholders.

Institutions and organizations that employ energy market experts:

• Energy companies: Producers, distributors and traders of energy.

• Consulting companies: Specialized in energy consulting.

• Regulatory bodies: State agencies responsible for regulating the energy sector.

• Financial institutions: Banks and investment funds that invest in energy projects.

• Universities and research institutes: Engaged in research and education in the field of energy.

Examples of energy market experts in Croatia:

• Dražen Jakšić: Director of the Hrvoje Požar Energy Institute.

• Dalibor Mikulić: International energy expert.

These are just a few examples of energy market experts in Croatia. Many other experts contribute to the development of the energy sector with their knowledge and experience.

4. Leading European regulator for energy markets

The leading European regulator for energy markets is the Agency for the Cooperation of Energy Regulators (ACER). ACER is an agency of the European Union based in Ljubljana, Slovenia. Its main task is to coordinate the national energy regulatory authorities of the EU member states, ensuring cooperation and integration of the European energy market.

In addition to ACER, ENTSO-E (European Network of Transmission System Operators for Electricity) and ENTSOG (European Network of Transmission System Operators for Gas) also operate in the European energy market. These organizations play a key role in the development and functioning of the EU internal energy market.

5. Leading Croatian regulator for energy markets

The leading Croatian regulator for energy markets is the Croatian Energy Regulatory Agency (HERA). HERA is an independent regulatory body operating in the field of energy in the Republic of Croatia.

HERA's responsibilities include:

• Regulation of the electricity, gas, thermal energy and oil markets. This includes issuing licenses for energy activities, supervising the work of energy entities, setting prices and tariffs, and protecting consumers.

• Promoting competition in energy markets.

• Ensuring the reliability and security of energy supply.

• Encouraging the use of renewable energy sources and energy efficiency.

In addition to HERA, the Croatian Transmission System Operator (HOPS) for electricity and Plinacro for gas also operate in the Croatian energy market. These companies play a key role in the transmission and transportation of energy.

For more information about HERA, you can visit their official website: https://www.hera.hr/

IV. Useful information for the fourth panel

Fourth panel

Croatia as a new EU gas hub within the new energy order

1. Croatia as a new EU gas hub within the new energy order

Croatia has the potential to become a significant gas hub for the European Union, primarily thanks to the LNG terminal on Krk and plans to expand capacity, as well as the construction of new gas pipelines.

The current capacity of the LNG terminal is 2.9 billion cubic meters of gas per year, and an expansion to 6.1 billion cubic meters is planned by 2025. This would enable Croatia to become an important gas supplier to neighboring countries, such as Slovenia, Austria and Hungary, but also beyond.

In addition to the LNG terminal, Croatia is also working to strengthen its gas infrastructure, including the construction of new gas pipelines and the modernization of existing ones. This will enable better connectivity with other countries and increase security of gas supply.

Croatia also plans to connect to the gas pipeline from Azerbaijan, which would further diversify gas sources and reduce dependence on Russia.

All this makes Croatia a potentially important player in the European gas market, and its position as a transit country could bring it significant economic and geopolitical benefits.

2.LNG Croatia

LNG Croatia refers to the company LNG Croatia d.o.o. that operates the Liquefied Natural Gas (LNG) Terminal on the island of Krk, near Omišalj. It is an extremely important strategic project for Croatia and the entire region, and here is why:

What is an LNG terminal?

LNG (Liquefied Natural Gas) is natural gas that has been cooled to a liquid state for easier transport and storage. An LNG terminal is a facility where the liquefied gas is converted back into a gaseous state and sent to the gas pipeline network.

LNG Terminal Krk - key information:

• Location: Omišalj, island of Krk, Croatia

• Capacity: Currently 2.9 billion cubic meters of gas per year, with a planned expansion to 6.1 billion cubic meters by 2025.

Significance:

- Security of supply: Reducing dependence of Croatia on a single gas supplier and increases security of supply.
- Diversification of sources: Enables gas imports from different parts of the world.
- Regional hub: Croatia becomes an important regional hub for gas trade.
- Economic development: Creates new jobs and stimulates economic development.

Capacity expansion:

The planned expansion of the LNG terminal capacity on Krk will enable Croatia to become an even more important player in the European gas market. This will also enable gas supply to neighboring countries, such as Slovenia, Austria and Hungary.

Connection to gas pipelines:

The LNG terminal is connected to the Croatian gas transport system, which enables gas distribution throughout the country. New gas pipelines are also planned to ensure even better connectivity with other countries.

Conclusion:

The Krk LNG terminal is a strategically important project for Croatia and the entire region. Its expansion will further strengthen Croatia's position as an important energy hub in Europe.

Sources: Gemini Google

AI GPT Deep

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