

ASPEN ENERGY SUMMIT

2017

Conference Report

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ASPEN ENERGY SUMMIT

The Aspen Energy Summit was created in order to explore strategic issues, at the intersection between energy, economics, geopolitics and security. A select group of national and international leaders and policy experts from energy producing and consuming industries, government officials, and research organizations gathered in Ploiești for an open discussion tackling subjects with national and regional importance. These discussions are designed to encourage new, collaborative, cross-disciplinary thinking.

ASPEN POLICY PROGRAM

The Aspen Energy and Sustainability Program represents an active and prominent convener of non-partisan policy dialogue and neutral forums focused on key energy topics and ways of advancing environmental sustainability in a technological world. The Program's mission is to discuss the enduring questions about society and economic opportunities, to prompt a new thinking among diverse participants by deliberately testing assumptions and policies about sustainable energy use, clean energy, vulnerable consumers, energy security and the geo-strategic context of the industry. The Program promotes values-based dialogue between thought leaders from business, government, NGOs, and academia to address complex energy policy challenges in an atmosphere that allows deliberation, creativity and collaboration to flourish. Like the Aspen Institute as a whole, the Energy program seeks to inspire and explore new ideas and provoke action in the real world.

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FOREWORD

The **Aspen Institute Romania** was privileged to partner with the local authorities in celebrating a long tradition of the energy industry in Ploiesti, a tradition that started 160 years ago with the first modern oil refinery in the world.

We believe it is our duty to help communities in exploring the opportunities that lay in the present, opportunities that will also lay the foundation and will shape the future of society and business. In this respect, we look at a number of tensions that impact the present-day energy industry, tensions that generate disruption to the business models, but also offer great opportunities. The main aspects we set to emphasize are:

- Technology and the ongoing trend of digitalization
- Geopolitical outlook and energy security
- Energy independence and connectivity of the CESEC region
- Different realities of national interest and common European interest
- Building infrastructure connections through the web of energy geopolitics

The Aspen Energy Summit was created in order to explore issues at the intersection of energy, economics, geopolitics and security. A select group of national and international leaders and policy experts from energy producing and consuming industries, government officials, and research organizations gathered in **Ploiești** for a discussion of issues with national and regional relevance. The discussions are designed to encourage new, collaborative, cross-disciplinary thinking.

Aspen Energy Summit comes as a continuation of Aspen efforts in the energy sector, with 3 editions of the **Bucharest Forum Energy**, an ongoing **Aspen Energy Lab** and an **Aspen Energy and Sustainability Program**, the event at Ploiești is a natural step in our institute's efforts and mission.

The Institute acknowledges and thanks the Forum sponsors & partners for their support. Without their involvement, the **Aspen Energy Summit** could not have taken place.

Aspen Energy Summit will be organized on a yearly basis in September, in Ploiești, Prahova County.

Mircea Geoană

President

Aspen Institute Romania

EXECUTIVE SUMMARY

Aspen Institute Romania was privileged to partner with local authorities, business & institutional partners in celebrating a long tradition of the energy industry in Ploiesti, **a tradition that started 160 years ago with the first modern oil refinery in the world** and that celebrates PLOIESTI 2017 – WORLD CAPITAL OF OIL. The **Aspen Energy Summit** took place on **the 27th of September in Ploiesti**, Romania. The discussions focused on: Romania's role as a provider of energy security to the region, transnational cooperation with regard to the gas market – the BRUA (Bulgaria, Romania, Hungary, Austria) pipeline, Central and South-Eastern European Gas Connectivity (CESEC) extending cooperation on electricity, energy efficiency and renewable energy, and the geopolitical environment.

Romania's Governmental Perspective

In his message, **Prime Minister of Romania, Mihai TUDOSE**, highlighted the fact that *“the energy field is of maximum importance for the Romanian Government. The government looks carefully at the key trends and evolutions, in order to reach its objectives: **increasing energy security & independence**. Romania's tradition and existing potential are binding us to achieve energy independence and become suppliers of energy security in the region.”*. With this in mind, **the Romanian government has accelerated the efforts of finalizing the National Energy Strategy**, which will also include a list of essential projects such as the (i) *Reactors 3 & 4 from the Cernavoda Nuclear plant*, (ii) *the Tarnita Hydropower*, (iii) *the development of new capacities at the Oltenia Energy Complex*, (iv) *the BRUA project*.

“Romania's tradition and existing potential are binding us to achieve energy independence and become suppliers of energy security in the region.” - Mihai TUDOSE, Prime Minister of Romania

Mr. TOMA PETCU Minister for Energy, Government of Romania, has reconfirmed Romania's commitment towards completing the BRUA project¹, as a priority for Romania's gas sector and the region's security. **Mr. PETCU** has confidence that CESEC is an essential platform for the integration of the Central and South-Eastern European gas market. Romania officials are

¹ The BRUA corridor is a pipeline project that aims to connect Bulgaria, Romania, Hungary and Austria, connecting gas resources in the near region including the recent discoveries in the Black Sea.

confident that soon progress will be met with regard to another projects that helps the region in diversifying sources of natural gas, that is the AGRI LNG project².

The completion of the BRUA pipeline also offers an opportunity for Romania to capitalize on the discoveries in the Black Sea³, that would later **help the country become a regional energy hub**, a gateway for Europe. In this regard developing the transport routes and interconnections with neighboring countries is part of the Romania's energy infrastructure principles for development.

Mr. TEODOR MELESCANU, Minister of Foreign Affairs, Government of Romania believes that *“Central and South Eastern Europe, as well as the Greater Black Sea Area are regions where it is paramount to find **balanced energy security, energy equity and environmental sustainability**. It is also critical for Central and South-Eastern Europe to undertake the imperative of energy transition as closely linked to the consumers’ expectations.”*

According to **Ms. Gratiela Gavrilesu, Minister of the Environment, Romanian Government:** *“In the context of climate change, Romania’s progress in the energy sector & abundance of natural resources compels us to find the appropriate balance between development, sustainability and affordability.”* Romania is proud to have reached the 2020 environment goals, a decrease of CO2 emissions with 20% before the year 2020 and reaching an energy mix where an approximate of 24% is represented by energy from renewable sources (predominantly hydro).

* CESEC - Central and South-Eastern European Gas Connectivity is an enhanced regional cooperation platform. The aim of the group is to coordinate efforts to facilitate cross-border and trans-European projects that diversify gas supplies to the region, as well as to implement harmonized rules. From 2017 the group extended its area of interest to renewables & energy efficiency.

Initial members of the group include: Austria, Bulgaria, Croatia, Greece, Hungary, Italy, Romania, Slovakia and Slovenia. They were joined later by six Energy Community Contracting Parties: Ukraine, the Republic of Moldova, Serbia, the Former Yugoslav Republic of Macedonia, Albania, Bosnia and Herzegovina, Kosovo, and Montenegro.

Modernizing the energy sector is required not just from an economic standpoint but also for a better environment. The modernization process should be made while maintaining affordable prices for the consumer. That is why funding through EU instruments, as in the case of BRUA, and a transnational cooperation framework, such as CESEC*, represent key ingredients for stakeholders in the region. Building on the successful cooperation up to now, CESEC intends to extend its area of interest

² The AGRI Project is a Project of Common Interest of the EU as well as the first LNG project in the Black Sea. It is supposed to ensure transportation of gas from the Caspian gas fields, passing through Azerbaijan and Georgia, to an LNG Liquefaction terminal on Georgia's Black Sea coast, then across the Black Sea using LNGC's to a Regasification terminal in Romania. Further pipelines would allow the gas to transit through Romania to Hungary and other potential gas markets.

³ Black Sea Oil & Gas, a company in Romania, controlled by private equity firm Carlyle Group, declared it aims to start production by 2019 of two offshore wells in Neptun block of the Black Sea that are estimated to hold an approximate of 10 billion cubic meters of natural gas.

towards other fields, such as electric connectivity grids and renewables. Romania hosted the 4th ministerial meeting of the CESEC (Central and South-Eastern Europe Gas Connectivity), the Romanian government expressed its commitment to become a supplier of energy security to the region.

Ploiesti 2017 – World Capital of Oil

Zooming in, from the national outlook to a local perspective, highlights why Ploiesti and the Prahova county represent one of main engines when talking about the Romanian energy sector and the importance of such a place in achieving the national agenda. **Mr. Bogdan TOADER, President of the Prahova County Council**, pointed out the fact that the tradition of Ploiesti and the Prahova county in the energy sector goes beyond the opening of the first oil refinery in the world, it also holds milestones such as the first school for foreman drillers in the world, the first institute for petroleum research and development in Europe and the only Oil and Gas Institute in South Eastern Europe, making Ploiesti the proud host of the title **World Capital of Oil in 2017**.

“The oil & gas industry is sure to continue to be the economic engine of the city of Ploiesti, the tradition & know-how, skilled workforce, vibrant business environment makes the city a key hotspot for investments.” - **Adrian DOBRE, Mayor of Ploiesti**.

The importance of the energy sector in the economic development of the city was backed by the numbers presented by Mr. **Aurelian GOGULESCU, President of the Chamber of Industry and Commerce Prahova**. Out of a total of 21.800 companies in the county of Ploiesti, about **730 companies** operate in the oil and gas industry, **more than 14.000 employees** work in the industry and about **31% of Prahova Country’s GDP is in the Petroleum industry**.

The growth of the energy sector is dependent on the skilled labor force, thus the Oil and Gas University in Ploiesti (UPG) is responsible for **6.000 students annually**, preparing specialists the energy sector needs in the future. To achieve this, the university invests in local and international partnerships according to **PhD. Eng. Mihail MINESCU, Pro-rector, UPG**. Working partnerships between UPG and companies like Engie or Enel allows for a cooperation between the public and private sectors that enables better training of the future workforce. UPG also has active partnerships with universities from the US (Oklahoma), Azerbaijan or China.

“I hope that in this ecosystem of big global players in the ecosystem of good governance and predictability, Romania should become, again, not only a source of smart engineers for export, but to be a source of smart engineering for business” – Mircea GEOANĂ

Keynote address: Maroš ŠEFČOVIČ, Vice-president of the European Commission, responsible with the Energy Union

Within the EU, which represents the world's largest trading block, Romania holds the assets that allow the country to become an energy player by following the completion of key infrastructure and production projects that will enable the country to export natural gas and play a key role in the region's energy security.

Mr. Šefčovič stated that: *"What is of crucial importance, what is the role Romania can play in improving the situation of Central Eastern and South-Eastern Europe? Because we know it from our empirical experience, but also through our results from impact assessments and vulnerability studies, that this is the region which is still the most vulnerable region in the EU when it comes to the energy security."*

From the last stress test, done in 2014, a lot of things have improved, there are more interconnectors and cross border flow has increased, better sources of supply have been set, a set of legislative measures that improve the situation has been implemented, progress has been made with projects of common interest such as AGRI (LNG project) or the BRUA corridor agreement. But it is important to build upon these accomplishments and extend cooperation in the region.

It is important to reiterate that **CESEC took a decision after the cancelation of the South Stream project that, in the future, it would not rely on a single big project**, but would use cross-national projects to better interconnect the gas markets of the region and seek to improve resilience by having at least 3 sources of natural gas.

"The CESEC progress with regard to the gas sector brought us to build on the good cooperation, to bring the same energy and work together in the CESEC format on other areas such as energy efficiency, electricity interconnections and renewables and the overall transition to clean energy". Also, Romania's progress in coupling of the electricity market with the Czech Republic, Slovakia and Hungary, was greatly beneficial for all 4 countries.

"Romania has the assets required to become an energy player, an energy exporter" - Maroš ŠEFČOVIČ, Vice-president of the European Commission, responsible with the Energy Union

Increasing energy security lies also in improving energy efficiency. *"For Europe, a 1% gain in energy efficiency means a decrease of about 2.6% of gas imports"*. Energy efficiency and European funds allow for efficiency projects to be developed that help the vulnerable European costumers save money by reducing energy bills and tackle energy poverty. In this aspect, Romania allocated more than 1 bln. Euro for energy efficiency projects from the structural funds. *"We are undergoing the deepest*

transformation of the European energy sector, a transformation in which an unprecedented empowerment of the consumer is taking place.”

Romania is one of the few countries that achieved the EU’s 2020 target ahead of time and can furthermore use its good results in trading and helping other countries to reach their goal. **According to European experts, the potential of Romania is of 740 GW, out of which 130 GW can be implemented very quickly and cost effectively.**

In order to unleash Romania’s investment potential in such projects, the government should invest in creating an investment platform that aggregates the projects and works with the banking system in order to achieve innovative financing.

Romania-US Security Cooperation

Having a background of 20 years of Strategic Partnership with the USA, **Romania is encouraged to continue its commitment in becoming a regional energy player.** The US Administration is a staunch supporter of European energy security, built upon the pillars of removing barriers to energy development and trade, promoting US energy trade (including technology, services and resources) and ensuring economic and energy security.

The United States encourages all partners and allies **to seek energy security by minimizing dependency of oil and gas on a single supplier. True energy security can be achieved throughout the diversification of fuel types, supply sources and delivery routes.** According to **H.E. Hans KLEMM, ambassador of the USA to Romania**, *“Nord Stream II & Turkish Stream undermine these efforts as it increases dependency on Russian gas, it enforces Russian dominance of the European gas market, reduces opportunities for the diversification of energy sources and advances Russians goals of undermining Ukraine by ending its role as a transit country.”*

The construction of **Nord Stream II would concentrate over 78% of Russian gas imports to the EU through a single route**, creating a potential choke-point that would significantly increase Europe’s vulnerability to a supply disruption.

The US stands by Romania in the country’s effort to contribute to regional energy security by developing interconnectors with neighboring countries, seeking different fuel types, as well as alternative routes and sources. **Carla Elena SNYDER, Energy Diplomacy Officer for Western Europe, Resource Office for Energy, US State Department** stated: “Because of Romania’s geopolitical situation, long history in the energy sector, development and production and close ties to the US, **Romania is a**

“Romania is a critical player in European energy security.” – Carla Elena SNYDER, Energy Diplomacy Officer for Western Europe, US State Department

critical player in European energy security. Romania has made very important contributions such as the support for the connection with the Republic of Moldova, the progress on BRUA and efforts for the interconnectors with Bulgaria and Hungary.”

The energy sector plays a key role in ensuring security and prosperity, both those of Romania and those of the US, the two countries will continue to foster cooperation, government to government as well as business to business.

“Infrastructure and energy are critically related and are driving factors that improve security (economic, physical and strategic), but the question is: who is going to lead, who will be the leaders and how will they get it done?” – Harlan ULLMAN, Senior Adviser, Atlantic Council

DEVELOPING A COMPETITIVE ENERGY MARKET IN ROMANIA AND BUILDING REGIONAL INTERCONNECTIONS

Developing a competitive energy market in Romania needs investment in energy infrastructure and modern production capabilities. Public and private efforts should work together in using the existing reserves and recent identified resources in order to make Romania an energy exporter and transform it into a regional energy hub, as the Romania Gateway* project showed, connecting East and West.

The recent geopolitical context continues to raise the question of a multi-speed Europe, a Europe with different agendas between the core and the periphery. Romania and the rest of the countries in the region need to come together and find appropriate mechanisms to cooperate on issues such as energy security. **This year, the inter-governmental framework CESEC is extending its scope from natural gas towards the power sector, promoting renewables and energy sufficiency, setting out projects of common interest with the goal of increasing energy security and meeting electricity demand on the medium and long term at affordable prices for consumers.**

* Romania Gateway is a project of the Aspen Institute Romania, in partnership with McKinsey & the Romanian Government that analyzed key sectors of the Romanian Economy. As result, Romania is seen as having the potential to become an energy hub.

The EU's Energy Union needs to find Romania a modern competitive market. In this regard, efforts in becoming a regional hub need to continue towards a **predictability, stable, transparent** functioning market. According to the **National Energy Regulatory Agency**, the Romanian energy sector is already on track, having achieved several milestones that allows for a better functioning energy Romanian market:

- **Romanian energy market has an approx. size of 20-25 bln. euro per year out of a national GDP of 180 bln. euro.**
- **Hidroelectrica & Nuclearelectrica managed to get from insolvency, 5 years ago, to a 1 bln. contribution to the state budget.**
- **From 2012, 100% of electrical power is freely traded on the market national.**
- **2017 is the first year in which more than 50% of the national gas production is traded on the free market, the minimum quota was set at 35%.**

- **Romania has set up all the European provisions regarding energy integration for the electricity and gas market. This achievement allowed it to complete the process of linking the market for the next day with Hungary, Czech Republic, Slovakia.**

In the near future, ANRE hopes that Romania can continue linking the market with another 17 states, that would allow for an approximate 15% increase in yearly exports of electricity

A number of practical achievements helped improve cooperation in South East Europe, an increasing number of initiatives coming out of the region (as opposed to a top down element from the EC), the process towards a single regulatory framework for the region, extending cooperation to electricity, cybersecurity and efficiency. One major challenges for projects in the region continues to be a dependency towards public funding of projects. According to **Christian EGENHOFER, Senior Research Fellow & Director, CEPS & CEPS Energy Climate House**: *“A shift of emphasis from the hardware dimension (interconnection, limited infrastructure projects, pipelines) towards the software (market functioning elements) has taken place.”*

Even though EXXON Mobil’s investment in the Neptun block will increase Romania’s relevancy and role as a supplier of energy security, other ingredients are needed in order for the country to become a regional hub. Competitiveness and performance should be met in other places of the energy sector. Such is the case of Transgaz & Conpet, the national transmission system operators for Gas and Oil. In the case of the national transporter of oil in Romania, CONPET S.A., that managed to invest 44 mil. \$ in modernizing its network, triple its share value (since listing in 2013) and have a 5-year period of increasing profits are indications of a positive outlook of the Romanian oil sector. Romania’s network of oil transportation has 3800 km of pipelines and a capacity for transportation of 18.5 mil. tons of oil per year. According to **Liviu Ilasi, General Director of CONPET S.A.** existing challenges for the growth of the sector should be tackled by improving strategic partnerships and consolidating inter-state mechanisms and diminishing risk dependency through diversification of external energy sources

Building interconnections with neighboring countries is not important just for Romania. The Republic of Moldova is a country depended on energy imports and lacking in natural energy resources, therefore the Moldavian officials aim to diversify the energy mix and more important, the energy sources. In this regard, essential projects for Moldova diversification process depended on European cooperation. The Iasi-Ungheni gas pipeline will help the country be less dependent on the Russian imports and bring it closer to the European market.

“For Moldova the energy security specifically is the most important challenge that the country faces, and we need to find solutions that go beyond feasibility studies. Sometimes the feasibility should come after the geopolitical security.” - **Andrian Candu, President of the Parliament of Moldova**

A NEW PARADIGM: SECURITY, INTERCONNECTIVITY & FEASIBILITY

Despite significant natural resources reserves in the proximity of South-Eastern Europe, such as those found in the Caucasus, the Mediterranean Sea or the Middle East, lack of interconnections and incoherent political will makes infrastructure development a slow and rigid process. With the lack of energy transport infrastructure, ensuring the energy security of the region is a faraway goal.

NATO Should Pivot to the Black Sea, End Russia's Free Ride

According to **Arnold Dupuy, Virginia Polytechnic Institute**: "For NATO, Romania's strategic position represents a geo-strategic anchor in Europe along with Poland." In this aspect, US forces in Europe are dependent on the host nation's energy infrastructure (power generation and heating). Because NATO does not hold any energy infrastructure in Europe, free markets are vital for the organization, but because of geography and history, Eastern European nations are dependent on Russia for energy (especially when it comes to oil and gas). NATO member states' dependence on Russian oil and gas creates an unstable environment, therefore commercial energy markets have a vital role for security in the region. In this regard, the US is encouraging countries in the region to diversify sources of energy, to develop required transport and storage infrastructure and invest in cyber security resilience.

According to **Mr. Dupuy**, a geo-political power struggle is underway between Russia and the West that will determine long-term power structure as well as the orientation of Eastern Europe and fossil fuels represent a method through which power can be wielded.

Dr. Harlan Ullman, Senior Adviser, Atlantic Council believes that for NATO and the US **"a strategic pivot to the Black Sea is a vital political priority. As far as allies are concerned, Romania is a textbook example of supporting NATO and the U.S. Russia's intervention into Ukraine and**

"Can Romania still become a regional hub connecting East and West? Romania has no choice. An energy secure Romania is a prosperous and stable Romania" – Arnold Dupuy, Virginia Polytechnic



annexation of Crimea in 2014 changed the post-Cold War dynamics. Russia continues to fortify the Black Sea and its fleet. Turkey is certainly leaning East. The strategic response for the U.S. and NATO should be straightforward. Both should declare a strategic pivot to the Black Sea. And that pivot should be followed by specific actions to demonstrate intent. By enhancing the strategic value of the Black Sea, NATO will send a signal to Russia that free rides are over."

Energy security – a matter of national security

Because of Romania's geopolitical situation, long history of energy, production and size of the energy sector, the country plays a critical role in energy security for the region. Romania has made very important contributions such as the investments in the Iasi-Ungheni connection with Moldova, the progress on BRUA and efforts for the interconnections with Bulgaria and Hungary.

The government of Moldova's commitment to grow closer ties with EU's energy market is consolidated through the legal reforms so as to converge towards European standards and two privatizations of the national transmission system operator for gas and electricity, according to **Octavian Calmîc, Minister of Economy and Infrastructure, Moldova.**

These privatizations represent investment opportunities for Romania that could lead to better cooperation and interconnectivity of the two markets, and would enable Romania to become a provider of energy security for its neighbors. In the same time, the US shares concerns with regard to projects that undermine European energy security

"Energy is not a simple commercial commodity, it is a matter of national security and national foreign policy" – Mehmet Ögütçü, founder of Bosphorus Energy Club

such as Nord Stream II and Turkish Stream, that would lead to an increase dependency on the Russian gas & bypassing transit through Ukraine.

Romania's neighbor from across the Black Sea, Georgia, is another country that is fully pledged to the European energy community. For the next 4 years Georgia plans to update its legislative base and start the process of infrastructure modernization in accordance to the European principles.

Georgia's energy sector is relying heavily on renewables, 75% of electricity comes from hydro power. Recent developments led to the construction of 18 new hydro plants and one 1 wind farm. In the next 5 to 10 years, 2.000MW are supposed to be built while at the same time finalizing energy connection infrastructure with Azerbaijan and Armenia. According to **Iliia Elovshvili, Minister for Energy, Georgia**: Georgia is committed to interconnect the Caspian gas to the European markets through the AGRI project, the Trans-Caspian Pipeline & White Stream providing diversified sources of gas for the European markets.

When it comes to having sustainable alternatives to the dependency on Russian gas, Turkey is another key player in the region, but recent revival of Turkish Stream will increase Turkey's dependency on Russian gas from 30%, in the present, to 55%. Even though Turkey imports 98% of its natural gas and 93% of oil, the country is critical in ensuring security independence for Europe as it is the main transit country that can connect the EU to the Caspian and Middle East resources.

TRADITION & INNOVATION IN THE ROMANIAN ENERGY SECTOR

160 years from the first oil refinery in the world, Romania is not just a country with vast tradition in the field of energy, but also the potential to become a regional energy hub. What is the role of innovation for the Romanian energy sector in becoming an energy hub in the region?

Based on a recent study of the European Commission, Romania is a modest innovator with a performance below that of the EU average. Presenting from the report, **Mr. Cristian PARVULESCU, General Manager, Enevo Group**, underlined that *“Medium-high and high-tech industries have greater technology intensities than other industries. As a result, these industries will see an increase in R&D expenditures, patent applications and share of innovating enterprises. Countries with above average shares of these industries are expected to perform better”*. Emphasizing the importance of technology and added value products, Romania should focus on building the environment, that should enable technology development & innovation, an ecosystem that enables investing in pilot projects that would develop competitive products.

According to the World Economic Forum in a study about new emerging technologies, 5 out of the 10 technologies present will represent major game changers in the energy sector: block chain technology, batteries development, solar cells, artificial intelligence & autonomous vehicles, all these will bring dramatic changes to the energy field in the decades to come.

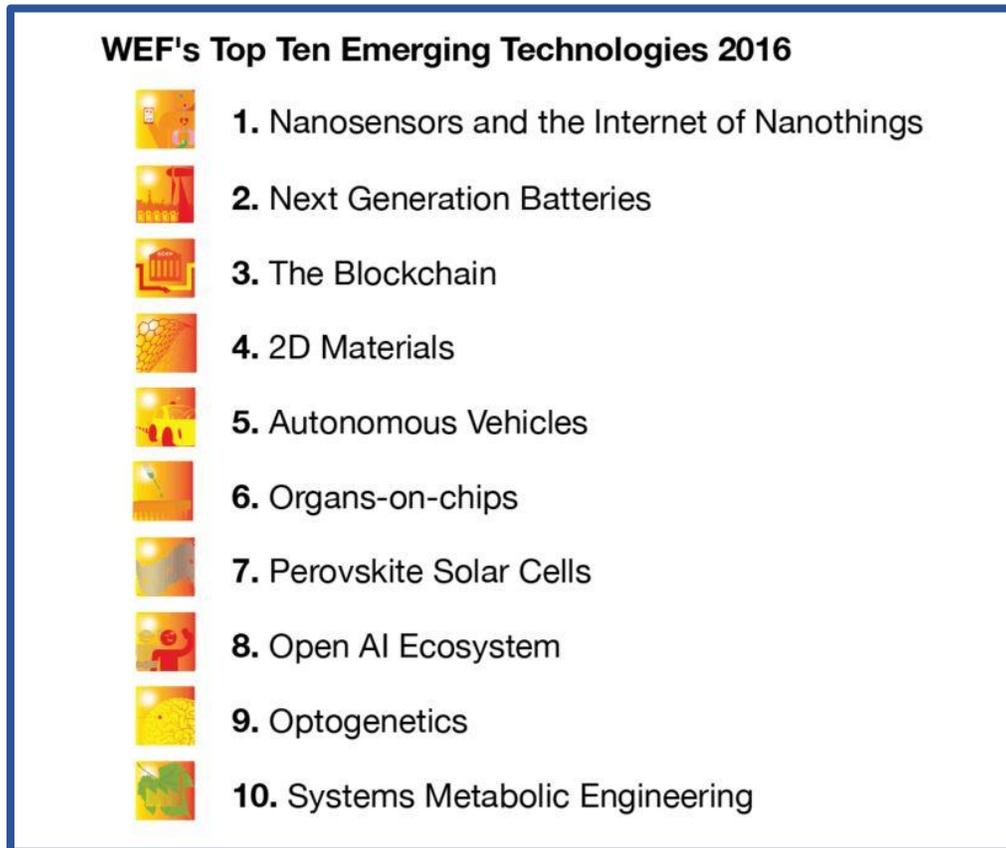
A Bloomberg study shows that in the next 20 years the electricity consumption will increase by 42%, as the cost of recent developed technologies is dropping considerably while automotive companies start producing more electrical cars.

According to **Mr. GIORGIOS STASSIS, Country Manager, ENEL Romania**: *“The digitalization process of energy companies will be driven by big data, but before this will occur, other steps should be taken”*. For Enel this means investing in: more automation, sensors, remote access, smart meters, cyber-security, are needed in order for energy companies to transform into *smart companies*.

As the automotive industry is at the heart of the energy sector, as well as part of the industries that will go through severe disruptions with the emerging of new technologies (especially new batteries), Romanian officials need to tackle the stress of the electrical car owner by fostering the development of a large network of charging stations.



KazMunayGas International invested 1.6 bln. dollars from 2007 to 2014, modernizing their 2 refineries, transport infrastructure as well as its distribution network, as a result Romania hosts one of the most productive and complex refineries in South Eastern Europe.



Source: World Economic Forum

In 1960 Romania's oil refining capacity was of 10 mil. tones per year. The next 10 years bought 5 new refineries, increasing Romania's capacity to 30 mil. tones per year. Higher environmental standards forced some refineries to close, leading to Romania's present-day refining capacity of about 12 mil. tones, made by 4 refineries.

According to **Mr. Cristian PARVULESCU**: *"Transforming Romania into a regional hub, needs a modern energy field as most of our energy production capacity was built around the 70s, put into use in the 80s, in accordance to a business model specific to the 60s. "*

THE FUTURE OF ENERGY

Capital, geopolitics and innovation in technology is set to determine changes to the energy mix of countries worldwide. The scenarios regarding Romania’s energy mix, looking at the available resources, energy trends, fiscal and legal framework suggests the country finds itself at a point where it shapes how the energy sector will be shaped and what will the critical projects for this sector be. What is a moment of change in the business model that will impact the entire energy sector, creates investment opportunities, but also exposes the big actors to greater risk than before. In this context, investment plays a bigger role in driving the change.

Mr. **Mehmet Ögütçü – founder of Bosphorus Energy Club** believes that timing is also a crucial aspect of building the infrastructure require to connect the areas of production to the major areas of consumption. A certain window of opportunity characterizes energy infrastructure projects, exceeding that time frame may lead to abandoning of projects, such was the case of TANAP or NABUCCO.

Today, energy is essential not just because of the crucial role it plays for an economy but also for the impact it has on politics. Changes regarding a country’s energy mix are sometimes rigid and slow because the political cost it brings to decision makers. The case of renouncing coal production in a very short timeframe would set a social crisis in some regions of Romania. Establishing incentives for one part of the energy sector over another could destabilize Romania’s energy mix. This puts public decision makers in a tough position in which they need to reach a **long term, sustainable and predictable balance**. In reaching such a balance, decision-makers must identify what are the expectations they have from the energy sector in the future? What are the fiscal & energy policy expectations in Romania and what is expected to global trends? What are the elements that foster growth?

“There is one thing predictable in Romania and that is its unpredictability.”
 – Cristian Pantazi, Journalist

The pace at which innovation is transforming all sectors exposes most companies in the energy sector to greater risk than before. In order to adapt, companies need to find new opportunities in diversifying their products portfolio, defining priorities of the new paradigm and invest more in pilot projects that will help them capitalize when the new type of market matures.

CEZ is one of these actors, being present in Romania for over 12 years, it aims to be strategic investor on the long term. After investing in a wind park in Dobrogea that has a capacity of 600 MW (in the Fantanele – Cogeaalac area of Constanta county), the company is set to diversify its operations by focusing on distribution and more integrated products, digitalization and smart metering as part of its transformation from a classical company to a *smart company*.

The new market of the energy sector is seen as defined by 4 aspects:

- **Deregulation**
- **Digitalization**
- **Decentralization**
- **Decarburization**

Energy Transition

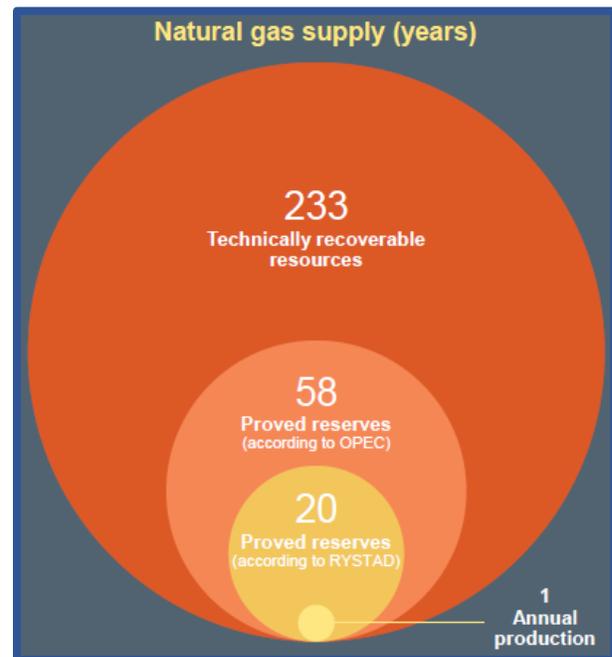
As energy transition takes off, access to new competitive clean-energy alternatives will accelerate. Businesses and government that want to capitalize on the opportunities will need to navigate a rapidly changing energy landscape shaped by four key dimensions:

- **Energy security:** Providing safe and reliable supply of energy to all, including the poorest
- **Energy costs:** Enabling acceptable energy costs to foster economic growth
- **Social acceptance:** Deploying energy solutions that are accepted by the civil society
- **Climate change:** Developing sustainable low carbon solutions suitable in a carbon constrained world

Decoupling greenhouse gas emissions from economic growth is improving at only 1% per year. Securing economic growth and energy efficiency will require innovative new approaches.

Energy use has a major impact on our climate-accounting for two-thirds of global greenhouse gas emissions. Forward-thinking businesses and governments are investing in solutions that use less energy, reduce costs, and make it easier for consumers to make the transition.

Switching from coal to gas could reduce the world's CO₂ emissions by 20%. With more than 200 years of gas reserves, utilities and oil and gas companies have a wealth of growth opportunities.



AT Kearney presentation

Carbon capture and storage is essential to keep global warming from rising above the 2°C threshold, but it requires robust carbon pricing mechanisms or direct public financial support to compensate for the immediate high upfront investments that are needed.

With major automakers introducing new models, the global fleet of electric vehicles could see massive growth (up to 140 million vehicles by 2030). Improving fuel engine efficiency will remain a priority for our climate for years to come.

Onshore wind and solar PV are the cheapest electricity sources in favorable locations, offering attractive investment opportunities and accelerating the energy transition.

Up to 20% of electricity is lost during transmission and distribution. Smart-grid technologies can recover most of these losses and reduce CO₂ emissions by up to 4 percent in the next 10 to 15 years.

The global energy transition is being led by new technologies and drastic drops in the cost of electricity storage needed to cope with fluctuations in renewable power generation.

The energy industry uses 15% of the world's supply of fresh water. Meanwhile, two-thirds of the world's population faces a water shortage. Solar and wind power improves energy security while also alleviating the water shortage in water stressed regions

If we used all of the world's coal, oil, and gas reserves, we would exceed the CO₂ threshold to limit global warming below 2°C three times over. Companies are already considering ways to optimize their portfolios to avoid stranded assets and are pursuing opportunities in gas and renewable energy.

Opportunities and Challenges

Offshore oil and gas projects have a long exploration period before taking a business investment decision. With Romania's recently confirmed offshore oil & gas resources, we are closing the end of the exploration phase and questions arise with the yet unfinished National Energy Strategy. That would set the fiscal and legal framework for the years to come. **Mr. DAN ROSU, Executive Director, Romanian Black Sea Titleholders Association** presented a number of significant and costly challenges that arise for the companies that wish to invest in offshore projects: *“Geological challenges, poor knowledge of the sea bed, seismic studies, exploration drills, assessment and confirmation studies are reasons that lead to the exploration phase to have a 10-years’ time span”*. This is the case of the Black Sea Domino field, the vast and complex processes that are associated with offshore oil & gas exploration is costly for energy companies in both time and capital. With this in mind, **Mr. DANIEL APOSTOL, Secretary General of the Romanian Association of Petroleum Exploration and Production Companies**, believes Romania's potential in the energy sector should be followed by a coherent, predictable national energy strategy that takes into consideration the high-risk companies incur. If this happens, Romania can be the first country to develop a project of such magnitude in the Black Sea.

Energy provider - Consumer relations

In today's energy market, as we are heading towards the market of the prosumer⁴, most companies focus their efforts towards their end consumer, especially when it comes to the electricity and gas markets. **The consumer-provider relationship** evolved similarly to the evolution the Romanian banking sector encountered over 20 years before. Looking back, we can talk about 4 milestones of the Romanian Energy market:

- **Monopoly**
- **Privatization**
- **Official liberalization**
- **Real liberalization**

In the **monopoly** stage, services provided through a monopoly that were not contestable by the consumer generating frustration and avoidance. The **privatization** stage brought confusion to the client, as the process generated much uncertainty and confusion for the average buyer. **Official liberalization** didn't affect the average person that much, as it mostly meant the rebranding of the providers and palpable change was set to come at a later date. We are now speaking about a **real liberalization** where investments generate a market where the options have been fully felt, empowering the consumer in relation with his energy provider.

Because of the past experiences, the market suffered a strong segmentation. The Romanian consumers are more demanding and characterized by tiredness and skepticism. **In this context trust becomes key in the relationship between energy providers and their clients.**

Preparing for the big disruption, Romania should focus on gaining from today's business model in order to prepare for disruption unfolds. The key towards a successful market is that it should not be dependent on a monolith group. The free market will always have a mainstream component as well as the segment called *early adopters*, segment that will drive change and innovation. Disruption in the energy sector is unavoidable, but the transformation process is much easier in a free market. Transitioning to a new model will allow for steep gains in efficiency and technology advancements. Stakeholders should accept the new paradigm and prepare for what the future brings.

⁴ Active energy consumers, often called 'prosumers' because they both consume and produce electricity.

CONCLUSIONS

The 2017 Aspen Energy Summit managed to look at where the Romanian energy sector is and what are the options for the future, a future that brings disruption as well as opportunities.

Major takeaways from the 2017 Aspen Energy Summit included the following:

- Romania is committed to become an important player in the regional energy market, wanting to be a key provider of energy security for the region.
- In the context of regional market integration, the BRUA pipeline is essential for connecting the recently discovered resources in the Black Sea with CESEC markets. This is an essential step in transforming Romania into a regional energy hub.
- Romania's energy focus is set on capitalization of the Black Sea resources, where an ongoing investment will focus on the 10 billion cubic meters of gas from the Black Sea. In order to fully capitalize the country needs the BRUA project operational.
- Diversification of sources and fuel types means that Romania is also focusing on LNG as potential alternatives, the AGRI LNG project is a viable alternative, but it should compete with other projects in the Caspian region.
- The EU and Romania's sustained effort to connect to the Republic of Moldova should continue, as the Moldovan officials continue their process of aligning to European standards. Officials from both sides making the point that feasibility is sometimes trumped by security and geopolitics.
- The US officials expressed concerns with regard to projects that undermine European energy security such as **Nord Stream II** and **Turkish Stream**, that would only increase dependency on the Russian gas, bypass transit through Ukraine's pipelines.
- Ploiesti is a key engine of the Romanian energy sector, offering skilled workforce and technical expertise, a growing business environment that enables national and transnational investments.

AGENDA

ASPEN ENERGY SUMMIT 2017

09:00-09:30 OPENING SPEECHES

- | | |
|---|---|
| <ul style="list-style-type: none"> • MIRCEA GEOANA
President of the Aspen Institute Romania • GRATIELA GAVRILESCU
Vice-premier & Minister of the Environment, Government of Romania • TOMA PETCU
Minister for Energy, Government of Romania | <ul style="list-style-type: none"> • MIHAI TUDOSE
Prime Minister of Romania • ADRIAN CANDU
President of the Parliament of the Republic of Moldova |
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09:30-10:00 PLOIESTI 2017 – WORLD CAPITAL OF OIL

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| <ul style="list-style-type: none"> • BOGDAN TOADER
President of the Prahova County Council • AURELIAN GOGULESCU
President of the Chamber of Industry and Commerce Prahova | <ul style="list-style-type: none"> • ADRIAN FLORIN DOBRE
Mayor of Ploiesti • PhD. Eng. MIHAIL MINESCU
Pro-rector, Petroleum-Gas University Of Ploiești |
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10:00-11:10 DEVELOPING A COMPETITIVE MARKET IN ROMANIA AND BUILDING THE CONNECTION WITH A REGIONAL AND EUROPEAN MARKET

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| <ul style="list-style-type: none"> • NICULAE HAVRILET
President National Energy Regulatory Agency • LIVIU ILASI
General Director CONPET S.A. | <ul style="list-style-type: none"> • GEORGETA CORINA POPESCU
President Transelectrica • Moderator: RADU TUDOR
Journalist |
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11:20-12:30 A NEW PARADIGM: SECURITY, INTERCONNECTIVITY & FEASIBILITY

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| <ul style="list-style-type: none"> • TEODOR MELESCANU
Minister of Foreign Affairs Government of Romania • ILIA ELOSHVILI
Minister for Energy Georgia | <ul style="list-style-type: none"> • OCTAVIAN CALMÎC
Minister of Economy and Infrastructure Republic of Moldova • CARLA ELENA SNYDER
Energy Diplomacy Officer for Western Europe, Resource Office for Energy US State Department |
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| <ul style="list-style-type: none"> • MEHMET ÖĞÜTÇÜ
President of Global Resources Partnership,
Founder of Bosphorus Energy Club • ARNOLD DUPUY
Virginia Polytechnic Institute | <ul style="list-style-type: none"> • CHRISTIAN EGENHOFER
Senior Research Fellow & Director,
CEPS & CEPS Energy Climate House • Moderator: HARLAN ULLMAN
Senior Adviser, Atlantic Council |
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12:00-13:15 KEYNOTE SPEECH BY MAROŠ ŠEFČOVIČ - VICE-PRESIDENT OF THE EUROPEAN COMMISSION, RESPONSIBLE WITH THE ENERGY UNION

14:45-15:00 KEYNOTE SPEECH BY H.E. HANS KLEMM - AMBASSADOR OF THE USA TO ROMANIA

15:00-16:00 TRADITION & INNOVATION IN THE ROMANIAN ENERGY SECTOR

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| <ul style="list-style-type: none"> • GIORGIOS STASSIS
Country Manager
ENEL Romania | <ul style="list-style-type: none"> • LAURENTIU COLTANEL
General Manager
Vega Refinery • Moderator CRISTIAN PIRVULESCU
General Manager
Enevo Group |
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16:00-17:15 THE FUTURE OF ENERGY

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| <ul style="list-style-type: none"> • DOINA VORNICU
COO & Member of the Board
CEZ Romania • MARIUS LUICAN
General Manager
Reveal Marketing Research • DANIEL APOSTOL
Secretary General
Romanian Association of Petroleum
Exploration and Production Companies | <ul style="list-style-type: none"> • ALEXANDRA VELESCU
Associate
A.T. Kearney Bucharest office • DAN ROSU
Executive Director
Romanian Black Sea Titleholders
Association • Moderator: CRISTIAN PANTAZI
Journalist |
|--|---|

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