

BLACK SEA REGION | EUROPE | MIDDLE EAST

JULY/AUG. 2020

ENERGY

INDUSTRY REVIEW

BLUE ECONOMY

Why Is It So Important

ROMANIAN GOVERNMENT'S PLAN

Investments of
EUR 12.48bn in
the Energy Sector

MOVING FORWARD WITHOUT COAL

Dusk of the Mining
Industry in Romania

Secretary of State Lucian Petrica Rusu

Unveils the Romanian Government Priorities
for the Energy Sector

clean energy since 1909



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A Sustainable Regionalization Model

In full pandemic, economic crisis that some consider to be only in its early stage, our attention was caught by an information according to which the Government

in Warsaw would plan to create a national energy giant to compete on the international markets with other energy groups.

Plans provide for the merger of four of the largest energy groups of the country, Government hoping to create a player able to compete on the international oil, gas and power markets.

For this purpose, PKN Orlen, the largest Polish refinery, which also has a business in Romania, in Floresti, Prahova County, where it owns an asphalt plant, has obtained the conditional approval from the European Commission to take over its smaller rival, Lotos, and announced that it wanted to buy the largest Polish gas company, PGNiG. All this given that this year PKN Orlen also purchased utility company Energa.

“We are building a powerful global energy group,” said Minister of State Assets Jacek Sasin, while PM Mateusz Morawiecki said the combined energy group could generate earnings before interest, tax, depreciation and amortization (EBITDA) of PLN 20bn (USD 5.07bn) and gave assurances that the merger

We have all given the example of Poland regarding the attraction of European funds and foreign investments, and now the officials in Warsaw have decided to create a ‘colossus’. In the meantime, in Romania, some analysts see viable only the decentralized companies that matter at regional level.

with Lotos would not lead to layoffs.

“We want to operate not only in Poland, but also have a significant presence in the region,” said Daniel Obajtek, CEO of PKN Orlen. This official announcement alone made the shares in PGNiG to climb by 3.6%, while Lotos titles went up 6.6%.

In exchange for obtaining European Commission’s approval, PKN Orlen will sell part of its filling stations in Poland and plans to make asset swaps with competitors in other European regions, Obajtek explained.

In 2019, PKN Orlen generated revenues of over PLN 111bn (USD 28bn), while the Lotos and PGNiG revenues amounted to almost PLN 30bn and PNL 42bn respectively.

State Treasury is the largest shareholder of the three companies listed on Warsaw Stock Exchange, holding a 27.5% stake in Orlen, 53% in Lotos and 72% in PGNiG.

The largest economy in Central and Eastern Europe, which relies on coal for 88% of its power production, wants to reduce this percentage in the coming years because mining is no longer profitable. Also, the authorities in Warsaw are taking measures to reduce reliance on Russian gas, by extending the LNG terminal in Swinoujście, on the Baltic Sea coast, and by building a gas pipeline to Norway.

We insisted on the details of this idea, which is the opposite of the principles of decentralization, much publicized over the past few years, to see that in full crisis one can speculate on opportunities.

We have all given the example of Poland regarding the attraction of European funds and foreign investments, and now the officials in Warsaw have decided to create a ‘colossus’. In the meantime, in Romania, some analysts see viable only the decentralized companies that matter at regional level.

What can we say about Romania? Besides the fact that we are in Top 5 at European level in terms of gas and oil resources, there isn’t much to brag about.

We don’t have regional gas pipelines, Black Sea projects are in standby and political disagreements in Bucharest don’t do any good to an economy and a country which clearly deserve more. ■

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Logistics Centre for Containers and Petroleum Products on Rafo Onesti Structure

At the end of July, Roserv Oil, part of Grampet Group, purchased the industrial platform of Rafo Onesti refinery, within a public tender procedure, coordinated by Casa de Insolventa Transilvania (CITR). “The transaction for selling the asset was completed according to the capitalization strategy approved by Rafo Onesti creditors, within the insolvency procedure, with the aim of developing the largest logistics center in Moldavia,” say CITR representatives.

Roserv Oil is a newly established company that will focus on the national development of logistics terminals for both containers and warehouses for petroleum products. In this context, the company has decided to purchase the assets of Rafo Onesti platform, in bankruptcy, with the purpose of developing the largest logistics center for containers and petroleum products that will serve Moldavia region. This specialization comes to supplement the main object of activity of Grampet Group, rail freight transport. With the takeover by Roserv Oil, Rafo Onesti assets become productive assets, part of the commercial activity of Grampet Group.

Once taken over by Roserv Oil, the platform could generate, in the long run, at least 600 jobs, and the first phase of the project, which involves the traded assets, will generate over 200 jobs. In the near future Roserv Oil will start a process to evaluate the existing facilities.

Clariant’s New Plant in Romania

Clariant is making good progress in building a new commercial-scale plant for the production of cellulosic ethanol from agricultural residues based on its sun-liquid technology. Paolo Corvo, Clariant’s head of sales and marketing, business line biofuels and derivatives, gave an update on the project during a webinar on how Europe can develop a market for advanced renewable fuels. The plant with an annual capacity of 50,000 tons of cellulosic ethanol will be located in Podari near Craiova in the south western part of Romania.

Cellulosic ethanol is an advanced, truly sustainable and nearly carbon-neutral biofuel that can readily be used in our existing car and energy infrastructure. It is produced from agricultural residues such as wheat straw, which are sourced from local farmers. The first-of-its-kind facility will generate new green jobs, business opportunities and economic growth in a rural area. By building the new plant, a new bio-based value chain built on agricultural residues will be established in the region, providing a tangible example for a successful circular economy approach. At the same time, this plant lays the foundation for a wide-scale implementation of advanced biofuels production in Europe and for a more sustainable energy supply in the European transport sector.

Clariant is investing more than EUR 100mln in its first sunliquid plant.

CONAF Elected to WEGate Council EC Platform

Romania’s National Confederation for Female Entrepreneurs (CONAF) has been elected to the WEGate Council, a platform of the European Commission, for its vast experience and involvement in the development of entrepreneurship in Romania, the organisation announced.

“The European Commission’s strategic commitment to gender equality is the framework for the commission’s future work

in this direction. The strategic commitment focuses on five priority areas, one of which is to increase women’s participation in the labour market and the economic independence of women and men. Consequently, it is necessary for policies and good practices to be developed for the development of an effective ecosystem to support female entrepreneurship. WEGate is a community of over 1,700

organisations across the European Union registered with the platform. WEGate Community Council is joined by key stakeholders who operate in various areas of entrepreneurial support for women, contributing to increasing the impact of the community by winning over key actors to create a renewed, more dynamic and vibrant community of women entrepreneurs,” said Cristina Chiriac, President of CONAF.

SNC-Lavalin Awarded Inspection Contracts for Cernavoda Unit 1



Canada's SNC-Lavalin has been awarded two inspection contracts by Societatea Nationala Nuclearelectrica (SNN) during a planned outage of a unit at Nuclearelectrica's Cernavoda nuclear power plant. The contracts, awarded to SNC Lavalin's wholly-owned subsidiary Candu Energy Inc, cover fuel channel and feeder assembly inspections on the Cernavoda Unit 1 nuclear reactor during the 2020 outage. These contract wins are aligned with the Company's new strategy moving forward towards engineering services and greater growth.

Fuel channel inspections are part of periodic inspection activities of the Cernavoda Unit 1 reactor. Feeder assembly inspections involve SNC-Lavalin engineers and technicians performing ultrasonic inspection activities on major components.

Cernavoda Unit 1 produces over 700 MW of electricity, about 10 per cent of Romania's electricity

demands. It was commissioned and began commercial full power operation in December 1996.

Since a nuclear plant does not emit greenhouse gases that contribute to acid rain and global warming, Unit 1 has avoided the release of more than four million tonnes per year of carbon dioxide (CO₂) that would have been produced by a fossil fuel plant. The Candu power reactor offers a combination of proven and superior state-of-the-art technology. It was designed specifically for electricity production, unlike other major reactor types that evolved from other uses. This focused development is one of the reasons that Candu has such high fuel efficiency. Candu 6 is Candu Energy's 700 MWe class nuclear power reactor. The first Candu 6 plants went into service in the early 1980s as leading-edge technology, and the design has continuously evolved since to maintain superior technology and performance.

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First Train Produced by Electroputere VFU Pascani

The prototype of the first train produced by Electroputere VFU Pascani, part of the GRAMPET Group, undergoes the last stage of testing. The DMU (Diesel Multiple Unit) model has left the factory under its new appearance with traditional Romanian motifs from the national folk costume that, through their symbolism, represent the Romanian cultural heritage.

“The DMU train represents Electroputere VFU Pascani’s debut on the new railway vehicle constructions segment,” says Gruia Stoica, President of GRAMPET Group, “and our choice for this visual identity aims to celebrate both the Romanian folk traditions and the tradition of the national railways industry, overall. Following its homologation, this model will be available for purchase in several countries in Europe and beyond, thus becoming a tool to promote the spirit and engineering craft in Romania.”

Launched at the end of 2014, the DMU train was designed and manufactured in accordance with the European Union’s railway standards, and can also be adapted to non-EU markets requirements. The prototype resulted from the work of more than 180 specialists from Electroputere VFU Pascani.

Rompetrol Launches the Cashback Service in Romania

Rompetrol Downstream, the retail division of the KMG International Group in Romania, launches a new service dedicated to individuals, through which they have the possibility to withdraw cash with 0% commission from any Rompetrol own station. The ‘Cashback’ service (cash withdrawal from merchant) is available at any time. The service allows withdrawal of cash from the personal debit or credit bank card in an amount of up to 200 RON/transaction together with a POS payment operation at the gas station. The amount and number of cash withdrawals may be influenced by the cash available at the cash register of the station at the time.

“We are constantly looking to develop and implement innovative solutions to offer customers an immediate benefit and contribute to improving their experience in our stations. The new service allows customers to use the payment terminals at the stations and withdraw cash from bank cards, along with the purchase of goods and/or services from the station,” says Sergei Sevenco, Rompetrol Downstream General Director.

Customers can currently use this service in all 156 Rompetrol own gas stations in Romania, the company being the first player in the oil & gas field and one of the first non-banking companies in Romania to launch the cash withdrawal service nationwide.

ERU’s First Supply of Natural Gas to Romania with Moldova Being a Transit Country

On the basis of the trilateral agreement between Moldovatransgaz LLC, Moldovagaz JSC and ERU Management Services LLC, which is part of the Energy Resources of Ukraine (ERU) Group, the first supply of natural gas to Romania with Moldova being a transit country took place. Historically, this route was used solely by Russia’s Gazprom.

The agreement reached as to the use of the Moldovan gas

transmission system opens the way for gas transit from Ukrainian underground storages to the market of Romania and other Balkan states. ERU Management Services LLC supplies gas under the contract with an international European supplier.

“ERU has become the first company to start operating on the gas transit route to Romania through Moldova, which is an alternate and attractive way to reach the European consumers. We can see

its significant potential as the volume of supplies through the territory of Moldova can amount to 3 billion cubic meters of gas annually,” noted Yaroslav Mudryy, Managing Partner with the Energy Resources of Ukraine Group. He also added that this would enhance the attractiveness of Ukraine as a viable Eastern European gas hub with the possibility of using underground storage capacities of 31 billion cubic meters that are currently only fifty percent utilized.

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OMV Petrom to Begin Oil and Gas Exploration Operations in Georgia's Black Sea Waters

Romanian oil and gas company OMV Petrom will begin oil and gas exploration operations in Georgia's Black Sea waters. OMV Petrom won the tender of the State Agency of Oil and Gas to obtain a general license to exploit the oil and gas resources of the Black Sea.

"We continue our plans to expand our upstream activities in the Black Sea region. This is another milestone, after signing a contract to enter the Han Asparuh exploration license in offshore Bulgaria. It is a natural continuation of our more than 40 years of experience in the Romanian Black Sea waters," Peter Zeilinger, member of the Executive Board, responsible for Upstream mentioned, referring to the gas exploration operations in Georgia's Black Sea waters.

The block will be formally awarded only if negotiation of a Production Sharing Contract is successfully finalized.

Nexans Wins Major Power Cable Contract for the Regeneration of Serbia's Largest Power Plant

Nexans has signed a EUR 2.1 million contract with Coptech to deliver 206 km of fire retardant power cables for the new flue gas desulfurization unit at Serbia's 1,560 megawatt (MW) Nikola Tesla A coal-fired power plant. The project is part of the Serbian government's pledge to invest EUR 14 billion in boosting the country's economy, including the development of its power generation sector. Nikola Tesla A is part of the Termoelektrane Nikola Tesla power generation complex in Obrenovac, a municipality of Belgrade. The addition of the flue gas desulfurization unit is a key step in achieving a major reduction in sulphur dioxide and particulates emissions from the plant to enable it to meet stringent EU environmental standards.

"We are delighted to be working alongside Coptech to deliver both LV and MV cables for the Nikola Tesla A project. Nexans Turkey, which will manufacture the cables, has worked closely with its strong local partnerships to deliver high-quality cables during this difficult period. We are excited by the prospect of making an important contribution to the power generation sector," Dumitru Sirbu, General Manager, Nexans Romania, says.

CEH to Provide System Services at a Power of 400MW Until the End of the Year

Complexul Energetic Hunedoara (CEH) will continue providing system services at a power of 400 MW until the end of this year, according to a draft Emergency Ordinance initiated by the Ministry of Economy, Energy and Business Environment. This measure had already been approved by the previous Government for the period April 2018 - June 30, 2020. According to the explanatory memorandum, this is a measure necessary so that the safety of operation of the national energy system (NES) is not affected.

In Romania, electricity production sources are distributed unevenly between the south and the north of the country. Thus, in the northern half of the country there are installed capacities that cover only 20% of the electricity production of the national system. Under these circumstances, in case of non-functioning of groups belonging to CEH, there is a need to ensure an increase in power transfer from the south of the country to the central area and, further, to the north and west of the national energy

system, with the related losses and overload of power transmission lines, the initiators explain.

Basically, through the operation of power plants belonging to CEH, electricity consumption in the north-west of the country is ensured mainly from energy production in that area, in contrast to the situation where these power plants are not operational, situation in which, to cover consumption, the transfer of power from other areas of the national energy system is necessary.

Kraftanlagen Romania S.R.L. was founded in 2007 as a subsidiary of the German company Kraftanlagen München GmbH and expanded its local services successfully in 2016 with IPIP S.A.

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EBRD Launches Mobile App Promoting Green Technologies

The EBRD launched a new mobile app, Tech Selector, which will change how the Bank delivers climate finance to meet the needs of clients who are increasingly using mobile devices for commerce during and beyond the coronavirus pandemic.

Technology and digitalisation continue transforming the way in which the financial sector is operating. Innovative applications of digital technology for financial services such as the Tech Selector are altering the interface between financial institutions and their clients while improving access to information about green technologies and climate finance.

Businesses and homeowners will be able to use their phones to find more than 18,000 green technologies that



improve energy efficiency, provide renewable energy, and reduce water use and soil erosion. Users will also be able to easily identify the technologies that benefit from EBRD support—from the

EBRD's Green Economy Financing Facility (GEFF), the Green Trade Facilitation Programme (Green TFP) or the Finance and Technology Transfer Centre for Climate Change programme.

Fostering a Single EU Balancing Market for Electricity

The European Union Agency for the Cooperation of Energy Regulators (ACER) publishes on June 18 two decisions in line with the EU Regulation establishing a Guideline on Electricity Balancing, aiming to integrate the EU balancing markets.

The first decision regards the methodology establishing a list of standard products for balancing capacity for frequency restoration reserves and replacement reserves. The methodology provides the rules for an efficient exchange, sharing and procurement of reserves on a cross-border basis in Europe.

The second decision concerns the methodology establishing a co-optimised allocation process of cross-zonal capacity for the exchange of balancing capacity or sharing of reserves, which should lead to an optimised allocation of cross-zonal capacities to the day-ahead energy or balancing capacity markets and therefore to maximise possible welfare gains.

ILF Consulting Engineers Becomes Member of the Bavarian Hydrogen Alliance

To strengthen and further develop Bavaria's technological competence in the field of innovative hydrogen technologies, the State of Bavaria founded the Center Hydrogen.Bavaria (H2.B) in 2019 and initiated the Hydrogen Alliance Bavaria.

ILF has many years of practical experience in consulting, planning, and project management in the energy and transport sector. ILF is currently supporting several pilot projects on hydrogen production, transport, and acceptance. Also, ILF advises companies on the use of hydrogen along the entire value chain, thus contributing to the establishment of a hydrogen infrastructure.

ILF is therefore contributing to the progress of hydrogen technologies as an official member of the Bavarian Hydrogen Alliance since June 2020.

World's First Hydrogen Blend Turbine for Gas Networks



Baker Hughes and Snam have completed testing of the world's first 'hybrid' hydrogen turbine designed for a gas network. The test paves the way to implement adoption of hydrogen blended with natural gas in Snam's current transmission network infrastructure.

The test took place at Baker Hughes' facility in Florence, Italy with a Baker Hughes' NovaLT12 gas turbine. The test marks the first time that a gas infrastructure operator such as Snam has tested this type of turbine for its existing assets. The turbine will be installed by 2021 at Snam's compressor station of Istrana, in the province of Treviso, Italy. Once installed, the NovaLT12 will not only help to compress and move hydrogen fuel blends through Snam's transmission network of pipelines, but the turbine will simultaneously use the same fuel to power itself.

Snam has the most extensive transmission network among European peers (over 41,000 km globally) and the largest natural gas storage capacity (ca. 20 billion cubic meters globally). Today, 70% of Snam's pipelines are already built with hydrogen-ready pipes to help contribute to the reduction of CO₂ emissions in Italy. This test further validates the viability of Snam's infrastructure, including the NovaLT12, to support the transition to hydrogen.

By blending 10% hydrogen into the total annual gas capacity transported by Snam, it is estimated seven billion cubic meters of hydrogen could be introduced into the network each year. This amount is the equivalent to the annual gas consumption of three million families and represents a reduction of five million tons of CO₂ emissions.



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New Gas Discovery in North El Hammad Offshore Egypt

Eni, bp and Total have successfully drilled the first exploration well in the North El Hammad license, in the conventional Egyptian waters of the Nile Delta, on the prospect called Bashrush. The new discovery is located in 22 meters of water depth, 11 km from the coast and 12 km North-West from the Nooros field and about 1 km west of the Baltim South West field, both already in production.

The well discovered a single 152 meters thick gas column within the Messinian age sandstones of the Abu Madi formation with excellent petrophysical properties. The well

will be tested for production. The discovery of Bashrush demonstrates the significant gas and condensate potential of the Messinian formations in this sector of the Egyptian Offshore shallow waters. The discovery of Bashrush further extends to the west the gas potential of the Abu Madi formation reservoirs discovered and produced from the so-called 'Great Nooros Area'.

Eni, together with its partners BP and Total, in coordination with the Egyptian Petroleum Sector, will begin screening the development options of this new discovery, with the aim of 'fast tracking' production through synergies with

the area's existing infrastructures. In parallel with the development activities associated with this new discovery, Eni will continue to explore the 'Great Nooros Area' with the drilling, this year, of another exploration well called Nidoco NW-1 DIR, located in the Abu Madi West concession.

In the North El Hammad concession, which is in participation with the Egyptian Natural Gas Holding Company, Eni through its affiliate IEOC holds 37.5% interest, the role of Operator, bp holds the 37.5%, and Total holds the 25% of the Contractor interest.

bp's to Sell Global Aromatics & Acetyls Business to INEOS

bp has agreed to sell its global petrochemicals business to INEOS for a total consideration of USD 5 billion, subject to customary adjustments. The agreed sale, the next strategic step in reinventing bp, will further strengthen bp's balance sheet and delivers its target for agreed divestments a year earlier than originally scheduled. The business consists of 15 sites across the world (5 in the Americas, 2 in Europe and 8 in Asia) as well as 10 leading joint ventures. Aromatics provides the building blocks for the global polyester industry, key to fibres, films and packaging. Acetyls support a wide range of downstream industries in food flavouring and preservation, pharmaceuticals, paints, adhesives and packaging.

INEOS will acquire a range of world class assets and an experienced team of people. The deal is a good fit with INEOS existing asset base, reintegrating the Hull site and expanding the existing INEOS footprint at Geel, Belgium.

Under the terms of the agreement, INEOS will pay bp a deposit of USD 400 million and will pay a further USD 3.6 billion on completion. An additional USD 1 billion will be deferred and paid in three separate instalments of USD 100 million in March, April and May 2021 with the remaining USD 700 million payable by the end of June 2021.

Diesel Tank Level Transmitters for Oil and Gas Applications

Within the oil and gas industry, critical equipment responsible for a variety of crucial tasks run on diesel fuel. Caring for this equipment is a full-time position, as any downtime could drastically affect operations, costing time and money. However, assuring that this equipment always has the fuel needed to run correctly is an easily attainable task by using the correct instruments.

AMETEK STC offers the liquid level equipment needed to solve this issue in its U.S. Gauge models of level transmitters. The Model 575 intrinsically safe level transmitter and the Model DDMC meter/controller can continuously monitor the fuel level in diesel storage tanks. The Model 575 level transmitter is placed in the liquid, and an optional conduit adapter is used in the tank to protect the cable. The Model DDMC meter is used to power the Model 575 transmitter through approved electrical barriers. The DDMC also provides a continuous display of the level in the tank.

The Model 575 intrinsically safe level transmitter and the Model DDMC meter/controller can continuously monitor the fuel level in diesel storage tanks.

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New Procedure

FOR APPLYING THE ANNUAL VISA ON THE ENVIRONMENTAL PERMIT

The legal framework regulating the validity of the environmental permit ('EP') and of the environmental integrated permit ('IPPC') has suffered many changes during the last two years (some better than others).

Back in 2018, the EP and the IPPC were valid for 5 and, respectively 10 years; said permits had to be renewed at the end of this period irrespective if the operator's activity changed or not. As such, aiming to reduce the formalities for the operators not changing their activity, the legislator issued a new (simplified) procedure consisting in the issuance of an annual visa. As of the introduction of this procedure, the EP/IPPC was to remain valid for an unlimited period (should such annual visa be obtained).

Said procedure brought numerous advantages, such as: (i) decreasing the tendency to interrupt the activity of the economic operators not holding a valid EP or IPPC (as, in many cases, such permits expired prior to completing the renewal procedure), with obvious negative effects on both the economic results and employment rate and (ii) relieving the competent authorities [i.e. the National

On 11 June 2020, the Order of the Minister of Environment, Waters and Forests no. 1150/2020 approving the Procedure for applying the annual visa on the environmental permit and the integrated environmental permit ('Order no. 1150/2020') was published in the Official Gazette. The procedure provided under the Order no. 1150/2020 became effective as of 11 July 2020.

Environmental Protection Agency ('NEPA') or the county agencies] of bureaucratic burden.

This was reflected in the Emergency Ordinance no. 75/2018 ('GEO 75/2018') which introduced for the first time the annual visa concept. The procedure and the conditions of obtaining such annual visa were detailed under the Ministry Order no. 1171/2018 ('Order 1171/2018'). Order no. 1171/2018 provided, among others, that the operator must carry out its activity under the same conditions considered upon the EP/IPPC issuance in order to obtain the annual visa. The content of the procedure was significantly improved in March 2019, by Order no 324/2019, which brought more clarity on the deadlines to be observed when applying for such annual visa.

Yet, in June 2019, the Constitutional Court issued the famous Decision no. 214/2019 ('Decision 214/2019') which declared unconstitutional the provisions of GEO no. 75/2018. As such, the entire procedure for the annual visa was repealed. Back to square one: the EP and the IPPC were to be issued for a 5 and, respectively, 10 years¹ ...

Finally, in November 2019, the legislator issued Law no. 219/2019 amending the Emergency Ordinance no. 195/2005 ('Law 219/2019') which re-introduced the annual visa concept. However, the conditions for obtaining the annual visa were still not set under any normative act. As such, the only missing piece (i.e. a new procedure setting the conditions for obtaining the annual visa) came in June 2020: the issuance of the Ministry Order 1150/2020 was not only awaited, but also welcomed.

The new procedure under the recent Ministry Order 1150/2020

The new annual visa procedure holds several relevant provisions and seems to outline a distinct philosophy, as opposed to the previous one. One of the highly appreciated novelties is that the risk for the annual visa procedure to overlap with the revision

¹ However, the status of certain EPs and IPPCs (those having validity expired prior to the Decision no. 214/2019) suddenly became unclear generating uncertainty among many operators.

procedure of the EP/IPPC has been removed.

Yet, for the benefit of the regulatory authorities and the operators, additional clarifications on a series of situations is highly advisable, as briefly presented below.

The applicable deadlines

The procedure clearly stipulates that, if the EP/IPPC was revised, the operator must apply for the annual visa in the next year following the EP/IPPC revision. Thus, while the concern for avoiding the overlapping of the procedures for the annual visa and of the EP/IPPC revision was removed, it is worth mentioning that an EP/IPPC revision is often a highly complex process which may easily extend the procedure into the following year. As such, it is still unclear whether the exemption from applying for the annual visa also covers the year when the EP/IPPC revision is initiated or only the year when the EP/IPPC revision is ended².

Another improvement may regard the transition period provided under the new procedure correlated with the minimum prior period (of 60 days before the issuance date – day and month) for applying for the annual visa. As such, one could identify different situations of operators that do not fall under a clear corresponding provision in the new procedure. For example, it looks unclear how an operator holding an EP/IPPC with the issuance date (i.e. day and month) prior to the date of entry into force of the new procedure (i.e. 11 July 2020) should proceed³. Not least, the situation of an operator holding an EP/IPPC with the issuance date (i.e. day and month) between 11 July 2020 and 10 September 2020⁴ is also uncertain.

One could argue that any operator falling in one of the above-mentioned

² For example, if the revision process starts in 2020 but ends in 2021, would the operator be exempted from its obligation to obtain the annual visa both for 2020 **and** 2021 (or only for 2021, when the revision is completed)?

³ Note is to be made that such operators could not have duly applied for the annual visa before 11 July 2020 as there was no procedure in place before said date (Decision no 214/2019 repealed the procedure under Order 1171/2018).

⁴ As 11 July 2020 falls on a Saturday (the authorities are closed for the public), it seems that *only* the operators holding an EP/IPPC with the issuance date (i.e. day and month) *after 10 September* are able to meet the obligation of submitting the application with 60 days before the issuance date.

situations is unable to meet the minimum deadline and, as such, it falls under the below detailed sanction(s). This situation is obviously inequitable and certainly not intended by the legislator.

Sanctions

The legislator seems to have completely changed the perspective over the field of sanctioning the deadline non-compliance. For each day missed by the operator for submitting the application for the annual visa, the environment protection agency ('EPA') shall suspend its EP/IPPC for a period equal to the late submission period.

The suspension of the EP/IPPC is one of the most severe sanctions. One could argue that an operator, which is late in submitting its application by one day, is more severely sanctioned than an operator harming the environment through various polluting actions, which are (mainly) sanctioned with a fine.

From a different angle, depending on the specifics of each industry, the measure of suspending the activity (automatically triggered by the suspension of the EP or the IPPC), even for one day, could naturally extend over several days (even weeks) due to technical and safety reasons (specific to certain fields of activity), leading therefore to a de facto extension of the sanction and to substantial losses.

Given the above, a more proportionate regime of sanctions for the non-compliance with the deadlines of the procedure should be considered.

The answer to these uncertainties will be most probably addressed in practice by the EPAs. As the provisions of the Order no. 1150/2020 shall enter into force on 11 July 2020, a (preferable) alternative would consist in the amendment of the procedure before that time.

Conclusions

The advantages of regulating the annual visa are more than obvious, both for the operators and, as well, the EPAs. Despite certain unclear aspects (which one might see rather natural for a new piece of legislation), the new procedure under Order 1150/2020 regulating the annual visa procedure for the activities that do not change over time is more than welcome. ■



Energy, New Approaches

The long lockdown period could last for a few more months, bringing changes, both forced and voluntary regarding our behaviours. In terms of energy and environment, the following three are the particular areas of interest: 1. Mobility; 2. Actual work; 3. Digital activity.

Talking about each, we would start mentioning that the facets of mobility are numerous, from public or private transport, smart working, electricity, e-commerce and streaming etc., facets which together could have a happy ending.

Analysing from a mathematical point of view these many facets, behaviour transformation contributes to the apparition and definition of what we call 'the new normal'.

How will our behaviour change after the three-month lockdown followed by the gradual return to normal? What impact will it have on energy? How will the public policies change, policies squeezed between necessity and solutions adequate for the poorer classes and return to the real path of sustainability with costs that will burden especially this segment of the population?

We will try to analyse, one by one, the three aspects of interest presented above, as follows.

- In the Mobility chapter own means of transport will most likely be used, avoiding as much as possible the public transport and this not only in the urban areas; this is explained by:

a. The impossibility to increase the number of means over a short period

of time, taking into account losses recorded by public transport, losses supported from the state budget;

b. The difficulty in managing the social distancing of passengers through booking systems;

c. The need to maintain the interiors of the means of transport in healthy parameters;

d. The unpredictability of the parking times of the means of public transport.

All these aspects can lead to the conclusion that buses will run rather empty, given that in some cities many deviations of routes and many pedestrian areas, as well as some of the free parking lots have been eliminated.

In parallel, the aforementioned can be a potential explanation of the tendency of using mainly the own means of transport to the detriment of public ones.

Looking at the real data, the so-called sustainable mobility did not register any significant change over the past few years.

Governments and local administrations noticed that increasing the number of bicycle lanes, electric scooters etc. could accelerate the faster use of electric means of transport, buyers benefiting from large bonuses.

The work, with its components, during the lockdown months, has made the smart working process to include several activities.

Reducing the commute to work, by own car, brought important benefits in terms of environment, significantly increased electricity consumption, to even double levels, both household and consumed in offices during working hours.

Research regarding the United States, which have been in lockdown for a long time, but not a very invasive lockdown, has revealed a significant increase in household appliances, but not so much as to offset the fall of other sectors.

The increase in household consumption is normal, the one during morning hours

Once the present crisis overcome, those who have learned to work online, more precisely those who have learned the taste of working from home, will continue this system.

being added to consumption during the day given the presence of children at home, schools and kindergartens being closed.

Under the impact of teleworking, in terms of energy consumption, as a result of recent studies no significant increase in the general energy consumption has been proven.

Specialists who study behaviour changes during and after the pandemic period claim that work mobility by distancing from the office will prove to be permanent. We will have to see whether the current virus also brings permanent changes in consumer behaviour.

Once the present crisis overcome, those who have learned to work online, more precisely those who have learned the taste of working from home, will continue this system. This will accentuate the e-commerce mechanisms, slowly leading to the abolition of traditional stores.

Increasing the use of Internet has facilitated

access to low-carbon services, reducing carbon dioxide emissions. Therefore, the increase in electricity consumption will lead to a reduction in emissions into the atmosphere, all in favour of reducing global warming, a major target of mankind.

Some of these changing behaviours can be considered virtuous, others a little less so (the term 'virtuous' was used by Deloitte in a recently published analysis).

Analysing some of the measures taken so far, it seems that they have taken into account the avoidance of dissatisfaction of all parties.

Summarizing as follows: more electric bicycles, but more private cars used in the city centre, more eco-bonuses with the abolition of the plastic tax for example - a tax to protect factories that produce that plastic.

I would suggest for the end of the article that we wait for the European Green Deal for a better future! ■

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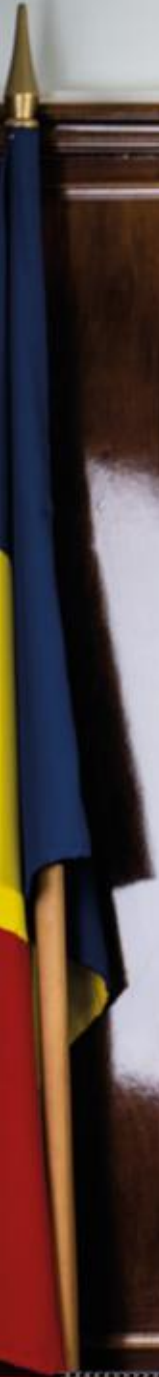
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Secretary of State Lucian Petrica Rusu Unveils the Romanian Government Priorities for the Energy Sector

In an extended discussion, Lucian Petrica Rusu - Secretary of State within the General Secretariat of the Government of Romania, emphasizes the main objectives of the Executive regarding the energy sector. They include reviewing how the natural resources of the country are managed and capitalized, as well as the development of energy production capacities from multiple sources. For the Government, ensuring the energy security of the country, modernizing and streamlining the entire production cycle, from production and transmission to distribution to the end-consumer, are a priority. Also, adopting reliable solutions to increase the percentage of the population connected to the gas network.

Text by LAVINIA IANCU

Photo by JUSTIN IANCU



Mr. Secretary of State, the studies and professional experience acquired in the energy sector provide you with an overview of the energy market in Romania. How do you currently assess the situation of the national energy sector, in the context of challenges at regional/global level - legislative, environmental, technological?

The energy market in Romania is stable, interconnected at European level and represents an important player in the region. Moreover, we have the most balanced energy mix in the European Union and, in the future, with the Green

Deal, I expect to see consistent measures of increase in the share of renewable energy in the national energy consumption.

CNTEE Transelectrica S.A. has proven to be an important player in the Eastern European region, including in terms of interconnection of energy systems, and its consumers benefit from security of electricity supply. On the other hand, SNTGN Transgaz permanently seeks to develop the transmission networks both domestically and



internationally, and I would mention here especially BRUA gas transmission corridor. Let's not forget that a number of objectives of the national gas transmission system (NTS) have been retrofitted and upgraded, endowed with modern automation equipment, including, inter alia: 948 regulating and metering stations, 106 block valves (line), 33 technological nodes, 5 compressor stations, 6 transit stations and 2 import stations and 7 underground storage facilities.

Both Transelectrica and Transgaz have prepared national development plans covering periods of 10 years, based on both the strategies and policies of the Government of Romania and

on the objectives of the new policies of the European Union. For example, Transgaz estimates investments of almost EUR 5 billion in the development of the national gas transmission system (NTS) and in the expansion and upgrade of underground storage facilities.

Obviously, it's not all rosy, and the COVID crisis has highlighted even further the need for digitization, automation and increase in investments in network modernization. The implementation of the SCADA system and the development of Smart Metering systems must be continued.

Moving from plans on paper to practice is yet to be perfected, but I trust the professionals of the National Energy System, whom I assure of my full support.

What tasks and duties do you specifically have within the Secretariat General of the Government of Romania?

Specifically, I am in charge with the coordination of electricity and natural gas transmission companies. As you know, based on GEO 68/2019, the Secretariat General of the Government is responsible for the exercise of the rights and obligations arising from the capacity of shareholder of the Romanian state in the National Gas Transmission Company Transgaz S.A. Medias and in the National Power Grid Company Transelectrica S.A.

At the same time, I am also responsible for managing the Open Government Partnership (OGP), the Steering Committee of which also includes our country. Since 2012, the Government of Romania has been a member of OGP, together with other states that promote transparency, dialogue with citizens and the use of new technologies to consolidate the governing act. To remain in the sphere of the energy sector, the OGP member status could translate into the involvement of institutions and companies in the energy sector in the elaboration and implementation of Romania's commitments at the sector level, thus generating greater transparency in the National Energy System and a more active participation of the civil society in developing strategies and programs. Such openness to society can generate trust, legitimacy and a valuable feedback from consumers and partners. I would also mention an OGP partner initiative - Extractive Industries Transparency Initiative (EITI) - which promotes transparency in the extractive sector, including through data management and publication standards, fiscal

transparency and the publication of open data in the energy sector (authorizations, contracts, environmental measures etc.).

What global objectives are a priority for the Romanian Government in the next period?

In the government program we highlight the special importance granted to the implementation of reforms necessary to modernize Romania in the European spirit and building citizen trust, and it also targets the energy sector. In terms of priorities of the Government led by PM Ludovic Orban, reviewing how natural resources are managed and capitalized on or the development of energy production capacities from multiple sources are not excluded.

For example, unlocking Black Sea investments is essential for the energy security. We repealed GEO 114 and the next step should be the amendment of the Offshore Law by the Parliament, where to have consensus in the interest of Romania. But these amendments should be agreed by the lawmaker as soon as possible, by consensus and transparent dialogue, maximizing the benefits for all those involved. Let's not forget the European Green Deal, under which the European Union aims to reach climate neutrality of its economy by 2050 and which puts pressure on the use of fossil fuels.

Romania has assumed through the Green Deal a brave percentage of 30.7% renewable energy. It means investments, retrofitting, replacement and construction of new capacities, training human resources and, in an interconnected world, digitization.

Development of interconnection of energy systems at European Union level is also a priority. Here we can also talk about the project of closing the ring in Oradea, carried out by CNTEE Transelectrica S.A., the development of the power grid in Pancevo (Serbia) or implementing the BRUA project.

Regarding strictly Transgaz, the priorities included in the Development Plan include the interconnection of the energy system between Romania and the Republic of Moldova. Given the need to develop the Romanian gas transmission system, consideration was given to the improvement of gas supply to the north-east of Romania and the perspective offered by the interconnection pipeline between Romania and the Republic of Moldova (Iasi-Ungheni), which provides gas transmission capacities to/from Moldova. Works are being performed at the interconnection of the technological node Onesti with the technological node Letcani by building new compressor stations and new pipelines, which will have a transmission capacity of 1.5-2.2bcm/year, in the 2021 the gas pipeline following to be commissioned.

I assure you that at Government level we are working to define and protect vulnerable energy consumers, an important component for the improvement of policies in the field, especially in the context of electricity and gas price liberalization. We also monitor the implementation of provisions of legislation on corporate governance at CNTEE Transelectrica S.A. and SNTGN Transgaz S.A.

The energy sector represents a priority in the national economy, and carrying out privatization projects and attracting investments can contribute to ensuring the modernization



and development of this sector, improvement of energy efficiency, safety in operation, energy security, meeting the energy demand both currently and in the medium and long term, in compliance with the principles of sustainable development. What measures can be taken in this regard and how do you see the evolution of the energy sector in Romania?

The energy sector is a priority for the



Government of Romania, being an important driver for economic development. It is a priority to ensure the energy security of the country, to modernize and streamline the entire cycle, from production and transmission to distribution to the end-consumer. At the same time, we build viable solutions to increase the percentage of the population connected to the gas network, as, although our country has important gas resources, less than half of the population is connected.

With the government program we assumed to support the

strategic projects of Transgaz and Transelectrica. For example, Transelectrica has in progress almost 30 major investment projects. We have carefully analysed the annual investment plans of the two companies and requested a greater focus on reaching the proposed indicators. As you know, ANRE can charge a penalty of 5% of the turnover, if the plan for commissioning is not achieved.

We asked the energy transmission companies

to accelerate digitization, modernization and retrofitting projects, given the energy efficiency component, so as to be financed including under the European Green Deal. For the following seven years approximately 25% of the European Union's budget, totalling almost EUR 300bn, will be directed to projects that contribute to environmental protection and the reduction of carbon dioxide emissions. At the same time, under the Just Transition Fund of the European Union, non-reimbursable funds of EUR 4.4bn are allocated for Romania.

Therefore, there are many opportunities for the evolution of the energy sector, but it will be up to us to keep up.

What are the most important strategic regional/national programs/projects in which the Government of Romania is involved in 2020? Do you consider, at least in perspective, additional ways to attract funding sources, such as energy partnerships with foreign partners or involvement in regional cooperation programs?

As previously mentioned, at CNTEE Transelectrica S.A., closing the 400 kV ring in the N-V of the country is a priority. The same is the 'Mid Continental East Corridor' Project, included by the European Commission in the first list of Projects of Common Interest (PCI), which will lead to increasing the electricity exchange capacity on borders between Romania - Hungary - Serbia.

From SNTGN Transgaz S.A. perspective, implementing BRUA project and interconnection with the Republic of Moldova through Iasi - Ungheni - Chisinau gas pipeline are some of the priorities.

Obviously, any partnership aimed to modernize and develop the National Energy System is welcome, as long as it is based on a sustainable approach, mutually advantageous and which brings benefits for Romanians. At the level of the Secretariat General of the Government, we are currently analysing several proposals of energy partnerships from other states. Therefore, we don't exclude in any moment foreign partnerships or projects of regional cooperation in the list of funding sources, as long as they are in the interest of the energy system and of Romania.

As a member state of the European Union, Romania is a provider of energy security in the region and in Europe and has the potential to strengthen this role, actively contributing through its policy and programs to achieving the objectives of the European Union in the field of energy. What strategy will Romania apply in order to develop energy infrastructure and materialize the direct link between foreign policy and domestic policy in the energy sector, at the level of the European Union?

Our country will participate in European projects for the interconnection of energy systems and to strengthen its position as a pole of energy stability in Eastern Europe. On the other hand, Romania is involved in the European process of integration of energy markets and has assumed clear commitments in the context of the European Green Deal.

At national level, SNTGN Transgaz will also have the possibility to develop its gas transmission network, through



a program dedicated to the increase in the number of Romanian gas consumers.

An important role in the development of infrastructure and human resources in the energy sector can also be played by the research-innovation area. For this purpose, I call on Romanian universities and research institutes to start projects in partnership with energy producers and transmission operators, because the creative and innovative potential of our researchers can be a real support in bridging gaps and increasing competitiveness. I will give you an example from the Research Program of Transgaz, a project that developed an equipment for converting natural gas expansion energy into



green electricity. Basically, they generated green energy from gas pressure, testing the generator under the conditions of parameters of gas supplied by S.C. Onesti station, proving the safe and efficient operation of the equipment. The project is still in testing.

Moreover, official data show that by 2030 natural gas will remain the preferred fuel for heating in the urban environment in Romania. The project of the Integrated National Energy and Climate Plan provides for an analysis on hydrogen injection in the form of synthesis gas from RES in natural gas transmission/distribution systems. In this context, I welcome the development of the Romanian Hydrogen and New Energy Technologies HUB, supported by the Ministry of European Funds and the Ministry of Education and Research, in the hope that it will generate viable solutions for obtaining hydrogen as a green fuel, through a cost-

effective and attractive process for economic actors.

Another recent example of infrastructure development is the memorandum to transform the Galati plant into a green plant, the first steel plant in Europe with the lowest carbon footprint, with investments of EUR 1.2bn over the next 5 years.

What are the main directions of development in the gas sector, both in terms of transmission and gas storage component, with positive effects in strengthening regional cooperation between Romania and neighbouring states? How about security of energy supply and the transit of electricity in the regional market?

Our country's geostrategic position in relation to the important European transmission corridors is an advantage. We have a network of over 13,300 km of pipelines and a high level of domestic production. The priority project at this moment is the transmission corridor Bulgaria-Romania-Hungary-Austria - BRUA Phase 1, project aiming at the integration of the National Transmission System (NTS) into the European Network, by increasing the degree of interconnectivity with the adjacent systems. I would also mention here the Development of SCADA system for the National Gas Transmission System.

The Romanian gas hub plays an important role in market liberalization and in concentrating activities in the field for gas trading at the best prices, at a certain point. Obviously, it involves responsibility, constant supervision and support for vulnerable customers.

On the other hand, as mentioned in the government program, it is important to use Romanian gas in the production of electricity and in creating petrochemical products with high added value, with an increase in the storage capacity for the underground gas storage facilities.

Although the Romanian energy sector is currently stable and benefits from a balanced mix of resources, there are still deficiencies, improvements being necessary, especially due to an old problem - lack of major investments in this field. What do you consider to be the priority measures for improvement and which business segments have urgent needs?

First of all, I believe there is a need for greater responsibility on the part of all those involved to carry out the investment and maintenance work on time. Blockages, be them bureaucratic in nature, must be avoided. Digitization is very important, as has been demonstrated even in this complicated period of pandemic, as is cyber security.

Yes, we need to adapt and modernize the technical component, but not only in terms of equipment, but also in terms of human resources. I believe that supporting dual education by developing specializations in partnership with major companies in the energy sector, conducting regular internship projects, as well as providing training courses for employees should be included in management plans. The human resource consisting of professionals is essential to overcome the gaps and to ensure continuity and balance in the system.

It is also worth carrying out a discussion on a collective labour agreement on this branch, to protect employees and to ensure more fairness of their wages.

Increasing the annual maintenance programs must be pursued, as well as the internalization of staff in subsidiaries performing services for parent companies. It is important to spend the budget component on the Annual Maintenance Plan of energy transmission companies.

The importance of the Southeast Europe area and Black Sea region is increasingly recognized from an energy point



of view at the level of Member States of the European Union. The new political and economic conditions, the upward trend of demand for energy resources, the evolution of investments in the neighbouring areas - Caspian Sea, Middle East and Central Asia - in order to discover new reserves and develop hydrocarbon production and transmission and transit flows to Western Europe and the Black Sea riparian states, highlight the



strategic role of regional cooperation and the European Union's growing need to develop energy infrastructure. What role will Romania fulfil, in your opinion, in this equation?

Romania is already playing an important role in the region, which I am convinced that we will consolidate and develop further in the future. Investment projects for the development of transmission and transit flows are a priority, so is the development of new reserves, the purpose being to increase the energy security of the population, as well as long-term sustainability. Our competitiveness in the energy sector and strategic positioning make us an important player at

the level of the European Union and we have all prerequisites to play an increasingly important role. Moreover, I am convinced that Romania will become a regional hub, if we manage a greater interconnection, regulatory coherence and a consistent partnership with the private environment.

What is the basis of Romania's vision for the energy field, in the context of the obligations assumed at European and

international level? How can national policies respond to security and environmental requirements, as well as the needs of investors and energy market participants?

National policies need greater clarity and stability in order to provide predictability in the energy sector and attractiveness in relation to private investors. For example, we should recall the negative impact of the famous Ordinance 114/2018 that generated price increases in chain, a decrease in contributions to the state budget, and Romanians were forced to pay record prices for electricity and natural gas. The modification of the harmful provisions of this Ordinance will also allow the resumption of strategic investments in the Black Sea.

With the Green Deal, the approach of the energy field is also made in relation to climate change. We want a fair contribution to the decarbonization of the European Union and the project of the National Integrated Energy and Climate Change Plan 2021-2030 is underway. I would also point out that we want to support research, development and innovation in the field, in order to overcome the gaps and increase local know-how.

An important aspect, besides the increase in foreign investments in our country, is also the increase of the internationalization of Romanian businesses in the field. I know that we have companies that have the capacity and the interest to invest in the regional markets. I remember that in 2017, the energy supplier and distributor Electrica S.A. submitted an offer to take over the company that CEZ owns in Bulgaria, and this year, Romgaz wanted to enter the project of the marine gas terminal in Greece.

What would be the main impediments/challenges faced by Romania in achieving the proposed goals?

The need for consistency in regulation, simplification of procedures, especially from a bureaucratic perspective, clear targets for all major players in the energy system, professional, depoliticized management and a real partnership with the business environment. Obviously, the impact of the pandemic with the COVID-19 virus is a challenge, the implications of which cannot be fully quantified at this time.

As you well know, due to the decrease in consumption during this period, naturally, the price of energy also decreased. With the resumption of economic activities, we expect a return to energy consumption, in normal parameters. However, consistent support from the Government is essential.

Work is underway at a Recovery Plan focused on transition to green energy and digitization. We are aware that the oil and gas industry wants urgent measures to unlock the digitization process. However, this can only be achieved by updating the legislative framework to technological and safe progress. Unfortunately, due to legislative obstacles, Romania could not start the process of digitizing the oil industry, which generates high costs to close the gap.

As a result of the economic impact of the COVID-19 pandemic, a support scheme for small and medium-sized enterprises has also been developed, approved by the European Commission, based on which support will be provided in the form of direct subsidies and

state guarantees for loans under form of investment and working capital, so that they can continue their activity. At the same time, our country intends to participate in the SURE instrument, for which a Guarantee Agreement will be signed.

With regard strictly to the energy sector, the Government announced in early May that large electricity consumers would receive support, and the aid scheme approved by the European Commission would become operational. Basically, the electricity price will be reduced by reducing the amount of CO₂ by up to 20%. At the same time, the Romanian Government has recently proposed amending the Energy Law 123/2012, in order to stimulate new investments in electricity production and offering for producers to conclude bilateral contracts outside the centralized market, on the competitive market, wholesale or retail, at negotiated prices, in compliance with the competition rules, for electricity coming from new energy production capacities, commissioned after June 1, 2020.

How does the Government respond to the oil and gas industry's request for urgent measures to unlock the digitization process in this sector?

A roadmap of digitization must be established by companies. This roadmap will take into account the current stage and future steps for implementing digitization. I believe that in the stages identified in the roadmaps, where the implementation of legislative technique measures related to the digitization process is required, the Orban Government will support legislative initiatives to implement digitization within oil and gas companies.

Do you think that an Energy Union is possible without affecting the rights and competences of the Member States, mainly the right to establish their own energy mix and to remain technologically neutral?

Romania supports the Energy Union project, which for our country can be translated including in the development of infrastructure and industry, better prices for consumers, economic growth and jobs. Obviously, we pursue a series of priorities such as capitalizing on our own energy resources, diversifying sources and supply routes or the right of each state to choose its energy mix. Protection of vulnerable consumers is essential. I am convinced that together we will be stronger and we can sustainably ensure the energy security and economic development of each Member State. ■

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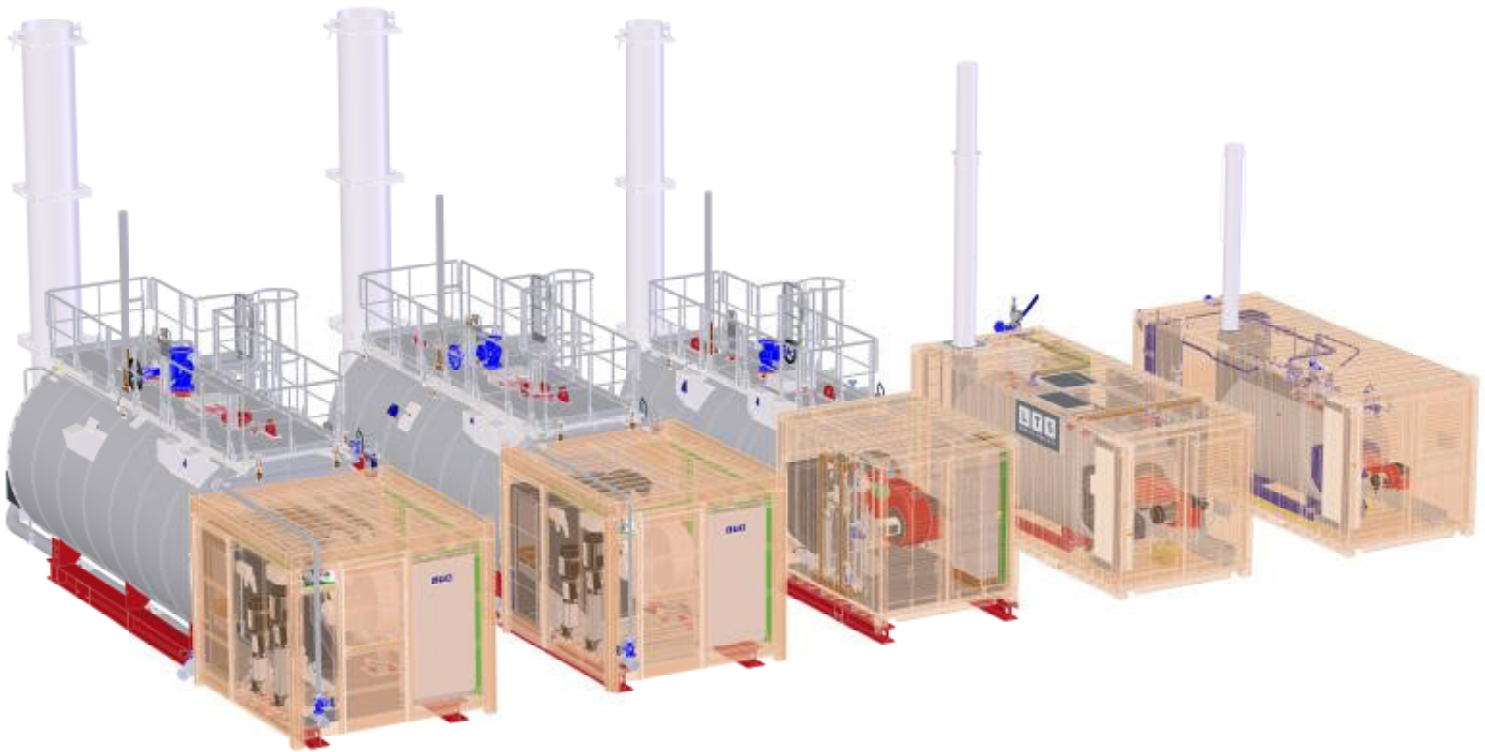
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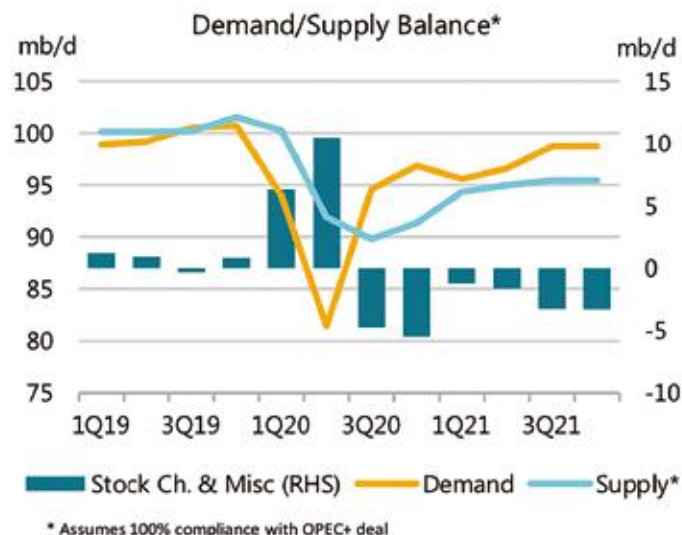
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Oil Demand Set to Return to Pre-crisis Levels by Mid-2021

IEA's latest Oil Market Report suggests monthly global oil demand (excluding jet fuel) is set to return to pre-crisis levels by mid-2021. IEA's initial forecast for 2021 – which assumes a significant economic rebound and no further major waves of Covid-19 – points to annual global oil demand rising by 5.7 mb/d, the largest annual increase ever recorded.

Oil demand in 2020 is expected to fall by 8.1 mb/d, the largest in history, before recovering by 5.7 mb/d in 2021. Reduced jet and kerosene deliveries will impact total oil demand until at least 2022. In this Report the forecast for 2020 oil demand has been raised by nearly 500 kb/d to 91.7 mb/d, due to stronger than expected deliveries



According to the IEA, the second half of 2020 is expected to see a global deficit of 4.5 mb/d. The one thing we noted in IEA's oil market report, however, is that the deficit of 4.5 mb/d is actually far less than the implied from the call on OPEC.

during the Covid-19 lockdown. In China, oil demand recovered fast in March-April and India's demand rose sharply in May.

Global oil supply plunged by 11.8 mb/d in May, driven by a record OPEC+ cut and economic shut-ins in the US, Canada and elsewhere. After tumbling by 7.2 mb/d in 2020, global oil output is set for a modest 1.7 mb/d recovery in 2021, assuming OPEC+ cuts ease, Norway, Brazil and Guyana deliver solid gains and Libya manages to sustain a rebound. US supply is poised to fall by 0.9 mb/d in 2020 and a further 0.3 mb/d next year unless higher prices unlock fresh investments in the shale patch.

Global refining intake in April fell 6.6 mb/d month-on-month to just 68.8 mb/d, down 12.3 mb/d year-on-year and in May it was down by a further 1 mb/d. Large implied product stock builds set the stage for a subdued margin environment for the near future. After a 5.4 mb/d decline this year, refining activity is set to gain 5.3 mb/d in 2021, nearly recovering to 2019 levels, but below the 2018 historical peak.

OECD data for April show that industry stocks rose by 148.7 mb (4.9 mb/d) to 3 137 mb, and were 208.3 mb above the five-year average. In the US, preliminary data show that commercial stocks in early June were at record highs, having built by about 1 mb/d in 2020. In 1Q20, government held stocks increased by nearly 2 mb, mainly product stocks in Europe. In May, floating storage of crude oil fell by 6.4 mb from its all-time high (172.2 mb in April) to 165.8 mb.

Crude prices rose in May to the highest in three months as demand began to recover and global supply fell sharply. Rising prices squeezed product cracks, in particular diesel and jet/kerosene due to concerns about the global economy and the weak outlook for the aviation industry. Freight rates plummeted as OPEC+ cuts took effect. In early June, both WTI and Brent traded close to USD 40/bbl for several days before easing back slightly.

Highlights

While the oil market remains fragile, the recent modest recovery in prices suggests that the first half of 2020 is ending on a more optimistic note. New data show that demand destruction in the early part of the year was slightly less than expected, although still unprecedented. On the supply side, record output cuts from OPEC+ and steep declines from other non-OPEC producers saw global oil production fall by a massive 12 mb/d in May. In addition to a 9.4 mb/d decline in OPEC+ supply last month, output from non-OPEC countries outside the deal has fallen by 4.5 mb/d since the start of the year. To further speed up the market rebalancing, OPEC+ decided on 6 June to extend their historic output cut of close to 10 mb/d through July.

For demand, increased mobility indicators in the March-May period provided support: in particular, China's strong exit from lockdown measures has seen demand in April almost back to year-ago levels. IEA has also seen a strong rebound in India in May, although demand is still well below year-ago levels. In the second half of the year the easing of lockdown measures in many countries should provide a boost. Even so, demand in 2020 is expected to be 8.1 mb/d lower than in 2019, with the biggest declines seen in the first half of the year. IEA's first forecast for 2021 as a

whole shows demand growing by 5.7 mb/d, which, at 97.4 mb/d, will be 2.4 mb/d below the 2019 level.

This 2.4 mb/d gap between 2021 and 2019 is largely explained by the dire situation of the aviation sector. Data from the International Air Transport Association show that passenger traffic in 2020 will be nearly 55% lower than in 2019. The industry will continue to be a drag on oil demand through 2021, with the first estimate showing that, having fallen by 3 mb/d in 2020, jet/kerosene demand will rebound by only 1 mb/d in 2021, leaving it below the pre-crisis level.

Global oil supply is set to tumble by a massive 7.2 mb/d on average in 2020, and stage only a 1.8 mb/d increase in 2021 assuming 100% compliance with OPEC+ cuts. The recent improvement in oil prices that saw WTI trading for a few days close to USD 40/bbl is not enough to allow a significant increase in US output, which in June is estimated to have fallen to 10.5 mb/d, down by 2.4 mb/d from a record high seen in November. In the meantime, high crude and product stocks will limit the scope for producers in many countries to sell more to refiners. In the case of the US, data from the Energy Information Administration show that commercial stocks of crude oil and products have increased by about 1 mb/d since the start of the year and are at an all-time record high.

In sporting terms, the 2020 oil market is now close to the half time mark. So far, initiatives in the form of the OPEC+ agreement and the meeting of G20 energy ministers have made a major contribution to restoring stability to the market. If recent trends in production are maintained and demand does recover, the market will be on a more stable footing by the end of the second half. However, we should not underestimate the enormous uncertainties. ■

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OPEC's Roadmap to Stabilization

by Evgenios Zogopoulos

What is OPEC's roadmap for moving towards stabilization?

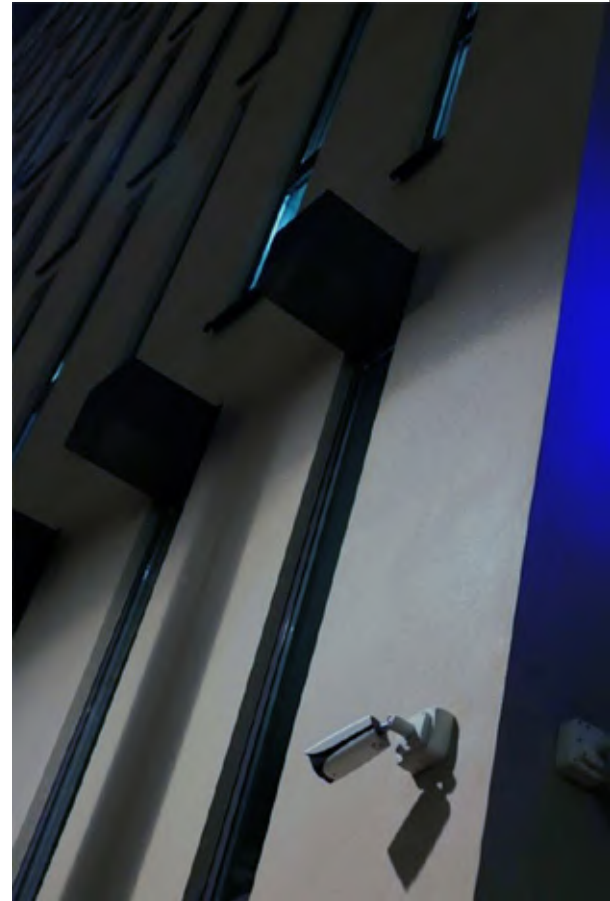
Admittedly, there is only a handful of industries globally that have been hit as hard and with so dire consequences as the oil and gas industry this year. 2020 is shaping up to be the most dramatic year in the history of oil markets, with a decade's worth of change seeming to be taking place in a timespan of less than a year.

In a recent report, Fitch Ratings forecast that oil and gas exploration and production companies would lose up to USD 1.8 trillion in revenues this year, which is six times more than the retail sector is set to lose. Yet the long-term consequences are still unpredictable and potentially devastating. Global players of the industry brace themselves to withstand the impact, taking extreme measures of austerity. BP has been forced to cut around 10,000 positions from its workforce as it tries to slash and adapt to the new reality.

Shell and Chevron have also announced similar plans to reduce their workforces. Nevertheless, the employees are not the only impacted side of the new reality. Shell decided to cut its dividend for the first time since the end of WW2 and this was probably the single largest indicator of the long-term impact this pandemic has brought. The major oil players have prided themselves on paying out dividends regardless of market conditions in order to keep their shareholders happy. Shell's decision to cut its dividends marks a shift in strategy that suggests the oil major is now determined to cut its debt going forward and focus on financial sustainability rather than just pleasing shareholders.

It surely is unclear if the oil industry will ever be able to recover to pre-pandemic conditions. From the sinking of the travel industry to the transformation of transportations today, oil demand is being attacked on all sides due to COVID-19. The regulatory pressure applied by governments to promote renewables doesn't help either.

The situation was already bad, even before the Russo-Saudi oil



conflict begun, melting the prices. The coronavirus pandemic has caused oil demand to drop so rapidly that the world was running out of room to store it. At the same time, Russia and Saudi Arabia flooded the world with excess supply. That double black swan event caused oil prices to turn negative for the first time on April 20. That peculiar 'marriage of convenience' ended up in tatters, the global price equilibrium destroyed and the oil industry changed forever. It was president Trump coming out of nowhere with a swift intervention stabilized the situation.

One of the major conclusions, coming out of that crisis was that OPEC (and its extended 'alliance' or 'cartel') cannot really handle these situations; it lacks the enforcing mechanisms and tools. That does not necessarily mean that it is not extremely important or even useful to many extents. The alliance's achievements regularized the market and reduced oil volatility by as much as 50%. Furthermore, there are legitimate claims of



the OPEC's actions resulting to an average USD 175 billion annual increase in global GDP.

OPEC's reaction

Following up with the efforts to further stabilize the market, after the recent meltdown, OPEC and the extended alliance already had pledged to cut output by 9.7 million barrels a day in May and June, which has helped prop up oil prices as demand for crude begins to recover. It was the deepest cut ever agreed to by the world's oil producers.

The recent follow up meeting welcomed Ecuador, Indonesia, Trinidad and Tobago as observers and reaffirmed the continued commitment of the participating producing countries in the 'Declaration of Co-operation' (DoC) to a stable market, the mutual interest of producing nations, the efficient, economic and secure supply to consumers, and a fair return on invested capital. The members also recalled the decision taken by all Participating Countries in the DoC at the tenth (extraordinary) OPEC and non-OPEC Ministerial Meeting on 12 April 2020 to adjust downwards overall crude oil production.

The meeting noted additional adjustments from Saudi Arabia (1 million bpd); the UAE (100 trillion bpd); Kuwait (80 trillion

bpd) and Oman (10 - 15 trillion bpd) in June; the announcements of voluntary adjustments from several countries, such as Norway and Canada; as well as various oil company statements revising downward production plans and shutting in supply.

The group met virtually over a video conference. The lone dissenter was Mexico, which stuck to its April agreement. Mexico stated that would continue to cut 100,000 barrels a day but would not go further. Indicatively, other members like Iraq and Nigeria failed to comply too. On Saturday, however, Iraq announced that it will now comply with the production cuts OPEC set forth in April. Iraq's Ministry of Oil spokesperson, Assem Jihad, said in a press release that Iraq had faced economic difficulties that complicated its ability to comply earlier. Countries that didn't comply in May and June agreed to compensate for their excess production by making additional cuts in July, August and September.

After a video conference lasting several hours, delegates said all nations had signed off on a new deal for a production cut of 9.6 million barrels a day next month. That's 100,000 barrels a day lower than the reduction in June because Mexico will end its supply constraints, but a tighter limit than the 7.7 million barrels a day set for July in the group's previous agreement.

It's a victory for Saudi Arabia and Russia, who put a destructive price war behind them to cajole Iraq, Nigeria and other laggards to fulfil their promises to cut production. The two leaders of OPEC+ showed that they intend to keep a close watch on the oil market. The group's monitoring committee will now meet every month to assess the balance between supply and demand amid an uncertain economic recovery from the global pandemic.

The cartel will meet again in the second half of June for another review of the oil market. Talks are scheduled on June 18 for the Joint Ministerial Monitoring Committee, which could recommend a further extension if it's deemed necessary, pushing the production curbs into August, a delegate said. That panel will meet every month until December.

(Un)foreseen complications

OPECs recent agreement included (another) promise by all countries to compensate for any barrels they didn't cut in May or June by making deeper reductions between July and September.

Diving a little deeper into the deal, complications can be observed clearly; one of the biggest

challenges lies with Iraq, which is one of the biggest producers and almost completely dependent on its oil. They need it now more than ever since it is the most powerful (and potentially their only) lever to rebuild their economy and the country in general.

They have fallen behind in their initial commitment and based on the new one they would have to further reduce production by almost a quarter in order to catch up. This will cause internal strife and backlash within the country. Nevertheless, Iraq's oil ministry said it is "fully committed" to cutting its production from June.

Skeptics insist on the fact that OPEC lacks the enforcing mechanism and will thus not be able to force all countries to comply. The tricky part is that this is a chain, and if a part breaks then we will have chain reactions. The skeptic analysts mentioned: "The OPEC leaders did not specifically respond to questions about the Iraqi finance minister's request for a quota reconsideration based on economic conditions and living standards. We remain skeptical about Iraq's ability to meet their enhanced output commitments."

Traditionally, this kind of complications always existed; especially with Iraq and Nigeria. Their failures to comply were often covered by Saudi Arabia which exceeded their cutting quota just to maintain the equilibrium. Nigeria, Angola and Gabon, as well as Kazakhstan and Azerbaijan, have been staying behind for a long time.

For Iraq, as well as Nigeria and Kazakhstan, "it may prove difficult for them to match their commitments 100%, because of the contractual agreements these countries have with upstream companies," David Fyfe, chief economist at energy analytics firm Argus, told CNBC. Issues with enforcement may even be political, given the balancing act of Iraq's relationships with Tehran and Riyadh, long-time adversaries.

"We expect Iraq to improve to 80% to 90% in coming months," said Abhi Rajendran, a head of research at Energy Intelligence. "If prices are still weak there will be more scrutiny for them to be compliant. But if prices are much higher, like USD 50+, there will be less pressure on them."

Stock market ambiguous indications

Despite the continuous market-fixing efforts in supply by the OPEC+ group, the world's consumption of oil is unlikely to return to the levels before the coronavirus pandemic until late next year, according to the Morgan Stanley. While the market is heading for deficit in the second half of the year, there are a lot of inventories – at an unusually high level – which will start shrinking in Q4 and in the first quarter next year, Morgan Stanley said. The oil price rally in recent weeks "appears mostly supply-rather than demand-driven, and it is questionable how strong refinery runs can increase against this backdrop," the investment bank said.

Global supply cuts and the easing of lockdowns in some countries has pushed prices higher after oil plunged below zero in April. However, the recovery is expected to be fragile and uneven, and there are concerns that producers may pump more with crude above USD 30 a barrel, adding to a glut. A new wave of coronavirus infections pushed the overall count in the U.S. past 2 million cases, with hospitalizations in Texas jumping.

"Prices may have run ahead of themselves over the last month or so," Howie Lee, an economist at Oversea-Chinese Banking Corp. in

Singapore, said. "As we approach the second half of the year, there will be some rethinking about how far this rally can continue given the high volume of stockpiles that still exists."

Futures lost 4.1% to trade near USD 38 a barrel, erasing all of the gains from the past two sessions. Crude inventories unexpectedly rose recently, even as oil production fell, while gasoline stockpiles also saw a surprise expansion. Fed Chairman Jerome Powell said the pandemic could inflict longer-lasting damage on the economy and the central bank signalled it would keep rates near zero possibly for years to come. There are also fears that a second wave of infections in the U.S. may derail its fragile recovery.

"Everyone saves face with this agreement," Jan Stuart, global energy economist at Cornerstone Macro LLC, said after a tentative deal was in place. "But it begs the question: What is the enforcement mechanism? I'm very curious to see how the organization is going to elicit greater compliance from the cheaters."

"The oil market is on its way to recovery," said Ann-Louise Hittle, oil analyst at Wood Mackenzie. "Supply has shifted dramatically already. Global demand is recovering too, with both May and June climbing from the low seen in April as the coronavirus-related shutdowns continue to ease."

Next steps

All in all, the extended alliance of OPEC has made progress and taken steps forward. The future remains uncertain but for now the present seems a little better than before. The members of the Joint Ministerial Monitoring Committee (JMMC) of OPEC+ have been requested to closely review the general energy market conditions and related factors, oil production levels, and conformity levels with the DoC, assisted by the Joint Technical Committee (JTC) and the OPEC Secretariat. They are also charged with monitoring compliance and using their admittedly limited arsenal of tools for enforcement.

The JMMC is to meet monthly until December 2020 for this purpose, with the next JMMC set for 18 June 2020. It has also been agreed that an OPEC and non-OPEC Ministerial Meeting also will come together in Vienna early December 2020. ■

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How Dosco Battles Heat Exhaustion During Hot Summers

Heat Exhaustion is a condition where symptoms may include heavy sweating and a rapid pulse. Heat Exhaustion is one of the three heat-related syndromes, heat cramps being the mildest and heatstroke being the most severe. The main causes of heat exhaustion include exposure to high temperatures, particularly when combined with a high humidity, and strenuous physical activity. Without prompt treatment, heat exhaustion can lead

to heatstroke, which is a life-threatening condition. Fortunately, heat exhaustion is easily preventable

Causes of heat exhaustion

Your body's heat combined with environmental heat results in what's called your core temperature — your body's internal temperature. Your body needs to regulate the heat gain (and, in cold weather, heat loss)

OIL & GAS

from the environment to maintain a core temperature that's normal, approximately 37°C (98.6 F).

In hot weather, the body cools itself mainly by sweating. The evaporation of sweat regulates your body temperature. However, when you exercise or work in hot, humid weather, your body is less able to cool itself efficiently. As a result, your body may develop heat cramps. Signs of heat cramps include heavy sweating, fatigue, thirst and muscle cramps. Drinking enough fluids, getting into cooler temperatures (air-conditioning and shade) and resting can treat heat cramps.

Untreated, heat cramps lead to heat exhaustion and eventually heatstroke. Heatstroke occurs when your core body temperature reaches 40°C (104 F) or higher. Heatstroke requires immediate medical attention to prevent permanent damage to your brain and other vital organs that can result in death.

Cooling products to beat the heat

Dosco PetroServices decided to do something about the risks of heatstroke for employees. Bogdana Anghelescu, QHSE Representative: "We experience very high temperatures during the summer and our team need to wear the proper PPE equipment while on a job. This combination makes it quite challenging to stay cool during work, especially outdoors." When asked how they solved this problem: "The safety of our team members is a must. Implementing cooling products from INUTEQ made our lives so much easier. The felt impact of heat and fatigue levels decreased drastically, creating a safer and more efficient working environment. As soon as they started to wear the Head & Neck cooling products, we noticed an increase in well-being. They feel more comfortable and stay focused for a longer period of time, completing their duties easier, faster and most importantly safer."

Dosco has been so excited about



the benefits for their employees, they have decided to bring INUTEQ cooling products to the Romanian market. INUTEQ is a Dutch based, world leading company in developing and manufacturing personal cooling technologies and apparel. With this new distribution partnership, Dosco always has the best solution available to keep your workers cool during their job in high temperatures. Cool workers feel more comfortable, have a higher productivity and keep concentrated on the job.

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EU Gas Consumption and Production in Q1 2020

In the first quarter of 2020 EU gas consumption decreased by 5% in year-on-year comparison, in contrast to the increases in the previous two quarters (7% and 2%). Gas-fired electricity generation slightly decreased (by 2%, year-on-year), and milder than usual weather reduced heating needs in most of the EU countries. In absolute numbers, gas consumption in Q1 2020 amounted to 131 bcm.

European Union gas production fell by 23% year-on-year in the first quarter of 2020; amounting to less than 16 bcm. Gas production decreased in the biggest EU gas producing countries, including the Netherlands (-33%, the steepest fall in the last six years) and in Romania (-5%). In Q1 2020 Netherlands produced 7.2 bcm of gas, Romania had a production of 2.5 bcm, followed by Germany (1.3 bcm) and Italy (1.1 bcm), respectively down from 10.6 bcm, 2.6 bcm, 1.5 bcm and 1.3 bcm measured in Q1 2019. Decreasing EU gas production points to increasing gas import dependency, which is expected to rise further after the withdrawal of the UK. In 2018 the EU external gas import dependency was 83% (whereas with the UK it was less, only 77%).

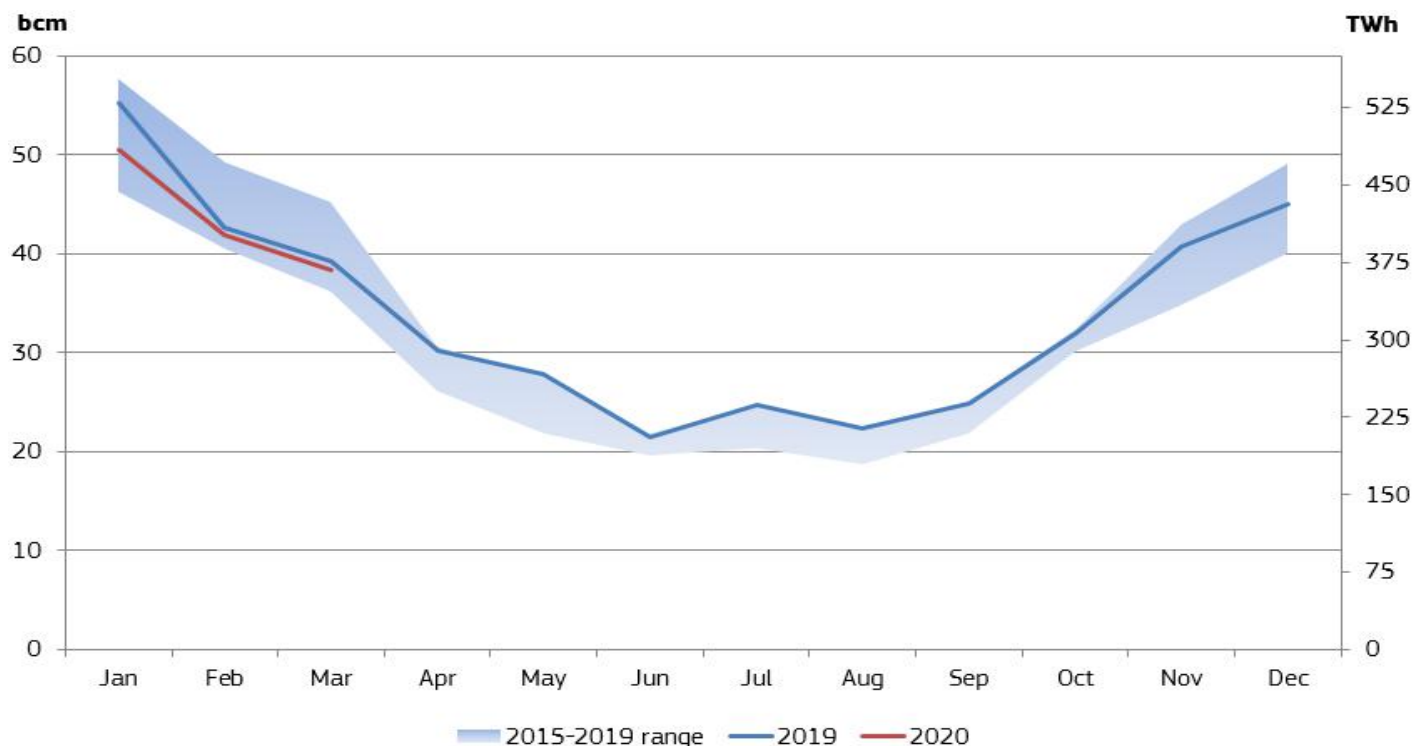
EU net gas imports fell by 7% in the first quarter of 2020, compared to Q1 2019. In Q1 2020 the amount of net gas imports (81 bcm) and domestic gas production (16 bcm) did not fully cover the quarterly gas consumption of 131 bcm, in the heating season storages (net decrease by 34 bcm) were also used. Pipeline gas imports from Russia fell by 23% year-on-year in Q1 2020, whereas pipeline imports from Norway decreased by 4%. Algerian pipeline gas imports fell steeply, by 38% compared to Q1 2019, driven by uncompetitive oil-indexed prices and increasing domestic gas demand in the country, implying

less export opportunities. Pipeline gas import from Libya, having only a small share in EU imports, also fell by 15%.

Russian pipeline supplies remained the main source of EU gas imports, covering 40% of extra-EU imports in Q1 2020, which represents the lowest share in the last six years.

In the first quarter of 2020, Nord Stream became the main supply route of Russian gas to the EU, as transit through Ukraine fell substantially. Nord Stream covered 45% of the total Russian supplies (around 15 bcm), up by 10 percentage points compared to in Q1 2019. The share of the Ukrainian transit route fell to 26% (8 bcm) down by 14 percentage points in year-on-year comparison. In Q1 2020 the amount of gas transited through Ukraine fell by 49% year-on-year, especially steeply falling in January 2020, when the transit volume was only 1.4 bcm, compared to the 2019 monthly average of 5.7 bcm. Some traders indicated that Gazprom sold gas during this period from European storages, using the Electronic Sales Platform (ESP), rather using the Ukrainian transit route. On the top of this, the Trans Balkan pipeline is no longer supplied through the Ukrainian transit, rather through the TurkStream. With the inauguration of the EUGAL pipeline, linking the Baltic Sea region (Nord Stream) with German and Czech customers, the direction of gas flows in Central Europe might change, which also explains why the share of the Ukrainian transit went down in Q1 2020. However, according to the agreement on Ukrainian transit signed at the end of 2019, the minimum transit volume through Ukraine should reach 65 bcm this year. In Q1 2020 gas supplies transiting Belarus also fell by 22% compared to Q1 2019, and covered 25% (8 bcm) within the total EU imports from Russia. As of 8 January 2020, the TurkStream is operational,

EU gas consumption



Source: Eurostat, data as of 12 June 2020 from data series nrg_103m. In the next edition of this report numbers might change retrospectively.

its share in the Russian gas transit was around 4% in Q1 2020, and around 1.2 bcm gas was shipped via this route to the EU.

On 30 March 2020 the Arbitral Tribunal in Stockholm has ruled in favour of the Polish oil and gas company PGNiG, thus ending a five-year long dispute between PGNiG and the Russian Gazprom concerning the price of gas. The Russian company was required to pay back to PGNiG an estimated USD 1.5 billion (around EUR 1.3 billion), which is the difference between the price calculated based on the new formula and the amounts actually paid by PGNiG between 1 November 2014 until 29 February 2020.

In March 2020 Bulgaria achieved a 40% cut in the price of gas it imports under its long-term contract with Russia, after the European Commission finalised an antitrust investigation against Gazprom in 2018 by way of commitments. The price cut was achieved, after Gazprom agreed to link a significant part of the price to European gas hubs.

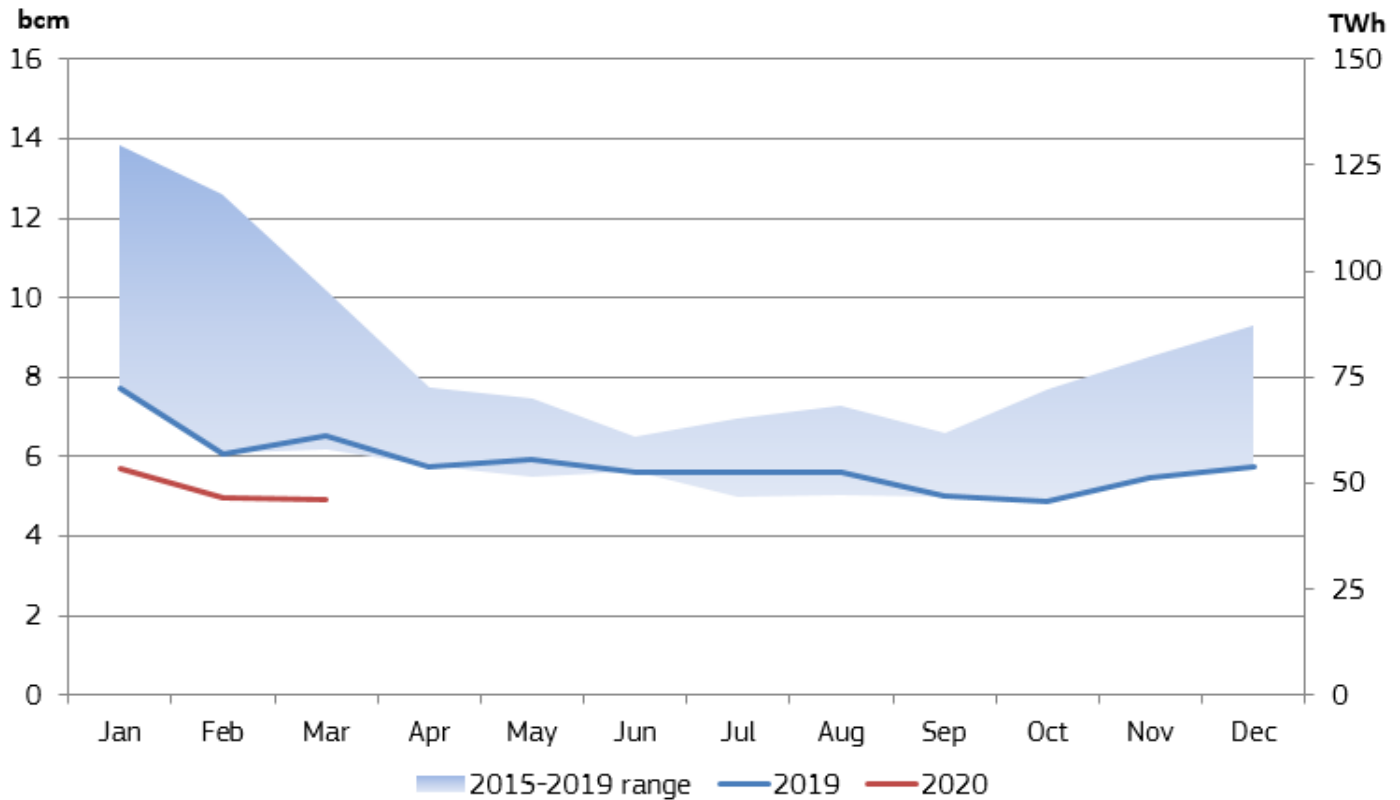
Gas storage levels in the EU stood at 54% at the end of March 2020, which was highest in the last nine years at this time end of the year. Gas withdrawals in Q1 2020 amounted to 34% of the total storage capacity, as opposed to 30% in the first quarter of 2019. Intensive storage withdrawal activity also contributed to the oversupply on many European gas markets. In many cases, traders anticipated lower prices for the near future, which prompted selling

the gas from the storages. At the end March 2020, the EU average storage-filling rate was 13 percentage points higher than a year before, implying less injection needs in the following two quarters during the summer filling season.

EU gas consumption in the first quarter of 2020

EU gas consumption in the first quarter of 2020 decreased by 5% in year-on-year comparison, after going up by respectively by 7% and 2% in the previous two quarters. In absolute numbers, the quarterly gas consumption in Q1 2020 amounted to an estimated 130.8 bcm, increasing from Q4 2019 (117.7 bcm), but down from (137.1 bcm) in Q1 2019. Gas-fired electricity generation showed a minor year-on-year decrease in Q1 2020 (decreasing by 1.8%, or 2.4 TWh), reversing the growing trend observed in earlier quarters in many European countries. Weather across Europe was generally warmer in January-March 2020 compared to the

Monthly gas production in the EU



Source: Eurostat, data as of 12 June 2020 from data series nrg_103m. In the next edition of this report numbers might change retrospectively.

seasonal average, resulting in less heating-related demand for gas in the residential sector. The decrease in gas demand in the electricity generation sector was aggravated by the decreasing industrial demand induced by the Covid-19 lockdown measures in the last weeks of the quarter. However, during the whole Q1 2020 gas consumption was in the range of 2014-2019, close to the lower end of the range.

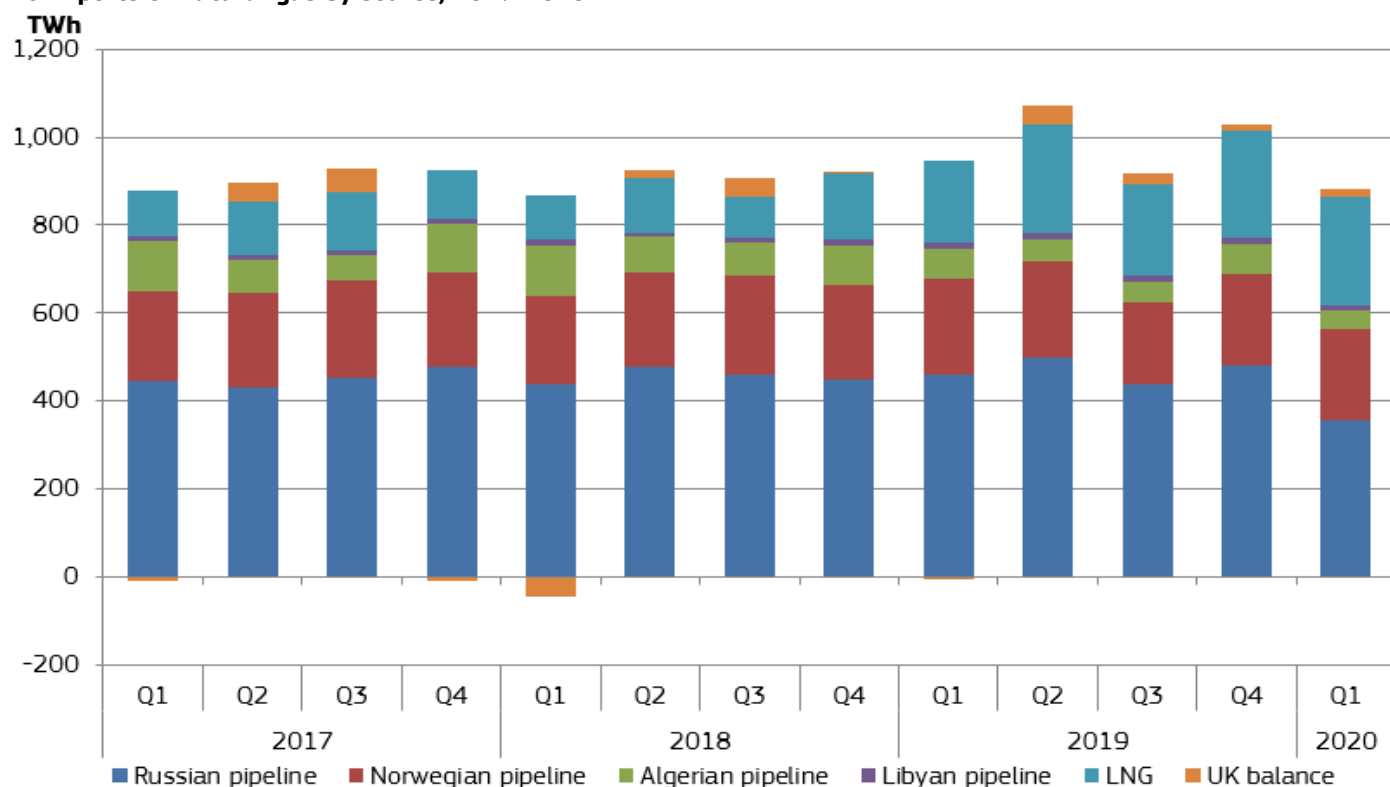
In the first quarter of 2020, the biggest year-on-year increase in gas consumption could be observed in Malta (20%, though representing only a minor increase of 0.02 bcm). Gas consumption went up in Portugal (by 17%, 0.2 bcm) and in Hungary and Croatia (4% in both, and respectively by 0.2 bcm and 0.04 bcm) and the Netherlands (by 3% and 0.4 bcm, which latter represented the biggest increase in consumption volume in the EU). Gas consumption decreased Q1 2020 by more than 20% in Romania, Latvia, Finland and Slovakia, whereas in Estonia it also fell by 14% in year-on-year comparison. In the United Kingdom² consumption of natural gas decreased by 4.5% (1.2 bcm) in Q1 2020 compared to the first quarter of 2019.

In absolute numbers, gas consumption in Q1 2020 decreased the most in Germany and Italy (both by 1.7 bcm), Romania (1.3 bcm), France (1.1 bcm), Slovakia (0.4 bcm), Spain (0.3 bcm), and Finland (0.2 bcm).

Besides the aforementioned mild weather conditions and decreasing use in electricity generation, natural gas demand also decreased in the industrial sector. Starting at the end of February in Italy, and by the end of March gradually expanding in whole Europe, confinement measures, severely impacting movement of persons and economic activity, were introduced in order to curb the spreading the Covid-19 coronavirus, which has already impacted other parts of the world (especially China in Asia) since the beginning of 2020. Looking at the year-on-year change in gas consumption in March 2020, in Italy and Spain, both heavily impacted by the confinement measures, a decrease of 4% and 6% could be observed.

Based on data from ENTSO-E, gas-fired power generation was down by 1.8% in the first quarter of 2020, compared to the same period of 2019. In absolute terms, electricity generated from gas decreased by 2.8 TWh year-on-year. In Q1 2020 gas wholesale prices turned down again in Europe, which could have been beneficial for gas use in

EU imports of natural gas by source, 2017-2020



Source: Based on data from the ENTSO-G Transparency Platform, data as of 5 May 2020.

Exports to the Baltic-states and Finland are not included in the chart owing to unavailability of reliable data

Russia, Norway, Algeria and Libya include pipeline imports only; LNG imports coming from these countries are reported in the LNG category.

A trade balance with the UK is estimated, reflecting that the UK is no longer part of the EU, and it is not easy to determine the origin of gas molecules arriving to the EU after going through the UK market (it can be UK production, imports from Norway of LNG imports from the UK, etc.).

power generation. However, besides the demand related impact, stemming from mild weather conditions and limited demand for gas in the industry, in Q1 2020 the role of renewables in the EU power generation mix was particularly strong, leaving not too much room for gas in spite of decreasing fuel costs. Solar and wind generation in the EU was up, respectively by 84% and 19% in Q1 2020, compared to the first quarter of 2019, and solid fuels continued their falling trend, decreasing by 30% over the same period. Although carbon prices decreased measurably in Q1 2020, reaching 22.8 EUR/tCO₂e on average, this could not improve the competitiveness of fossil fuels, especially that of coal and lignite in power generation in the EU.

In Q1 2020 the amount of electricity generated from gas went down by 6% in year-on-year comparison in Spain, Italy and France, in Germany it decreased by 2%, whereas in the Netherlands it rose by 3%, owing to changes in the local power generation mixes. Rise in electricity generation from hydro contributed to the replacement of gas in the local mixes in Spain, Italy and France. At the same time, increasing wind power generation in France and Germany had an important role, and increasing solar power generation in Germany

and Spain helped in reducing the role of natural gas, too. Generation from solid fuels showed a double-digit fall in each of these aforementioned countries, and generation from nuclear decreased as well in France and Germany. In Portugal gas-fired generation was up by 51%, and along with significantly increasing hydro it compensated the fall of coal-fired generation, practically disappearing from the local power mix. In Italy and Spain generation from gas was respectively down by 19% and 20% in March 2020 year-on-year, showing the impact of the economic downturn and confinement measures related to the lockdown.

EU gas production in the first quarter of 2020

In the first quarter of 2020 EU gas production reached approximately 15.6 bcm⁸, 23% (4.8 bcm)

less than in the same quarter of 2019. During the whole Q1 2020 gas output was below the 2015-2019 range, reflecting the dwindling trend of gas production in the EU. Five years before, in Q1 2015 the total gas production in the EU was still 36.6 bcm, more than twice as high as in the first quarter of 2020, implying the rapidly decreasing gas production in the block of 27, and increasing import dependency in natural gas.

In the biggest EU producer Netherlands natural gas production in Q1 2020 decreased by 33% (3.5 bcm). The production gap for the biggest Groningen gas field was set to 11.8 bcm for the gas year 2019 (started in last October), which is significantly down from the actual production of the preceding gas year (17.5 bcm, which was also less than the allowed maximum). Beyond the decrease from Groningen field, smaller gas fields produced 2 bcm less gas in 2019 than a year before, indicating the rapid fall in Dutch domestic gas production.

In Romania, being the second biggest gas producer in the EU, production went down by 5% (0.1 bcm). Gas output in Denmark showed a very strong decrease (by 57%, 0.5 bcm year-on-year, principally owing to the suspension of production at the Tyra fields in the Danish North Sea, ahead of the redevelopment until 2022), and in Germany, Italy and Ireland production went down by 0.2 bcm each (in percentage change respectively by 13%, 17% and 20%). Looking at the biggest EU gas producers, in Q1 2020 Netherlands produced 7.2 bcm, Romania had a production of 2.5 bcm, followed by Germany (1.3 bcm) and Italy (1.1 bcm).

The United Kingdom managed to slightly increase (by 1%, 0.1 bcm) its gas production in Q1 2020 to 10.4 bcm, whereas in Norway gas production decreased by 3.4%, from 32.1 bcm in Q1 2019 to 31.1 bcm in Q1 2020.

Imports

According to Eurostat, net imports decreased by 6% in the first quarter of 2020 (year-on-year), mainly driven by 5% reduction (year-on-year) of the EU gas demand. Net imports in different EU countries showed a high variation in Q1 2020, ranging from a decrease of 46% (in Austria) to an increase of 217% (in Malta, though by marginal value, 0.1 bcm) in year-on-year comparison. Among big gas consumer countries net imports decreased in the France (by 25%), Poland (12%), in Italy (9%), Germany (8%) and Spain (4%). Net imports increased slightly in Greece (by 4%) and Romania (1%).

In the first quarter of 2020, the total net extra-EU gas imports reached 80.9 bcm, down by 7% from 86.9 bcm in the same period of 2019. The five biggest importers in the EU in Q1 2020 were Germany (24 bcm), Italy (16 bcm), France and Spain (both 8 bcm) and Belgium (6 bcm), representing together close to 80% of the total EU net gas imports in Q1 2020. After the United Kingdom left the European Union, the gas import dependency of the EU-27 increased further. In 2018 import dependency stood at 83.2% (with the UK, being a significant gas producer, the import dependency was 77.4% in 2018, as Eurostat data show).

According to ENTSO-G data, imports amounted to 881 TWh

in the first quarter of 2020, of which 72% through pipelines and 28% through LNG terminals. Pipeline gas Imports from Russia fell significantly, by 23% in year-on-year comparison, principally owing to the big decrease in January through the Ukrainian transit route. Pipeline gas imports from Algeria fell further in Q1 2020 (by 38%), imports from Norway decreased only by 4% in Q1 2020, whereas from Libya it went down by 15% in year-on-year comparison. At the same time, LNG imports, though in a slower pace than in 2019, increased further year-on-year, and reached 248 TWh in Q1 2020.

Russia remained the top gas supplier of the EU, however, the share of Russian pipeline gas in the extra-EU gas imports fell to 40% in the first quarter of 2020, which was the lowest in the last six years. In Q1 2019 the share of Russian pipeline gas imports was almost 49%. As pipeline gas imports from Norway decreased only by 4% year-on-year in the first quarter of 2020, which was slightly less than the total gas decrease (5%), the country's share in extra-EU gas imports remained practically the same, 24%¹², compared to Q1 2019. In the first quarter of 2020 Norwegian gas production¹³ amounted to 31.1 bcm in Q1 2020, decreasing by 3.4% year-on-year. However, Norwegian gas production has relatively low costs (estimated to be around 2 USD/mmBTU, around 6-6.5 EUR/MWh in Q1 2020), which still ensured profitability for exporting gas to Europe. In the first quarter of 2020 pipeline gas imports from Algeria continued to fall, decreasing by 38% year-on-year, which resulted in a falling share within the total extra-EU imports (5% in Q1 2020 vs. 7.5% in Q1 2019). This was probably owing to increasing domestic gas use in the country (implying less export opportunities), and the uncompetitive nature of the still-significant oil indexed contracts in Algerian gas exports. Imports from Libya turned down again (-15% in Q1 2020 compared to the same period of the previous year), and its share was only 1.3% in the total EU gas imports.

Due decreasing import volumes and falling average import prices, in the first quarter of 2020 the estimated gas import bill fell below EUR 10 billion for the first time in the last six years (amounting to EUR 9.8 bn in Q1 2020, down from EUR 14.4 billion in Q4 2019 and from EUR 18.7 billion in Q1 2019, falling by 48% year-on-year).

Source: Quarterly Report Energy on European Gas Markets - Market Observatory for Energy, DG Energy Volume 13 (issue 1, first quarter of 2020)



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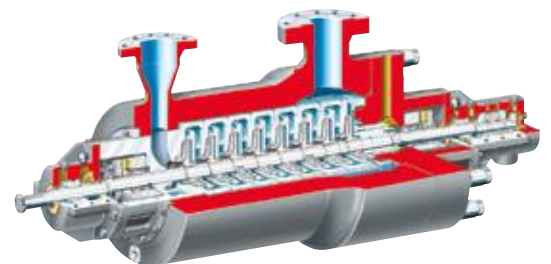
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Dietsmann Completes the Acquisition of KAROM

Dietsmann, one of the leading global Operation & Maintenance providers for the energy industry, acquired the shares of KAROM Servicii Profesionale in Industrie from Kraftanlagen Romania and Kremsmueller Romania.



“Dietsmann has been expanding in the Balkan region in recent years and KAROM provides a great fit in Romania. Together, we are in a good position to build a strong presence in the Romanian energy industry,” says **Peter J. Grobmueller - Country Manager Dietsmann Romania.**

The transaction initiated in late 2019 consolidates the Operations & Maintenance in the energy sector, creating knowledge and operational synergies for both companies.

KAROM is a long-term provider of OMV Petrom and currently handling maintenance operations and surface transportation for two of the company’s onshore oil & gas assets. With a workforce of approximately 300, KAROM has extensive know-how in the upstream Oil & Gas industry, especially in technologies for electrical measurement, control and regulation as well as in the mechanical and piping sector.

“Dietsmann has been expanding in the Balkan region in recent years and KAROM provides a great fit in Romania. Together, we are in a good position to build a strong presence in the Romanian energy industry,” says Peter J. Grobmueller - Country Manager Dietsmann Romania.

Dietsmann made this decision to have a better presence in the Balkan peninsula after extensive analysis identified the region’s potential. In 2018 Dietsmann acquired Energoremont Holding in Bulgaria and therewith broadening its presence in the petrochemical, nuclear and conventional power and mining sectors in Eastern Europe.

Dietsmann is among the leading independent specialist in Operation & Maintenance (O&M) services and Maintenance Engineering & Inspection (MEI) for continuous-production plant in the Oil & Gas, Conventional Power Plants & Nuclear power generation and Mining industries.

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Talking to Experts

Gabriela Stanciu, CEO Blumenfield

THE NEED FOR A STRATEGIC VISION AND HARMONIZATION WITH EU POLICIES

This year, in May, the Ministry of Environment, Water and Forests issued an order approving the conditions for preparing environmental studies, the criteria for certification of natural and legal persons and the composition and the Regulation on the organization and functioning of the Certification Committee.

Gabriela Stanciu, CEO Blumenfield – a Romanian environmental consulting company, discusses about challenges faced by companies in Romania in order to align with the Green Deal targets and clarifies some of the most important aspects relating to the activity of environmental consulting companies under Order No. 1134/2020 issued by the Ministry of Environment, Water and Forests.

by LAVINIA IANCU

In light of the European Green Deal, which includes policies aiming at climate neutrality by 2050, what are the challenges faced by companies in Romania in order to align to this desideratum?

Clearly, a large part of Romanian energy companies has established as priority the fight against climate change and environmental degradation, in line with Romania's desideratum assumed under the Green Deal policy. However, it is difficult to predict whether Romania will become climate neutral by 2050, given the current structure of the energy mix and the challenges faced by the domestic companies, especially in terms of endowment with performing, environmentally friendly equipment. For example, in this challenging

period for the business environment, the necessities of the industry refer to transformation, digitization and retrofitting, and still, briefly put, they involve obtaining significant financing sources allowing the development of long-term investment strategies.

Fortunately, the energy industry, identified as one of the most polluting industries, benefits from the support of the relevant European bodies and thus becomes a priority objective for the competent national authorities. Specifically, I believe that the challenges of the Romanian industry refer to strategic vision and harmonization with EU policies



regarding the development and streamlining of the entire operational circuit: production - transmission - distribution - supply.

How can advanced technologies change the rules in the field of environmental protection?

As we know, globally we face important environmental problems, such as climate change, water and air pollution, impoverishment of natural resources and loss of biodiversity. Therefore, innovation and large-scale use of eco-technologies must keep up with the effects of climate change and pressure from anthropogenic activity on the Earth's climate and ecosystems.

In this context, I would say that Romania provides great opportunities to make efficient the use of environmental technologies in the energy and transport sectors, and in particular in terms of waste and therefore wastewater management. Implementing environmentally friendly innovative solutions and technologies in these sectors provides possibilities for reducing energy consumption and emissions, recovering valuable by-products and reducing the volume of waste eliminated, as well as an efficient quantitative and qualitative wastewater treatment, thus contributing in a significant manner to the reduction of greenhouse gas emissions, as well as to

the reduction of water eutrophication.

From the point of view of the environmental specialist, I can say however that eco-technologies do not refer only to investment strategies and business efficiency. Advanced environmental technologies are also used to monitor environmental factors, thus contributing to the collection of relevant data to identify the presence of pollutants and set efficient remediation measures. Endowment of environmental laboratories with performing analysis equipment and technologies is a key requirement in delivering concrete, qualitative results. Specialized human resources are again a defining factor. Specifically, for an environmental laboratory to permanently ensure qualitative results, it involves both advanced technologies and professionals with training in various areas of activity: chemistry, physics, biology, ecology.

The challenge is to identify qualified personnel, with potential, to ensure a continuous professional development and create a sustainable business

environment to support these specialists in their efforts to protect the environment.

Europe monitors the factors that lead to lower biodiversity, through measures for fighting soil and water pollution, as well as a new forest strategy. What is the situation in Romania from this point of view? What can you tell us about the management of projects with environmental impact that you deal with?

Pollution always has a source and at least one direct effect.

The problem occurs when the level of soil, water or air pollution exceeds the limit that the ecosystem can absorb, causing a significant reduction of habitats and consequently the diminishing of biodiversity, or, even worse, losing it. Forests are habitats for many species of fauna and flora, and ecologically contribute to soil protection, reduce desertification, but especially participate in the water circuit in nature and balance the climate through processes such as evapotranspiration, carbon dioxide capture and oxygen release.

As such, protecting these environmental components is a desideratum at both European and national level. European directives on habitats, water, air, pollution reduction etc. transposed into the specific Romanian legislation, together with the national environmental strategies and policies, provide the legal framework for ensuring the protection of the environment/of these components.

However, an important factor in environmental protection is also the assessment of the potential impact generated by certain projects by performing concrete studies on the initial state of the environment and, at the same time, monitoring the effects of the environmental components on activities with significant impact.

Blumenfield®, as a developer of environmental studies certified by the Ministry of Environment, has the methodological support of its scientific division, Blumenfield Science, which is in fact a private research center for environmental protection. Therefore, assessing the initial state of the environment on the site of the proposed projects, as well as assessing the effects of economic activities, are carried out by laboratory analysis of water, soil, sediment, waste samples, air and noise level measurement, as well as monitoring of terrestrial and marine biodiversity.

Conducting these complex studies is necessary for a relevant assessment of the potential impact of projects, as well as to establish efficient and relevant programs to monitor the environmental factors that can be affected by the implementation of projects and development of activities.

This is important for two reasons.

First, for a better knowledge of the ecological state of environmental components on the site of the objectives proposed for development and a correct assessment of their environmental impact.

Secondly, to optimize potential future costs, recorded with landscaping and environmental protection projects. Given that it is concretely known which environmental factor is affected and to what extent it is impacted, you can intervene and monitor the effects on it punctually, without a consumption of resources allocated to

segments that do not require protection.

Regarding our environmental projects, I can claim that they have been successfully implemented, Blumenfield specialists being able to provide correct solutions, which have always benefited the environment, of course with the support of our partners - companies from various economic sectors, which understood the need to contribute to an unpolluted environment.

In this way, Black Sea and onshore gas exploration projects, projects for the operation of wind farms, the exploitation of mineral resources, infrastructure and real estate development projects, activities with significant environmental impact that require integrated environmental permits have been and are efficiently managed in terms of environmental protection by Blumenfield team.

Ensuring integrated environmental services for drilling Black Sea gas exploration wells was one of the difficult projects, which required our complex experience, starting from the stage of permits and approvals to the implementation of environmental protection conditions, waste management and monitoring of the marine ecosystem.

We are proud that one of the largest geophysical data acquisition projects for gas prospecting in Europe and automatically in Romania, implemented over more than 1,600 km², on the administrative area of three counties (Braila, Buzau, Ialomita) benefited from consulting and environmental studies from us, at this moment being involved in another similar project, in the stage of obtaining the environmental regulatory acts.

To the same extent, companies in the green energy sector currently use Blumenfield expertise for biodiversity monitoring studies and the draw up of environmental impact assessment studies for the development and operation of wind parks.

What are the most important milestones of Order no. 1134/2020 issued by the Ministry of Environment and how do they influence the activity of consulting companies in the environmental field? How can professional competence be ensured in this field?

The professional competence of consulting companies in drawing up environmental studies was regulated until May this year by Order of the Ministry of Environment no. 1026/2009. Based on this order, legal persons were certified to draw up environmental studies (environmental impact assessment reports, adequate assessment studies, environmental balance sheets, site reports, security

reports etc.) based on the professional training of the personnel, but without having a distinction between them, depending on the proven experience of the team.

The new regulation, i.e. Order No. 1134/2020, gives the possibility to legal entities to obtain the certificate of developer of environmental studies strictly on the fields and degree of certification (principal or assistant) of experts employed for an indefinite period or under collaboration contract within the respective entity. Moreover, changing the composition of the team, based on which the certification was received, will automatically lead to changes in the level and field of certification of the legal entity.

It is a substantive change regarding the professional competence of developer of environmental studies, the purpose that I intuit being to create a more rigorous and legally regulated specialization in the environmental consulting market.

Therefore, a healthy competitive environment is created, whose beneficiaries are in the end the companies that need specialized environmental consulting services at a high-performance level, adapted to the real needs.

Last but not least, I believe that it was necessary to create an adequate and regulated professional framework, based on which to offer conditions of professional development for the graduates of profile faculties, and also to facilitate the exchange of experience and continuous professional training, given the fact that we are living in a time of dynamic changes, automatically in the professional environment as well.

According to a report recently published by the European Environmental Agency (which analyzes the period 1990-2018), Romania is one of the cleanest countries in the European Union. However, while in the industrialized countries the reduction of polluting emissions came as an effect of environmental investments starting with 1990, in Romania it is the effect of the deindustrialization process. The EU statistics show that for each euro produced in Romania 569 grams of CO₂e are emitted, one of the largest quantities in the Community space, although, after Germany and the UK, our country recorded the largest reduction in pollution after 1990. In other words, we pollute a lot to produce little. From the perspective of an environmental specialist, how do you think things could be improved?

The fact that Romania is one of the cleanest countries in the European Union, but at the same time production not being at the same level as that of the developed countries, should not give us a comfort zone. On the contrary, although according to statistics Romania is evaluated as a 'clean' country as compared to other EU countries, we all notice in the day-to-day life that there are many areas that require significant improvement. Here, it is necessary to actively involve everyone to ensure environmental protection and the future of the following generations, from national policies, strategies of corporations, projects of small companies, and also the individual behavior, of each of us.

The situation could be improved, taking the example of strongly industrialized states, which managed to reduce CO₂ emissions over

the past few years. Following closely their policies and strategies and complying with the rules applied by them, Romania can develop and align to EU standards.

As a first step, I believe there should be a correct identification of the deindustrialization factors, such as an aging workforce, declining demand for industrial products, the outsourcing of production to emerging economies or the lack of qualified personnel. After identifying them, the industrial sector can reopen and expand complying with the European standards and regulations.

Reducing the gap on these CO₂ emissions, compared to massively industrialized countries, is a goal that we must assume at national level. It is encouraging and I welcome the significant reduction in pollution, but more is obviously needed. This trend must be confirmed as a constant one and this can be achieved through coherent environmental policies, adapted to the current realities, which will definitely provide the necessary space for technology and digitalization of industries.

How is Blumenfield going through this period of crisis caused by the Covid-19 pandemic and how do you see the return to the level of activity, prior to the period of crisis - productivity/economic performance?

It is a difficult period for all of us, marked by a state of uncertainty that we each feel more or less, according to the degree of adaptation to restrictive conditions regarding the social life and implicitly all activities.

Blumenfield® has since its inception an integrated management system implemented in safe work procedures for employees, and Blumenfield Science Environmental Laboratories are typically workspaces with restricted access for outsiders and controlled in terms of pathogens or contaminants.

Therefore, the personnel are trained to work in permanent safety, both in the laboratory and during field trips and sampling; at the same time, the workspaces are sterilized daily, using UV lamps, and at regular intervals the surfaces are wiped with disinfectant solutions, all for the protection and safety of the personnel and their families.

Putting aside the need to support the business environment through concrete government programs, my opinion is that companies' management have understood that they need to look beyond the crisis and set up their own recovery plans and... why not, plans for the future investment. ■

ALUM Received EUR 8.8mIn Grant from EC within ReActiv Project

ALUM S.A., the only calcined alumina producer in Romania, is one of the stakeholders of the ReActiv project, an initiative aiming to reduce waste and CO₂ emissions by transforming bauxite residue, the main by-product of the alumina sector, into an active material suitable for developing new cement products, with low CO₂ footprint. Coordinated by LafargeHolcim through its Research and Development Center ('Lafarge Centre de Recherche SAS'), the project is part of the Horizon 2020 program for creating low carbon circular industries and received EUR 8.8 million grant from the European Commission.

ReActiv focuses on transforming a currently unexploited industrial residue from the alumina sector Bauxite Residue, into active material for new sustainable cement products. In ReActiv project, ALUM participates as a stakeholder, providing appropriate samples of bauxite residue to be processed in the project, contributes to the feasibility studies and business plan development, especially in regards to potential technology deployment at cement plants. The project will be implemented starting end of 2020 or early 2021 and will be finalized in a four-year period.

“Through ReActiv project, altogether with several industry leaders and European institutions, we reinforce our sustainability commitments with a main focus on circular economy projects through the implementation of innovative methods to reduce near to

zero emissions & waste and our carbon footprint while creating better products, with lower impact on the environment”, said Gheorghe Dobra, CEO of ALUM. “With this new step of vertical integration and future investments in our facilities, we are not only contributing to protecting the environment and our local community, but also to creating a potentially new and sustainable business line,” added Gheorghe Dobra.

The ReActiv project will deploy new technologies that will transform the bauxite residue in a re-active material for low CO₂ cement production, to substitute 30% to 50% of clinker, the main component of cement. The process will provide much lower costs and will produce novel cement products with equal or better performances while reducing emissions related to production by at least 30%.

Moreover, the ReActiv project’s objectives are to: reduce with at least 30% the primary raw material use per tonne of cement; cut-off waste generation by at least 25%; provide significant energy savings and reductions in CO₂ emissions; establish the secure and sustainable provision of secondary resources at a total cost lower than existing solutions and to provide a sustainable method that can be replicated across industries.

Furthermore, for the alumina producers, having the possibility of further usage of the bauxite residue and reintroducing it in other industries represents a significant step forward in terms of achieving a sustainable value chain. Moreover, this will relieve the ecosystems in the vicinity of alumina refineries from the stockpiling and costs associated with them, as well as developing a new business line, where its waste becomes a resource and, ultimately, a new innovative product. ■

Cleanest Countries in the European Union

DEINDUSTRIALIZATION PROCESS IN ROMANIA: POLLUTION VERSUS PRODUCTION

While in the industrialized countries the reduction of polluting emissions came as an effect of environmental investments starting with 1990, in Romania it is the effect of the deindustrialization process. Romania is one of the cleanest countries in the European Union, the level of greenhouse gas emissions falling to 116.5 million tons of carbon dioxide equivalent (MtCO₂e). Nevertheless, the EU statistics show that for each euro produced in Romania 569 grams of CO₂e are emitted, one of the largest quantities in the Community space. Overall, after Germany and the United Kingdom, Romania recorded the largest reduction in pollution after 1990, according to a recent report published by the European Environment Agency, which analyses the period 1990-2018.

by Adrian Stoica

Cleanest countries in the European Union

With only 6 tons of CO₂e/capita, Romania is next to Croatia, also with 6 tons, and Malta, with 5.5 tons, the cleanest countries, the quoted report shows. Compared to 1990, the pollution inhaled by every Romanian had decreased in 2018 by 17.4%. As a percentage, the largest reductions were registered by Denmark (33.8%), Finland (32.8%) and Sweden (31.4%).

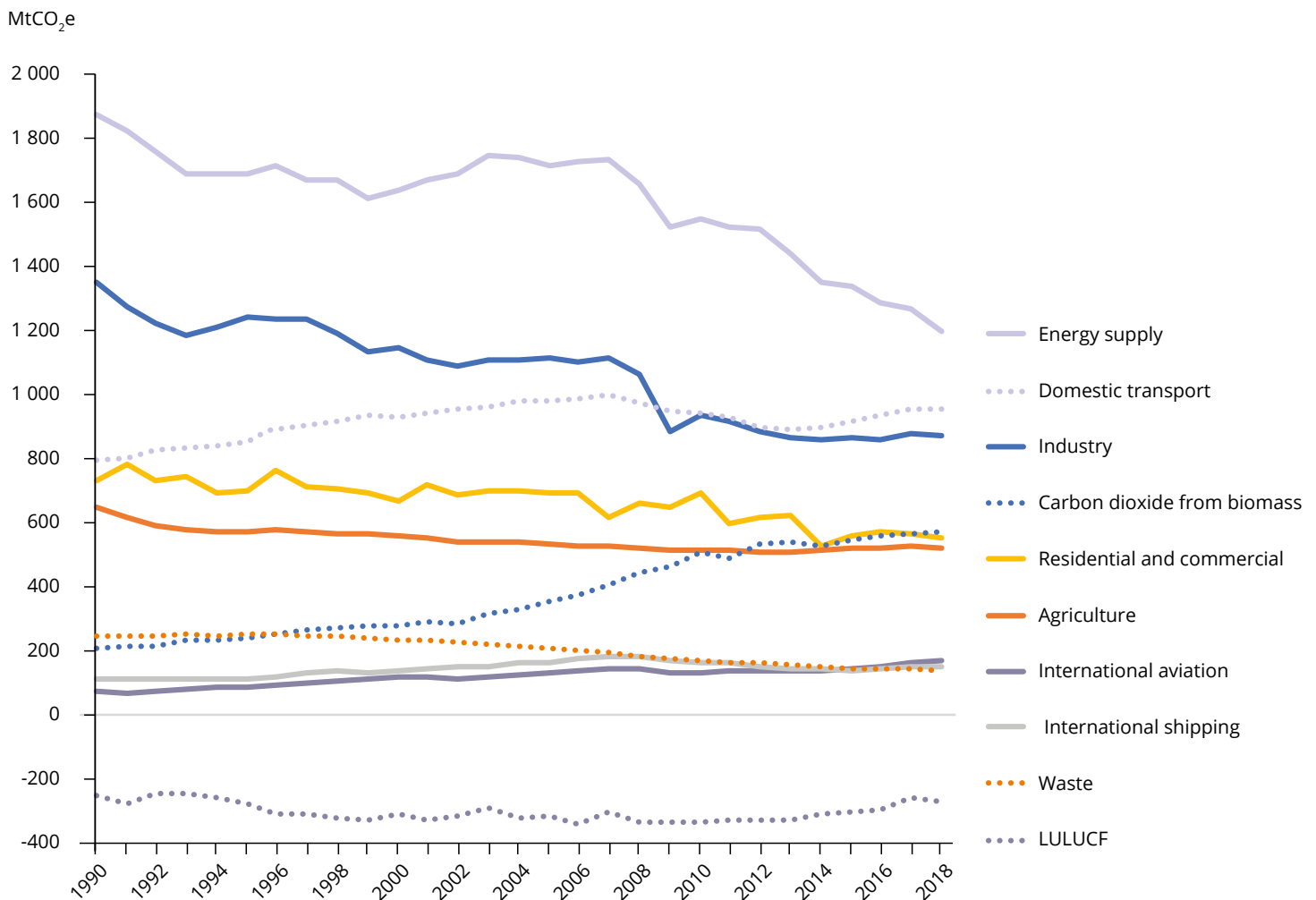
While for every euro produced, Romania emits 569 grams of CO₂e, Bulgaria emits 1,045 gCO₂e/euro, Poland - 836 gCO₂e/euro and the Czech Republic - 623 gCO₂e/euro. At the same time, Europe's major economies manage to have the lowest emission intensity values. EU statistics show that Germany emits 266 grams of greenhouse gases for every euro produced, France - 197, Italy - 249, Spain - 293 etc.

Another indicator taken into account by the analysis of the European Environment Agency is the amount of greenhouse gases emitted to achieve the Gross Domestic Product (GDP), relative to the standard purchasing power (SPP). In this respect, with 104 SPP at a GDP of 241 billion dollars, Romania is above the EU average, which shows that we pollute more than we produce. For example, countries with a much higher GDP than that of Romania have a much better situation. Thus, Germany, at a GDP of 3.948 billion dollars, registers 100 SPP, France, at a GDP of 2.778 billion dollars, has 76, and Italy, at a GDP of 2.080 billion dollars, has 86. The worst in this indicator are doing Estonia - 214, Bulgaria - 187 and Poland - 175.

The year of the largest reduction in greenhouse gas emissions

The EU reduced its greenhouse gas (GHG) emissions again in 2018, to reach the lowest level

Greenhouse gas emissions by main sector in the EU-27 plus United Kingdom



Source: EEA.

since 1990. Total GHG emissions decreased by 23.2% and stood at 4392 million tonnes of carbon dioxide equivalent (MtCO₂e) for the EU-27 plus the United Kingdom in 2018. The figure for the EU without the UK would be 20.7% over the 28-year period. The EU accounted for less than 8% of global GHG emissions in 2018, compared with 15% in 1990. The average EU citizen emitted 8.9 tonnes of CO₂e (tCO₂e), down from 12.2 tCO₂e in 1990, and the total GHG intensity of the EU economy more than halved during the period. The EU emitted 277 grams of CO₂ (gCO₂e) for each Euro generated in the economy in 2018, compared with 582 gCO₂ per Euro in 1990. GHG emissions decreased in the majority of

sectors between 1990 and 2018, and particularly in energy supply, industry and the residential sector. When allocating emissions from the energy supply sector to final end users, sectoral emission trends confirm that the largest energy-related emission reductions took place in industry and the residential sector. Emissions from agriculture and waste management have also contributed to the positive trend since 1990. Emissions from road transportation increased, both for passengers and freight transport, in spite of climate policies and the deployment of less carbon intensive and more efficient vehicles on the market.

The reduction in GHG emissions since 1990 can be attributed to a combination of economic factors and the implementation of policies and measures. These include improvements in the carbon intensity of energy production and consumption resulting from the strong uptake of renewables and the switch to less carbon intensive fossil fuels, as well as improvements in the gross energy intensity

of the economy, triggered by better energy efficiency, both in transformation and end use. Despite these positive trends, fossil fuels are still the largest source of energy and emissions in the EU. Decarbonising the EU economy will require substantial additional GHG emission reductions in the next 30 years if the EU is to become a climate neutral economy by 2050. The effort required to achieve net-zero emissions by 2050 could imply a tripling of the mitigation efforts achieved to date, in a sustained manner, over the next 30 years.

Results from the EU greenhouse gas inventory for 2018

The latest GHG inventory prepared by the EU and submitted to the United Nations Framework Convention on Climate Change (UNFCCC) shows that, in 2018, total GHG emissions (excluding land use, land use change and forestry -LULUCF) decreased by 92.6 million tonnes or 2.1% compared to 2017, to reach 4 392 MtCO₂e in 2018. This decrease in emissions came with an increase in GDP of 2.0%. Germany and France accounted for more than half of the net reduction in GHG emissions in absolute terms in the EU in 2018. The decrease without the UK was 83.6 million tonnes, to reach 3 893 MtCO₂e in 2018.

At the EU level, two thirds of the net reduction in GHG emissions in 2018 took place in main activity producers of heat and electricity, including combined heat and power. Emissions from the combustion of solid fuels for power generation decreased by almost 50 million tonnes in 2018 compared with 2017. Natural gas input to power stations also decreased, with emission levels 14 million tonnes below those of 2017. In addition, the use of renewable energy sources in electricity generation increased again in 2018, thus underpinning the ongoing decarbonisation trend in the sector.

Although less substantially than in the power sector, in 2018 GHG emissions also decreased in residential buildings, refrigeration and air conditioning, petroleum refining and agricultural soils. In particular, HFC emissions from refrigeration and air conditioning decreased for the fourth consecutive year since 2014. Carbon dioxide emissions from road transport remained broadly stable in 2018, compared with 2017, after four consecutive years of increases since 2013. This was a result of lower diesel consumption in passenger cars, where emissions decreased for the first time since 2012. The overall 2.1% net decrease in total GHG emissions in 2018 was partly offset by higher emissions from manufacturing industries and construction.

In terms of fuels, there was a significant decrease in the use of fossil fuels in the energy sector - particularly solid fuels, but also gaseous (natural gas) and liquid fossil fuels. Based on Eurostat data, there was a decline in nuclear energy in 2018, in parallel with a strong increase in the use of renewable energy sources, both in terms of primary and final energy.

Overall, the energy intensity of the economy and the carbon intensity of energy production and consumption decreased again in 2018. These were largely driven by lower transformation losses and better energy efficiency on the one hand, and by the higher share of renewables in the fuel mix, compared to fossil fuels, on the other.

In the past 28 years, total GHG emissions in the EU-27 plus the United Kingdom decreased by 1330 million tonnes of CO₂e. The block emitted 4 392 million tonnes of CO₂e in 2018 - the lowest level since GHG inventory reporting to the UNFCCC - which is 23.2% less than in 1990. The total reduction, including international navigation emissions, which are not included in the EU's current emission targets, over the 28-year period was 1291 million tonnes of CO₂e or 22.1% less than 1990 emission levels.

Emission trends by sector in greenhouse gas inventories

GHG emissions decreased in the majority of sectors between 1990 and 2018, with the exception of transportation. The largest decrease in emissions in absolute terms occurred in energy supply and industry, although agriculture, residential and commercial (i.e. buildings), and waste management have all contributed to the positive trend in GHG emissions since 1990. The figure also shows the increase in CO₂ emissions from bioenergy combustion. Although net removals from LULUCF increased over the period, the strong increase in CO₂ emissions from bioenergy highlights the rapidly increasing importance of bioenergy in replacing fossil fuel sources in the EU.

At the level of key emission sources reported in GHG inventories, the largest emission reductions took place in the manufacturing industries and construction, electricity and heat production, iron and steel production, and residential sectors. The largest decrease in emissions in relative terms occurred in waste management, through reduced and better controlled landfilling. Emissions from HFCs (until recently) and road transport increased substantially over the 28-year period. International transport emissions have also increased significantly since 1990.

In terms of the main GHGs, CO₂ reductions contributed most to the reduction in emissions since 1990. Reductions in emissions from

nitrous oxide (N₂O) and CH₄ have been substantial, reflecting inter alia:

- For CH₄: lower levels of mining activities, improvements in technology and pipeline networks, lower agricultural livestock and enteric fermentation from cattle, lower emissions from managed biodegradable waste disposal on land and intensified separate collection, recycling and landfill-gas recovery;
- For N₂O: reduced adipic and nitric acid production.

Although N₂O emissions from agricultural soils have decreased over the 28-year period, recent years have seen an increase in these emissions at the EU level, mostly due to the intensified use of inorganic fertilisers on cropland and grassland.

A combination of factors explains lower emissions in industrial sectors. These include improved efficiency and carbon intensity as well as structural changes in the economy, with a higher share of services and a lower share of more-energy-intensive industry in total GDP. The economic recession that began in the second half of 2008 and continued into 2009 also had a lasting impact on emissions from industrial sectors. Emissions from electricity and heat production have decreased strongly since 1990. In addition to improved energy efficiency, there has been a move towards less carbon intensive fuels. Between 1990 and 2018, the use of solid and liquid fuels in thermal stations decreased strongly, whereas natural gas consumption doubled, resulting in reduced CO₂ emissions per unit of fossil fuel energy generated. Emissions in the residential sector also represented one of the largest reductions at EU level. Energy efficiency improvements from better insulation standards in buildings and a less carbon intensive fuel mix can partly explain lower demand for space heating in the EU as a whole over the past 28 years. Since 1990, there has been, on average, a warming of autumns/winters in Europe, although there is high regional variability.

Economic growth, employment and emission reductions

There has been a substantial improvement in the GHG emissions intensity of the EU economy since 1990. GHG emissions decreased by 23% and GDP increased by 60% between 1990 and 2018. In addition, the population in the EU plus the United Kingdom increased by 35 million between 1990 and 2018. GHG intensities of Member States have both decreased and converged since 1990. One reason for this convergence is the strong growth in the use of renewable energy sources in most Member States and a clear move towards less carbon intensive fuels.

However, the reliance on coal, gas and oil remains high at EU level and the economy continues to be, by and large, based on fossil fuels. It is worth highlighting that EU economies have grown and emissions have decreased alongside a growing share of renewables, less carbon intensive fuels in the energy mix and improvements in energy efficiency. Yet, to break the link between GDP and GHG emissions, more substantial improvements in energy efficiency and carbon intensity will be needed, which will enable the EU to meet its 2030 and 2050 objectives, according to the quoted report. ■



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EU Invests Over EUR 2Bln in 140 Key Transport Projects

The EU is supporting the economic recovery in all Member States by injecting almost EUR 2.2 billion into 140 key transport projects. These projects will help build missing transport links across the continent, support sustainable transport and create jobs. The projects will receive funding through the Connecting Europe Facility (CEF), the EU's grant scheme supporting transport infrastructure.

Fith this budget, the EU will deliver on its climate objectives set out in the European Green Deal. A very strong emphasis is on projects reinforcing railways, including cross-border links and



“The EUR 2.2 billion EU contribution to this crucial transport infrastructure will help kick-start the recovery, and we expect it to generate EUR 5 billion in investments. The type of projects we invest in ranges from inland waterways transport to multimodal connections, alternative fuels to massive railroad infrastructure. The Connecting Europe Facility (CEF) is one of our key instruments in creating a crisis-proof and resilient transport system - vital now and in the long run,” **Commissioner for Transport Adina Valean said.**

connections to ports and airports. Inland waterway transport is boosted through more capacity and better multimodal connections to the road and rail networks. In the maritime sector, priority is given to short-sea-shipping projects based on alternative fuels and the installation of on-shore power supply for ports to cut emissions from docked ships.

“The EUR 2.2 billion EU contribution to this crucial transport infrastructure will help kick-start the recovery, and we expect it to generate EUR 5 billion in investments. The type of projects we invest in ranges from inland waterways transport to multimodal connections, alternative fuels to massive railroad infrastructure. The Connecting Europe Facility (CEF) is one of our key instruments in creating a crisis-proof and resilient transport system - vital now and in the long run,” **Commissioner for Transport Adina Valean said.**

The EU will support rail infrastructure projects located on the trans-European transport (TEN-T) core network with a total of EUR 1.6 billion (55 projects).



This includes the Rail Baltica project, which integrates the Baltic States in the European rail network, as well as the cross-border section of the railway line between Dresden (Germany) and Prague (Czechia).

It will also support the shift to greener fuels for transport (19 projects) with almost EUR 142 million. A number of projects involve converting vessels so they may run on Liquefied Natural Gas (LNG), as well as installing corresponding infrastructure in ports.

Road transport will also see the deployment of alternative fuels infrastructure, namely through the installation of 17,275 charging points on the road network and the deployment of 355 new buses.

Nine projects will contribute to an interoperable railway system in the EU and the seamless operation of trains across the continent through the European Rail Traffic Management System (ERTMS), Upgrading locomotives and railway track to the unified European train control

system will boost safety, decrease travel times and optimise track usage. The nine projects will receive over EUR 49.8 million.

EU investment in Romania

Connecting Europe Facility (CEF) – Transport grants 2014-2020

Romanian beneficiaries participate in 34 projects and receive EUR 896.7 million in CEF Transport co-funding, (out of which EUR 893 million come from the Cohesion envelope), with investments in these projects of EUR 1.1 billion.

Additionally, two projects are located in Romania but without the involvement of Romanian beneficiaries. These projects correspond to a total of EUR 19.3 million of CEF Transport funding and a total investment of EUR 81 million.

Background

The projects were selected for funding via two competitive calls for proposals launched in October 2019 (regular CEF Transport call) and November 2019 (CEF Transport Blending Facility

call). The EU's financial contribution comes in the form of grants, with different co-financing rates depending on the project type. For 10 projects selected under the Blending Facility, EU support is to be combined with additional financing from banks (via a loan, debt, equity or any other repayable form of support).

Overall, under the CEF programme, EUR 23.2 billion is available for grants from the EU's 2014-2020 budget to co-fund Trans-European Transport Network (TEN-T) projects in the EU Member States. Since 2014, the first CEF programming year, six calls for project proposals have been launched (one per year). In total, CEF has so far supported 794 projects in the transport sector, worth a total of EUR 21.1 billion.

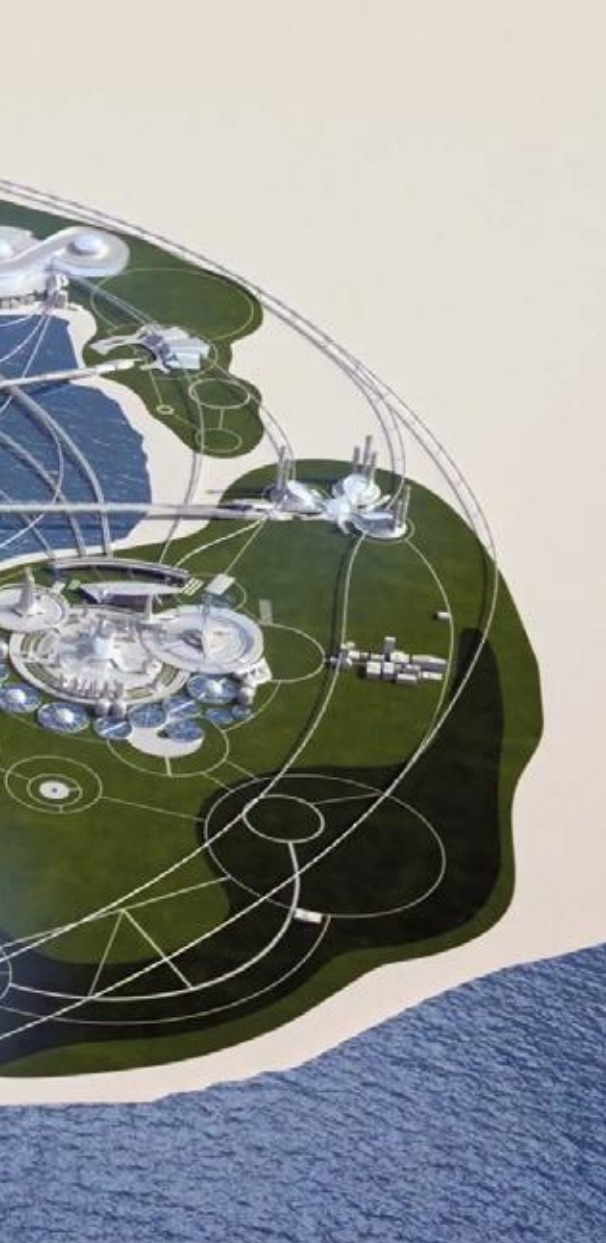
Next steps

For both calls, given EU Member States' approval of the selected projects, the Commission will adopt formal financing decisions in the coming days. The Commission's Innovation and Networks Executive Agency (INEA) will sign the grant agreements with the project beneficiaries at the latest by January 2021. ■



Christof Clean City Plan

The Christof Clean City Solution is a master plan for an integrated waste management concept for cities and areas that want to improve their sustainability, reduce their CO₂ output, and make waste disposal a thing of the past. The ambitious plan brings together new products and new energy resources. Cutting-edge technology gives municipalities the ability to make a significant contribution to the environment and to the quality of life of their populations. This makes it possible to create a circular economy.



Christof Industries has developed the Clean City plan in the course of the last decade. The major focus has been on finding ways to complement the technical and industrial experience of more than a century with state-of-the-art know-how and technologies. A global team of 50 professionals is pursuing the goal of realizing a circular economy by employing financially and environmentally feasible waste-to-value projects in order to reach a zero-waste solution.

The importance of the circular economy becomes clear in the ideal scenario of a city in which resources are used to their maximum utility throughout their life cycles with the final goal of reaching a zero-waste situation.

The team

The Christof Clean City team is a lean and extremely competent one of about 50 experts. With the ability to call on the support of more than 4,000 professionals as well as partner companies, the team is able to execute, operate and maintain multiple projects at the same time. The team is technology agnostic and solutions driven, incorporating the experience of project development, industrialization, engineering, construction, EPC execution and upgrades.

Circular economy

The term circular economy encompasses a range of processes, in which resources are used for their maximum utility throughout their lifetime, thus maximizing sustainable use and eliminating waste. The final goal is for the economy as a whole to move towards a more sustainable future, ultimately reaching a zero-waste situation. This stands in sharp contrast to the traditional approach, in which goods are manufactured from raw materials, sold, used and then discarded or incinerated as waste.

The circular concept fosters wealth and employment across generations. Against the backdrop of resource constraints, circular business models will gain an ever-greater competitive edge in the years to come, by making it possible to release the value of materials, labour, energy and capital embedded in products after the end of each cycle of use. This enables the world economy and population to grow in a more sustainable way than the traditional linear model.

Technologies for the circular economy

Christof Industries' collective know-how in the construction of industrial plants, in waste utilisation and in the research and development of innovative technologies means that they have the ability to process all waste flows in a single, integrated system; the goal is not just the complete elimination of waste, but also to use it to generate resources and new value, including protein for the animal feed industry, biodiesel, and other innovative products. This is a cornerstone of a sustainable circular economy.

3.40bln tons of waste annually by 2050

According to World Bank Waste report, by 2050, the world is expected to generate 3.40 billion tons of waste annually, increasing drastically from today's 2.01 billion tons. 'What a Waste 2.0: A Global Snapshot of Solid Waste Management to 2050' aggregates extensive solid waste data at the national and urban levels. It estimates and projects waste generation to 2030 and 2050.

Beyond the core data metrics from waste generation to disposal, the report provides information on waste management costs, revenues, and tariffs; special wastes; regulations; public communication; administrative and operational models; and the informal sector. ■

EBS Rotary Screw Blowers: Pure Efficiency

EBS series rotary screw blowers are true standouts with their high efficiency and compact design.



The EBS 410 rotary screw blower from Kaeser represents a new milestone in the development of oil-free compression blower technology, designed especially with water industry applications in mind.

With a flow rate of 10 – 40 m³/min and pressure differentials from 0.3 to 1.1, as well as a selection of motors ranging from 22 to 75 kW, the innovative EBS 410 sets new standards in terms of energy efficiency, space-saving design and automation.

The SFC version is equipped with a frequency converter and a synchronous reluctance motor – a slip-free design that combines all the advantages of high efficiency permanent-magnet motors with those of robust, service-friendly asynchronous motors. Thanks to variable speed control, the flow rate can be adjusted as required and a control range of 1:4 is achieved, which allows exceptionally dynamic operation.

The STC version is now equipped with an energy-saving IE4 Super Premium Efficiency motor that reduces energy consumption and therefore costs, making the STC version more efficient than ever before.

With both versions, power transmission from the motor to the air-end takes place via loss-free and maintenance-free gearing, which results in an up to 8% improvement in specific power compared to the previous model. The complete machine achieves an isentropic efficiency of up to 80%, representing the pinnacle of performance for oil-free compression machines. In order to ensure that the specified performance figures are translated into reality, Kaeser guarantees performance in accordance with the strict tolerances of the ISO 1217-C/E standard.

Furthermore, efficiency remains constant across the entire control range and flow rate is virtually unaffected by pressure fluctuations. This allows the blower to be precisely regulated and adjusted at all times via the master control system. This achieves even greater energy savings and also ensures effortless integration with other control technologies.

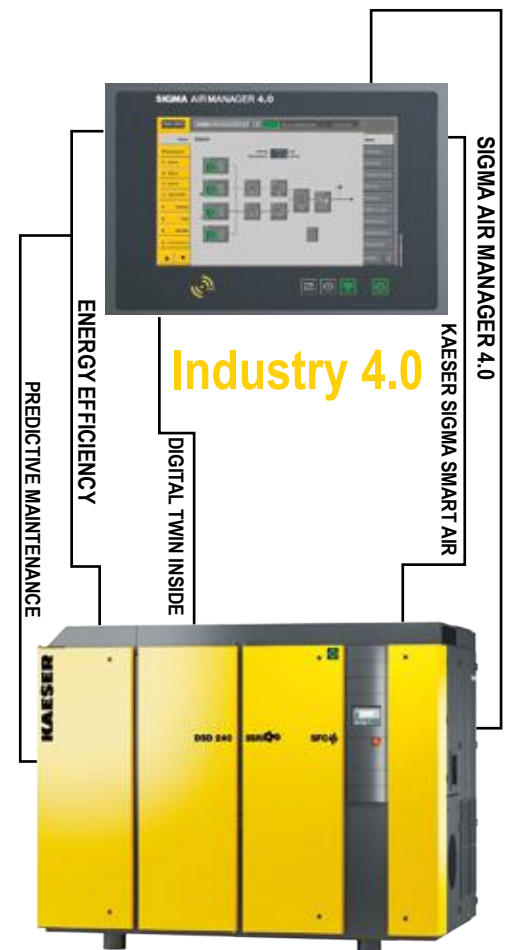
These new models will be available in two different sizes – up to 37 kW and 75 kW respectively. They not only stand out on account of their attractive, contemporary design, but they can also be installed side-by-side, leading to considerable space savings. The 37 kW version in particular is impressively compact, featuring a footprint of only 2.2 m² (or 2.6 m² for the 75 kW version).

EBS 410 rotary screw blowers are delivered ready for immediate connection, including controller and frequency converter, or star-delta starter. All units are CE and EMC-certified, thereby minimizing the planning, construction, certification, documentation and commissioning costs for planners, operators and plant manufacturers. Last but not least, highly effective sound and pulsation damping ensure exceptionally quiet operation.

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MoU Between Romgaz and Liberty for the Development of Greenfield Projects

Romgaz Medias and Liberty Galati have concluded a Memorandum of Understanding (MoU) aimed at setting up a joint venture, in view of developing Greenfield investment projects, respectively the development of a gas-fired power plant (CCGT) and power plants based on renewable sources, using both wind and photovoltaic technologies.

Through this Memorandum of Understanding, the two companies agree to work together in the true spirit of the partnership to make sure there is a single and receptive approach on the implementation of investment projects, which can be financed both from equity and from external sources through the joint venture that will seek to attract European funds through the 'Green Deal' financing mechanism and/or through the financing schemes available in Romania.

The period of implementation of these investment projects will range between 3.5 and 4 years, during which both companies will cooperate and make joint efforts for the investment projects to become a reality and a model of best practice in the Romanian economy.

"This partnership is an example for Romania. We thus continue Romgaz's priorities in the long-term development strategy through which we want to diversify the natural gas capitalization chains at a higher level. The investment is an important one at national level and represents a first step of positioning Romania on the map of Europe in the production of green steel. Such investments lead to horizontal developments of many economic sectors and implicitly a motivation for Romgaz to amplify exploration-production programs," said Romgaz CEO Adrian Volintiru.

"Based on the agreement we signed with Romgaz, we will be able to

deliver the long-term competitive energy needed to support this fascinating project to produce steel with a reduced carbon footprint in Galati. I have no doubt that this project will be a great success and will put Galati on the map, not only in Europe, but globally, as a low-carbon, sustainable steel manufacturing unit for a new era, built for future generations," said Sanjeev Gupta, Executive Chairman of the GFG Alliance.

Creating a European GREENSTEEL flagship at Liberty Galati

Liberty Galati, located in South-East Romania, is the largest integrated steel plant in the country and leader in manufacturing metallurgical products, with a current production capacity of 2 million tons of steel as well as the ability to increase that output in the future.

The Galati Steel Plant produces a wide range of quality flat products (plates, coils, galvanized sheets & coils and organic coated products) as well as welded tubular products and supplies, for customers across Romania, the Balkans and elsewhere in Europe. The products produced are used in shipbuilding, construction, pressure vessels, automotive and other industries. Its welded tubular products are used for transporting oil, gases



and other fluids.

Liberty Galati has around 5,600 employees and 2,000 contractors, making it the biggest employer in Eastern Romania. The topmost priority for the Galati Steel Plant is to ensure a safe work environment for those employees and contractors.

The unit focuses on continuously improving the quality of products and services offered to its customers, protecting the environment and encouraging young people to join the local team.

Liberty Galati is actively involved in community development activities through the long-term sponsorship of local medical and educational projects.

The Executive Chairman of GFG Alliance, which includes Liberty Steel Group, on June 10 welcomed Ludovic Orban, the Prime Minister of Romania, to Liberty Galati as he signed a series of agreements with Government, the national gas company Romgaz, EximBank Romania and also local educational institutions to help deliver his GREENSTEEL vision.

During the visit, Sanjeev Gupta and Virgil-Daniel Popescu, the Minister of Economy, Energy and Business Environment, signed a Memorandum of Understanding (MoU) supported by Prime Minister Orban, which incorporates GFG's plan to install modern steel-making technologies, significantly reducing direct CO2 emissions, increasing the use of lower carbon energy sources and creating a more flexible, competitive operation.

Alongside the investment MoU, GFG Alliance signed agreements with key national suppliers and respected educational institutions that will work with Liberty Galati to deliver the transformation through the provision of competitive energy, skills, research, know-how and finance.

"It is a great honour to welcome the Prime Minister and other senior members of the Romanian government here today in support of our GREENSTEEL vision for Galati. Through their backing, and the agreements we have signed today with Romgaz we will be able to deliver the competitive long-term energy needed to underpin this exciting project. Galati University will partner with us to create a GREENSTEEL Academy aimed at developing a new generation of highly skilled workers equipped to handle cutting edge technologies. The National Research Institute will help develop the know-how

required to deliver complex hydrogen projects. EximBank Romania will cooperate with us to secure competitive long-term funding for the project," the Executive Chairman of GFG Alliance mentioned.

GFG Alliance GREENSTEEL investment plans include the following.

- A Direct Reduced Iron (DRI) plant with 2.5 million tonne capacity. The DRI plant, which will initially use natural gas, will transition to using hydrogen as hydrogen production technology becomes more cost effective.

- Two Electric Arc Furnaces, one of which will be dedicated to cast slabs for Galati's world-renowned plate mill and the other for direct casting of hot rolled coil production, a state of the art and highly competitive technology. The EAFs will reduce CO2 emissions per tonne of steel produced by up to 80%, with emissions dropping to almost nothing once the DRI plant is hydrogen powered. This will make Galati the first European primary steel plant in GFG to get going on a path to become carbon neutral by 2030.

- Expand production capacity towards 4 million tonnes of liquid steel a year.

Below are the summaries of the MoU.

- The MOU with the Ministry of Economy, Energy and Business Environment outlines GFG's investment plans for Liberty Galati and confirms the Ministry's determination to support and encourage GFG Alliance's investment in the sustainable development of Liberty Galati.

- The MoU signed with Adrian Constantin Volintiru, the CEO of Romgaz, provides a framework for the potential joint venture partnership between the parties to build a new natural gas power plant within the curtilage of Liberty Galati.

- The MoU signed with Professor Dr. Puiu Lucian Georgescu, Rector of 'Dunarea de Jos' University Galati, is to collaborate in the creation of a Liberty Galati GREENSTEEL Academy. The Academy will encourage more young people, from top-quality engineers to technical and operational specialists, to come into the steel industry to help develop more sustainable production methods.

- The MoU signed with Mihai Varlam, Executive Director at The Romanian Institute for Research and Development for Cryogenic and Isotopic Technologies, is to collaborate in the development of technical studies and business applications of green hydrogen technology in steel production.

- The MoU signed with Traian Halalai, Executive Chairman, EximBank Romania, agrees to collaborate to support GFG's investment in LIBERTY Galati. ■

CIECH Soda Romania to Construct a New Co-generation Power Plant in Valcea

RESTARTING SODA ASH PRODUCTION IN ROMANIA

CIECH Soda Romania submitted the official documents for obtaining the environmental permit needed for the construction of a new co-generation power plant on its own premises from Valcea. Still, the company is working on a feasibility study for that power plant to reach the best final decision. CIECH Group – the owner of CIECH Soda Romania – intends to obtain an external partner for this project and to secure the possibility of using a support mechanism provided by the European Union.

The company already obtained the first needed administrative decision, the Certificate for Urbanism, almost one month ago. In the same time, the work is going on the feasibility study for the new power plant. According to plan, it should be ready before the end of the third quarter of 2020. The feasibility study will cover both the operational and financial aspects of the investment. As Group CIECH announced earlier, such investment excludes the ability to incur any investment expenses that could affect the balance sheet of the CIECH Group. Additionally, CIECH intends to establish cooperation with an external partner responsible for the construction and maintenance of a new steam source, as well as with the Romanian authorities to obtain support from state-aid programs and mentioned earlier European Union aid mechanisms for this type of project.

CIECH Group operates its own power plants in Germany and Poland with high efficiency and under strict EU environmental norms. The construction of its own steam source is one of the very few solutions for the company to be able to resume operations in

Romania, after being forced in September 2019 to enter in long-term stand-by due to unsustainable commercial conditions requested by the unique local steam supplier.

“We remain focused on taking all necessary efforts to restart soda ash production in Romania. Our long standing experience in soda production in Valcea, coupled with our unique positioning in supplying our clients and our established operational experience with own power plants allow us to view our options positively. Our preference would be to find a viable solution with the local provider, however we have to ensure a sound business outcome. Our goal is to secure the volumes of steam at the quantity and quality required for our industrial processes,” said Witold Urbanowski, the General Manager of CIECH Soda Romania.

Since September 2019 the company waited for 6 months a decision regarding the various possible



solutions to secure the steam supply in a sustainable way, after addressing all relevant local and national authorities with numerous reports, analysis and notifications which were drawing attention on the matter. CIECH Soda Romania covered all the team and maintenance costs related to this period. At the end of March, however, with the new pressure added by the pandemic outburst, the company decided to follow the course of a voluntary leave program for 72% of the 600 employees and collective dismissals procedure for 13% of the team.

During the emergency state, in April 2020, in order to respond to the needs of several local companies, CIECH Soda Romania rented an installation of a small steam generator to be able to produce own steam for the production of silicates and help its clients to respond to the increased needs of cleaning products.

At this moment a relatively small team is functional within the factory for the production of silicates and for the maintenance of the soda installations.

About CIECH

CIECH Group, the majority shareholder of CSR, is an international holding company in the chemical industry with a presence in over 100 countries and revenues in 2018 equivalent to USD 1 billion. In 2014, most of the CIECH shares were purchased by KI Chemistry, a company belonging to the largest Polish private investment firm, Kulczyk Investments.

CIECH Soda Romania S.A., a company of the CIECH Group, produced calcined soda and sodium silicate until september 2019. Since taking over the Govora Sodium Plants in 2006, CIECH has transformed the factory from the industrial platform into a competitive company on the market. In September 2019 the company entered in temporary stand by due to unilateral denouncement of the steam supply by CET Govora, incapable to offer steam at sustainable prices and volumes. Now the core company's soda production lines are in a long term stand by until the company will develop own plans for a sustainable steam supply, a new co-generation power plant. Silicates production line is still functional and liquid silicate production will be soon resumed. ■

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Impact of COVID-19 on the Electricity Value Chain

EURELECTRIC RECOMMENDATIONS FOR A GREEN RECOVERY OF THE POWER SECTOR

Eurelectric released on June 15 a set of policy recommendations for a smooth and efficient recovery of the power sector. They address the necessary measures for tackling the negative impacts of lockdowns on several segments of the electricity value chain, including generation, distribution grids, markets, as well as retail and customer services.

The COVID-19 outbreak has pushed the EU economy into one of the biggest crises of the century. An assessment conducted by Eurelectric throughout the lockdown period shows that the entire electricity value chain was affected by the measures taken to limit the spread of the virus.

To reset its activity and accelerate the clean energy transition, the power sector calls for:

- The establishment of concrete measures for ramping up the deployment of zero carbon infrastructure projects, as well as for

closely monitoring the risk of shortage of critical materials and of skilled workforce (i.e. construction and maintenance) via the national recovery plans;

- Stimulating capital-intensive investments in carbon-neutral generation through an efficient framework that provides long-term visibility and certainty;

- Supporting the electrification of buildings and transport, while paving the way for ambitious skilling objectives for workers, through the Renovation wave initiative;

- Enabling the equipment of entrants to the labour market with the right skills and provide access to adequate reskilling and upskilling for experienced employees, particularly in digital and new technologies;

- The preservation of the financial capacity of distribution grids and the mitigation of economic risks for electricity suppliers, as they have been directly impacted by the break on bills and delayed payments.

The full list of recommendations, building on responses provided by the majority of Eurelectric's members, is available [here](#).

Horizontal recommendations

- Prioritise and accelerate low-carbon infrastructure projects in national recovery plans to recuperate registered delays and achieve climate goals set at the national and EU levels. Such projects will bring direct benefits to local economies and act as catalysts for the economic development of other EU strategic initiatives, such as those on clean mobility, solar and wind energy, and batteries.

- Ensure a robust EU ETS system, with the Linear Reduction Factor (LRF) and the Market Stability Reserve (MSR) as the two main policy tools. Their parameters will require reassessment in light of the upcoming 2030 target increase and expected MSR review.

- Monitor and address potential risks of shortage in the supply chain with regard to critical materials and components, as well as potential shortage of skilled workforce (i.e. construction and maintenance).

- Take appropriate measures given the significant impact that lower electricity consumption and power prices have on the balance sheets of energy utilities and on their long-term ability to invest in the energy transition. While those are part of market risks, the EU and national authorities should be aware of this impact and act accordingly.

Committee-specific recommendations

Electrification & Sustainability

- Prioritise a system-wide approach towards electrification of buildings and transport as a part of the upcoming Renovation Wave initiative.
- Ensure that digital skills and technologies are recognised as key enablers for a socially responsible digital transition. This would require both equipping new entrants to the labour market with the right skills and providing access to adequate reskilling and upskilling for experienced employees.

Generation & Environment

- Guarantee that a long-term schedule - anticipating the expected allocation of support for the deployment of renewables - is published, in order to ensure visibility and certainty for investors;
- Establish a swift process ensuring that operators are given sufficient time to comply with the emission limit values in their permits and/or requirements of the Industrial Emissions Directive (IED). Delays in refurbishments could lead to certain sites not being able to fulfil these requirements on time.

Markets & Investments

- Make sure that the regulatory framework is more conducive

to capital-intensive investments in carbon-neutral generation, in particular including more long-term arrangements. Otherwise, there is a risk of lock-in related to fossil fuels and the carbon neutrality goals for 2050 would become more challenging to reach.

Distribution & Market Facilitation

- Preserve and increase the investment capacity of DSOs to ensure the timely infrastructure deployment (i.e. smart meters roll-out, renewables and charging stations connection, grid modernisation and maintenance works) thus supporting the entire industrial value chain (suppliers, manufacturers, subcontractors).
- Alleviate the financial strains and regulatory limits put on DSOs in order to maintain investment and operation capacity at the pace of pre-pandemic levels and allow them to envisage a higher level of investments.
- Take regulatory measures to recognise the increased capital risk borne by DSOs due to delays of payment deadlines granted to businesses, and ensure the solvency of the entire electricity system. ■

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Romanian Government Announces Investments of EUR 12.48bn in the Energy Sector

Government's plan to relaunch the economy provides, for the period 2020-2025, investments in the National Energy System estimated at EUR 12.48bn. Investments announced by Orban Government provide for the construction of new gas-fired power plants and hydropower plants, projects in renewable energy and hydrogen, retrofitting of substations, as well as the construction of new power lines. All these projects are part of the development strategies of energy companies that they were required to prepare and adopt by mid-June.

Summarizing, the objectives announced by the Government target:

- Green energy: onshore and offshore wind parks (2x300MW) - RON 4.6bn; new hydropower production capacities (Retezat, Vidraru, Mariselu, Avrig, Bistra, Livezeni etc.) - RON 1.6bn;
- Romgaz's strategic investments worth RON 15.69 billion: gas turbine power plants (Iernut, Mintia), development of offshore projects Neptun Deep, Est Rapsodia and Trident in the Black Sea, methanol plant (greenfield), new energy capacities in partnership with private companies (Chimcomplex, Alro, Liberty Galati etc.);
- Restructuring and decarbonization plan 2020-2025 of the company Complexul Energetic Oltenia S.A., worth RON 7.2bn;
- Increase in the nuclear power production capacity with at least

one unit by 2030 and extending the life of Unit 1 by 30 years;

- Increasing the capacity of power transmission lines and of cross-border interconnection - about RON 4.6bn;
- Investments in the national gas transmission system and for the interconnection with the international transmission system - about RON 9bn.

Romgaz to allocate EUR 3.24bn for development

In the period 2017-2019, Romgaz invested about RON 2.8bn and for the period 2020-2025 it targets an investment volume of about RON 15.69bn, the equivalent of EUR 3.24bn. The strategic investments of Romgaz are, according to Government's Strategic Plan, the following:

- Gas turbine combined-cycle power plants, which are in line within the objective of decarbonization of the energy sector by switching from the coal-fired capacities to gas-fired and renewable energy capacities.
 - The gas turbine combined-cycle power plant in Iernut. The budget allocated for the completion of the new power plant, as well as to repair and upgrade the infrastructure of networks and utilities taken over from the old power plant for serving the new one is RON 321mln. It will have a capacity of 400 MW and should be completed by the end of this year;
 - The combined cycle power plant with gas turbines Mintia. So far, the prefeasibility and feasibility studies have been drawn up and approved. The total gross electrical power of the new plant will be approx. 405 MW. According to estimates of the

feasibility study, the total value of the new power plant will be around RON 2.14bn and the period of implementation of the investment is 2020-2025;

- Power Plant by integrating the production of electricity from renewable sources (RES) with hydrogen production, through a combined cycle gas turbine (CCGT) plant, of average size, 200 MW, in Tr. Severin - Halanga;

- Production of electricity from renewable sources. Romania is one of the Member States with a significant potential for wind energy, which can be used in optimal conditions. In this context, Romgaz included in the development strategy the identification of new opportunities in order to grow and diversify the company's business in the field of renewable electricity production. The estimated total installed power for the new capacities will be around 250 MW.

For the period 2020-2025, funds of about RON 1.2bn are needed for these investment expenses. These investments fall within the priority axis of the Modernization Fund, with the financing ensured up to 100%.

- **Offshore project – Neptun Deep**

In conditions in which ExxonMobil plans to divest its 50% interest in the Neptun Project, Black Sea, where it is partner with OMV Petrom, Romgaz is holding discussions to take over part of Exxon's stake. So far, a Joint Bidding Agreement (JBA) has been signed with OMV Petrom SA and PGNiG SA, in order to take over ExxonMobil's stake in the block. The Joint Operating Agreement (JOA) is being analysed. Also, there are discussions and negotiations within the consortium for the evaluation and establishment of a final bid to ExxonMobil.

- **Offshore project – Lukoil**

Romgaz took over in 2012 from Lukoil and Vanco a 10% stake in the rights gained and obligations assumed related to EX-29 Est Rapsodia and EX-30 Trident blocks, on the continental shelf of the Black Sea. The co-holders of petroleum agreements gave up the EX-29 Est Rapsodia block in December 2016, as a result of negative results of exploration in this block. Given the different results from those expected to be obtained by drilling the Trinity 1X well, the titleholders of the concession agreement requested and received from NAMR the extension of phase 1, part 2 of the additional exploration period, by 3 months (until 03.08.2020).

- **Methanol production plant**

Romgaz is interested in entering the market of petrochemical products in Romania and in the region, this being one of the development directions

of the company for the period 2020-2025 provided within the strategic objective on business development by approaching new markets at domestic and international levels. In this context, an innovative vision to diversify Romgaz's investment portfolio is the possibility of converting natural gas into methanol by making an investment in the construction of a new (greenfield) methanol production unit. The estimated budget allocated to this investment objective is about RON 1.175bn.

- **Projects in partnership**

There are currently discussions with potential partners to develop projects in partnership. The purpose of association is assimilating the business experience in the energy sector of both companies, in a joint concept by the participation of each company with own complementary knowledge:

- Chimcomplex project. The project ensures the supply of industrial steam and electricity in safe and competitive conditions, including operating and maintenance costs throughout the period. The site will be integrated in the electricity recovery structure managed by Romgaz, being part of Romgaz's gas supply portfolio.

- ALRO project. Combined cycle power plant (CCGT) 467 MW, of which 360 MW necessary for ALRO consumption and 100 MW capitalization on the electricity market with operation 8,424 h/year. The site will be integrated in the electricity recovery structure managed by Romgaz, being part of Romgaz's gas supply portfolio.

- Liberty partnership. The steel platform in Galati (formerly Arcelor Mittal) will develop in the following 3-4 years steel production at a steady pace, in a relatively short time. To this end, the energy needed to support this development level must be ensured through investments within the current environment context supported by the EU. Therefore, the following energy needs are estimated: natural gas - increase in consumption from 2.2 TWh/year at the moment, by 7.4 TWh/year, resulting in an estimated 9.6 TWh; electricity - increase from the current demand of 100-120 MW to 500 MW. The production estimate is 350-400 MW CCGT, completed by a combined renewable source, photovoltaic and wind energy, of 180 MW CCGT, on an available area of 50 hectares.

Retrofitting of substations, the main investment at Transelectrica

At Transelectrica, the Government plans investments of RON 346.46mln in the expansion of power grids with new lines and RON 1.42bn in the retrofitting of existing substations. The main directions of evolution in the period 2020-2025 are:

- The emergence of new production capacities, in particular based on renewable sources (wind, solar, biomass), a large part with intermittent operation and priority regime, connected to both the Power Transmission Grid and the distribution network;

- Development of the electricity market, at national, regional and European level;

- The disappearance or decrease in production or increase in consumption, to a level where supply to consumers in certain areas to the standard parameters of quality and safety is not endangered.

In order to maintain the adequacy of the grid so that it is properly sized for the transmission of electricity forecast to be produced, imported, exported and transited under the conditions of the changes occurred, the following categories of investments have been included in the Power Transmission Grid Development Plan over the medium term of 5 years:

- Retrofitting of the existing substations - RON 1.42bn;
- Expansion of the Power Transmission Grid by building new lines (closing the 400kV ring of Romania) - RON 346.46mln;
- Increasing the transmission capacity of the existing lines - RON 32.12mln;
- Increasing the cross-border interconnection capacity - RON 1.17bn.

Given the contribution to the implementation of EU's strategic priorities on the trans-European energy infrastructure, the European Commission has introduced the following group of projects on the third list of Projects of Common Interest (PCI):

- PCI 'Romania-Serbia Group, between Resita and Pancevo', also known as 'Mid Continental East corridor', which includes the following projects of common interest: Resita - Pancevo 400 kV OHL and expansion of the 220/110 kV Resita substation by building a new substation of 400 kV - RON 173.20mln; converting to 400 kV the 220 kV d.c. OHL. Resita - Timisoara - Sacalaz - Arad, including the construction of 400 kV Timisoara, Arad and Sacalaz substations - RON 316.20mln;

These projects will eliminate congestion, both on the E-V direction at the border with Hungary and Serbia, and on the N-S direction, by strengthening the Iron Gates - Resita - Timisoara - Arad corridor.

- PCI 'Bulgaria-Romania Group, capacity increase', also known as 'Black Sea corridor', which includes the following projects of common interest: 400 kV d.c. OHL (1 circuit equipped) Smardan - Gutinas - RON 254mln; 400 kV d.c. OHL Cernavoda - Stalpu, with one input/output circuit in Gura Ialomitei - RON 379.11 mln;

- Expansion of existing substations and increasing the transformer capacity in the substations;
- Projects for preparing the transition to smart grids and digitization of the Power Transmission Grid - RON 40mln;
- Projects for the development of the operational management system by EMS/SCADA dispatcher - National Power Dispatcher - RON 45mln.

Nuclearelectrica to start the construction from scratch of Units 3 and 4

As far as Nuclearelectrica National Company is concerned, investments of around RON 2.25bn are estimated here for the following 5 years. Nuclear power has a significant contribution in the generation of low carbon emissions, Nuclearelectrica having as main investments the increase of nuclear-based capacity through the construction of Units 3 and 4, of which at least one unit until 2030 and the extension of the operation of Unit 1 with more 30 years. All these investments are part of the company's development strategy, which was recently approved by shareholders. Also, on this occasion,



the shareholders repealed the Strategy for the continuation of the Cernavoda Units 3 and 4 Project with the Chinese, at the request of the Ministry of Economy, Energy and Business Environment.

Investments of over RON 7bn at CE Oltenia

Investments in energy capacities of around 1,650 MW, worth RON 7.250bn, are envisaged at Complex Energetic Oltenia (CEO). Therefore, CEO considers a Decarbonization Plan for switching from coal-fired production to gas-fired and renewable energy production, according to the National Investment Plan presented by the Government. This Decarbonization Plan will be introduced in the Restructuring and Decarbonization Plan 2020-2025 of the company Complex Energetic Oltenia, which is being developed.

The following investments are envisaged:

- Construction of a photovoltaic park with an installed power of around 60 MW on the closed slag and ash deposits related to S.E. Rovinari;
- Construction of a photovoltaic park with an installed power of around 80 MW on the closed slag and ash deposits related to S.E. Turceni;
- Construction of a photovoltaic park with an installed power of around 75 MW on the closed slag and ash deposits related to S.E. Isalnita;
- Photovoltaic park - E.M.C. Rosia - Rovinari - construction of a photovoltaic park with an installed power of around 95 on the inner tailings facility within Tismana quarry - E.M.C. Rosia - Rovinari;



- Construction of a gas-fired unit of 400 MW at S.E. Turceni;
- Construction of 2 gas-fired units of 400 MW at SE Isalnita;
- Rehabilitation and modernization of the small hydro-power station with an installed power of 9.9 MW at S.E. Turceni;
- Retrofitting/Modernization of the small hydro-power stations of 2 MW at S.E. Isalnita.

Investments of RON 26bn at Hidroelectrica

At Hidroelectrica, there are plans to complete certain hydropower capacities already started, as well as to diversify the production portfolio by developing projects based on renewable energy sources, in onshore and offshore wind power capacities. Overall, by 2025 the investments will amount to RON 26bn, the equivalent of EUR 5.38bn. Therefore, in the medium term the following investments are scheduled:

- Offshore wind parks of 300 MW, with a value of RON 2.88bn;
- Onshore parks of 300 MW, with a value of RON 1.87bn;
- Raul Mare Retezat hydropower plant, 335 MW, 417.284 GWh/year - RON 127.7mln;
- Mariselu hydropower plant, 390 GWh/year, RON 280mln;
- Vidraru hydropower plant, 220 MW, 400 GWh/year, RON 529.95mln;
- Portile de Fier I heat sink - RON 72.75mln;
- Surduc - Siriu hydropower development, 55

- MW, 171.80 GWh/year - RON 185.53mln;
- Rastolita hydropower development, 35.30 MW, 46.30 GWh/year - RON 127.7mln;
- Cornetu - Avrig hydropower development, 28.20 MW, 54.10 GWh/year - RON 167.38mln;
- Bistra - Poiana Marului hydropower development, 20.03 GWh/year - RON 78.02mln;
- Livezeni - Bumbesti hydropower development, 65.14 MW, 259 GWh/year - RON 94.743mln.

Other investments

- Conpet - RON 450mln (the equivalent of EUR 92.98mln)
- Grupul Electrica - RON 678.2mln (the equivalent of EUR 140.13mln)
- Electrocentrale Grup - RON 254mln (the equivalent of EUR 52.48mln)
- Oil Terminal - RON 168.65mln (the equivalent of EUR 34.84mln)
- Societatea de Administrare a Participatiilor in Energie SAPE – RON 4.48bn (the equivalent of EUR 928mln)
- Midia Thermal Power Plant - RON 309mln (the equivalent of EUR 64.03mln)

Financial sources

The very high need for investment in national energy infrastructure requires a diversification of funding sources and an efficient use of new opportunities in the European Union. Thus, the investment programs will be supported from the companies' own investment budgets, to which European non-reimbursable funds are added, the modernization fund, the funds available under the European Green Deal, as well as reimbursable funds.

Despite the economic decline registered in the first quarter of the year, through this economic recovery plan, the Romanian Government wants to end the year with economic growth, says Virgil Popescu, Minister of Economy, Energy and Business Environment. He specified that the amounts provided in the National Investment and Economic Recovery Plan (PNIRE) would come from European funds that were not absorbed in the period 2014 - 2020.

“Let's not forget that, in 2020, at the end of the year, the financial year ends and the money that was not spent will be used with the approval of the European Union for new projects. EUR 200mln are allocated for SMEs. It's about EUR 100mln coming from the Environmental Fund and EUR 100mln that we have in the budget of the Ministry of Economy. Money that exists to raise the competitiveness of SMEs, in general all SMEs that hold a building on whose roof solar panels can be installed, with a maximum power of 27 KW, so that they don't require a permit and to be able to cover in whole or in part their electricity consumption. The contracts must be concluded by the end of this year, and payments can be made in the financial year that ends, plus three years thereafter,” Virgil Popescu also mentioned. ■

Romania Risks Losing Investments of Billions of Euros in Clean Energy

As a result of proposed amendments to the legislation with impact on agricultural land sales, investments of billions of euros in clean energy are jeopardized, warn the most important associations in the renewable energy sector - Romanian Wind Energy Association (RWEA) and the Employers Organization of the Producers of Energy from Renewable Sources in Romania (PATRES).

Proposed amendments in the field of legislation with impact on agricultural land sales do not take into account Romania's interest in attracting investments in the field of clean energy, and adopting them in the current form would prevent the development of renewable energy projects, jeopardizing the absorption of European funds of over EUR 10bn, with impact on the energy security and economic competitiveness, the mentioned associations warn.

RWEA and PATRES member companies request the review of the Draft Law (PL-x 336/2018) in the Parliament amending



and supplementing the Law No. 17/2014 on some measures to regulate the sale-purchase of unincorporated agricultural land and amending Law No. 268/2001 on the privatization of companies that manage land in the public and private ownership of the state with agricultural destination and the establishment of the State Property Agency (Romanian: 'Agentia Domeniilor Statului').

In the event of promulgation of the Draft Law in its current form, adopted in the Parliament, the activity of investors in the renewable industry will be seriously disrupted, as they will be unable to acquire or otherwise legally secure unincorporated land for the development of energy projects.

Moreover, Romania risks being in the impossibility of complying with the targets assumed before the European Institutions, law enforcement following to determine a reluctance of investors or even their impossibility to invest in new renewable energy production capacities in the investment period 2020-2030. Entry into force of this law will have as main negative consequence the loss (again)



of investor confidence in the renewable energy industry in relation to the legislative framework and the legislative power of the Romanian state.

Romania has announced a target of renewable energy in the final energy consumption of 30.7% in 2030, according to the Integrated National Energy and Climate Plan (NECP) of the Romanian authorities, the country needing more than 7 GW of new renewable capacities, part of investments of over EUR 22bn in the energy sector. In this regard, Romania is one of the Member States that benefit the most from the Green Deal, having at its disposal over EUR 6bn through the Modernization Fund, more than EUR 1bn through the Just Transition Fund, besides the amounts dedicated to investments in energy transition included in the economic recovery plan NextGeneration EU and private investments.

RWEA and PATRES believe that entry into force of the Draft Law in its current form would have a negative impact on the resumption of investments in the energy sector in Romania at a time when the economic recovery is of utmost importance, in

conditions in which - through NECP - Romania has assumed a well-established investment plan for new production capacities. Moreover, the lack of investments in new competitive energy generation capacities will extend the negative impact on the energy security of Romania and the price paid by end-consumers, given the already aging park producing from conventional sources and the current situation in which Romania is a net energy importer, according to official data provided by authorities.

“We express our hope that, following the steps taken by RWEA and PATRES, as well as by other energy associations, this law will not be applied in the form adopted in the Parliament,” say RWEA representatives.

The Romanian Wind Energy Association (RWEA) has been participating since 2008, in an active and constructive manner, in the process of transformation of the Romanian energy market. RWEA represents an industry with 3,000 MW of wind energy installed in Romania by companies such as CEZ, Enel, EDP, Engie, Vestas, with developers of new energy capacities and providers of related services.

The Employers Organization of the Producers of Energy from Renewable Sources in Romania - PATRES has over 109 members - producers of energy from renewable sources with a total installed power of 1,800 MW, which represent investments in the energy sector of Romania of approximately EUR 2.7bn. ■

Dusk of the Mining Industry in Romania

MOVING FORWARD WITHOUT COAL

by Adrian Stoica

The new policy promoted by Brussels, under the Green Deal flag, also means the dusk of the coal mining industry in the European Union. Eliminating carbon emissions will force the states that still have coal production, including Romania, to come up with plans for the economic reconversion of mono-industrial basins. In our country, Jiu Valley still awaits solutions, after out of 14 mines that operated here before 1989, only four are still working, but they are also in process of winding-up. 530 mines and quarries have been closed over the past 30 years, while only three exploitation sites have been reopened. It's about three mines in Jolotca perimeter, Harghita County, mines operated by Radioactiv Magurele, under the coordination of the Ministry of Economy, Energy and Business Environment, and where rare metals are exploited.

A 17-year old law

Currently, the law governing the mining activity is the Mining Law No. 85/2003, although over the years there have been several attempts to amend it. The document was drawn up at a time when Romania was still negotiating its accession to the European Union



and in an unfavourable economic context. Although in that period, as today, the European and national trend was to drastically reduce the mining activity, the law does not address many of the problems generated by mine closure, does not regulate access to the abandoned reserves/resources, the procedures of closure, rehabilitation and greening of the affected areas and their correlation with the requirements of stakeholders (local communities, environmental authorities, water authorities etc.). On the other hand, the related legislation on environment, water and hazardous mining waste was subsequently promoted under the legislative acts that were often in conflict with Law No. 85/2003.

State aids for closure

The only state aid that is granted for coal is in accordance with the provisions of the European Council Decision No. 787/2010 on state aid to facilitate the closure of uncompetitive coal mines,



following to carry out activities of closure of mining works and greening of the affected mining perimeters.

The Romanian state had initially notified the closure of three mining units in Jiu Valley. The state aid SA 33033 was authorized by European Commission Decision no. C (2012) 1020 final of 22 February 2012. Subsequently, this state aid was changed, by including two more mining units from Jiu Valley. The last change of the state aid was reauthorized by European Commission Decision no. C (2018) 1001 final of 16 February 2018.

The state aid for the closure of Petrila, Paroseni and Uricani coal mines is managed by Societatea Nationala de Inchideri Mine Valea Jiului S.A. (SNIMVJ), and the state aid for the closure of Lonea and Lupeni coal mines is managed by Complexul Energetic Hunedoara S.A. (CEH).

In November 2019, Government adopted the Emergency Ordinance No. 69/2019 for the application of social protection measures granted to persons made redundant through collective

redundancies made on the basis of redundancy plans by Societatea Natională de Inchideri Mine Valea Jiului S.A and Societatea Complexul Energetic Hunedoara S.A. during 2019-2024. The Ordinance provides for granting the monthly supplementary income, as a social protection measure that benefits the dismissed persons from the companies for which it was approved to grant state aid to facilitate the closure of non-competitive coal mines. As the mentioned companies are located in a mono-industrial region, these measures are necessary to mitigate the social impact of structural changes caused by the closure of uncompetitive coal mines in Jiu Valley, and thus to promote a fair transition, given the legislative policy of the Romanian state and the requirements of correlation with internal regulations and harmonization of national legislation. Therefore, by the end of 2021, the aid to be received by the persons made redundant will amount to RON 62,290,000, of which RON 24,723,000 will be paid in 2021.

Investments at Complexul Energetic Oltenia

With a production accounting for up to 25% of Romania's electricity, Complexul Energetic Oltenia, the largest electricity

Aids granted for the closure of coal mines

Aid authorized under Decision C (2018) 1001 final (Period 2011-2024)	Thousand RON
Coverage of production losses for SNIMVJ (Article 3 of Council Decision 2010/787/EU)	545,830
Coverage of production losses for CEH (Article 3 of Council Decision 2010/787/EU)	214,087
Coverage of exceptional costs for SNIMVJ (Article 4 of Council Decision 2010/787/EU)	369,615
Coverage of exceptional costs for CEH (Article 4 of Council Decision 2010/787/EU)	465.856
Total:	1,595,388

Source: Integrated National Energy and Climate Plan 2021-2030

producer of the country, will undergo an extensive restructuring and decarbonization process. The value of investments to be made here amounts to around RON 7.2bn and to this end a tender has already been launched to choose a company in order to draw up the 'Study on preparing the Restructuring and Decarbonization Plan for 2020-2025 of CE Oltenia'. The following investments are envisaged:

- Construction of a photovoltaic park with an installed power of around 60 MW on the closed slag and ash deposits related to S.E. Rovinari;
- Construction of a photovoltaic park with an installed power of around 80 MW on the closed slag and ash deposits related to S.E. Turceni;
- Construction of a photovoltaic park with an installed power of around 75 MW on the closed slag and ash deposits related to S.E. Isalnita;
- Construction of a photovoltaic park with an installed power of around 95 MW on the inner tailings facility within Tismana quarry - E.M.C. Rosia - Rovinari;
- Construction of a gas-fired unit of 400 MW at S.E. Turceni;
- Construction of 2 gas-fired units of 400 MW at S.E. Isalnita;
- Rehabilitation and modernization of the small hydro-power station with an installed power of 9.9 MW at S.E. Turceni;
- Retrofitting/Modernization of the small hydro-power stations of 2 MW at S.E. Isalnita.

CupruMin is recovering

Several years ago, in danger of being wound-up, CupruMin Abrud managed to recover. Therefore, in the period 2016-2019 it doubled its key financial indicators. The company producing copper concentrate recorded an increase in revenues by 93%, in turnover by 120% and in profit by 117% in 2019 compared to 2016. CupruMin obtained these results through total investments of around EUR 30mln from own resources, in conditions in which the company has

no debts, company officials claim.

"The company obtained the results in the mentioned period through total investments of RON +125mln (about EUR 30mln) targeted to increase productivity, efficiency and automation of specific technological processes. CupruMin invested exclusively from own resources, without bank loans. CupruMin has no debts," reads a press release issued by the company.

The turnover of the company climbed from RON 119mln in 2016 to RON 262mln in 2019. In the mentioned period the profit followed the same upward trend and growth coefficient, from RON 6mln in 2016 to RON 15mln in 2019. Investments tripled from over RON 14mln in 2016 to over RON 52mln in the peak of 2018. Last year, investments amounted to over RON 40mln. Also, production evolved from 37,846 tons of copper concentrate (the equivalent of 7,800 tons of metallic copper) to 39,018 tons of concentrate in 2018 (8,200 tons of metallic copper), i.e. 43,500 tons of concentrate (9,180 tons of metallic copper) in 2019. In the future, CupruMin aims to develop new exploitation perimeters and integrate copper concentrate production in a chain that includes metallurgical processing and the manufacture of copper parts, necessary for components in the automotive or IT&C industries.

Vast Resources sells the first quantities of copper concentrate

Another company that is preparing to exploit copper in Romania is the British company Vast

Resources. It announced in June that it expected to make the first sale of copper concentrate produced at the Baita Plai polymetallic mine at the end of August. Vast Resources announced on May 12 that the results of the metallurgical tests performed were better than initially expected. Vast Resources also owns in Romania, besides the Baita Plai mine, the Manaila polymetallic mine. Recently, the British company received the exploitation licenses for Carlibaba perimeter, adjacent to Manaila mine, Suceava County. The new license expands the exploitation area of the Manaila-Carlibaba project by 410%, from 27.2 hectares to 138.6 hectares.

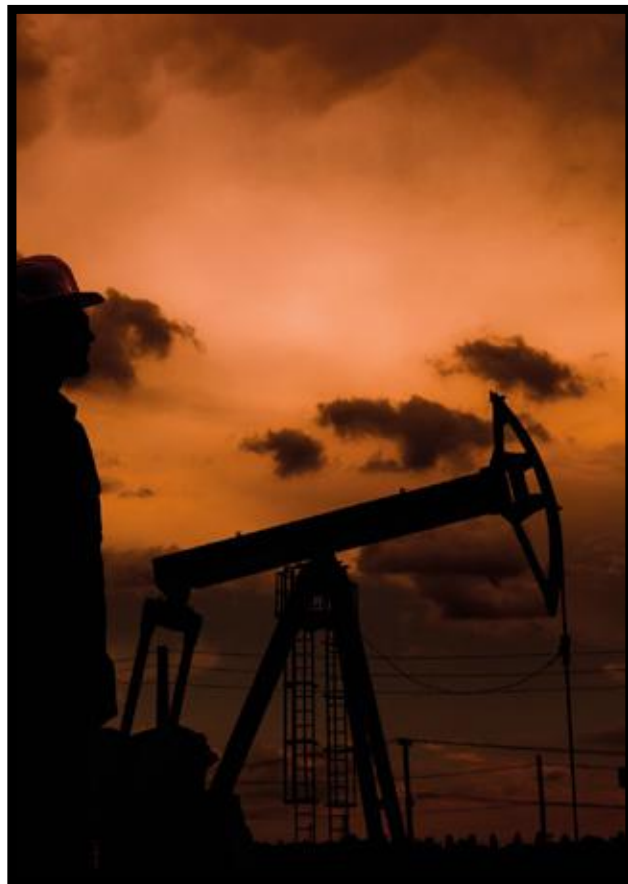
“This would allow the creation of a larger mining and processing facility on the site and would eliminate the need for the costly ore transport to the current processing unit in Iacobeni, located at a distance of approximately 30 kilometers,” according to the company.

Vast Resources announced since 2017 that it planned to expand the exploration activity in Carlibaba perimeter, where it plans to develop a new polymetallic quarry and a related metallurgical processing unit, which will replace the Iacobeni facility and is expected to reduce operating costs by 25-30%. Carlibaba is connected to Manaila through a 2-kilometer underground tunnel. Also, near Manaila, Vast Resources owns two more concessions, namely Piciorul Zimbrului and Magura Neagra, where the presence of copper and gold deposits was identified. The company is considering new drilling works to confirm and evaluate the deposits, which could be transformed into a new source of ores for the future metallurgical complex. The company also owns a 29% stake in the Geamana-Coltii Lazarului perimeter, located near Baia de Aries and Rosia Montana, in the so-called ‘golden quadrilateral’ of the Apuseni Mountains.

Financing of USD 16.6mln for Euro Sun Mining

Euro Sun Mining, formerly Carpathian Gold, owner of the gold project in Romania, has recently attracted financing of CAD 22.32mln (USD 16.6mln), the funds being intended to explore and develop the mining projects of the company, including the one in Romania. In 2018, the Government of Romania completed the ratification of the license for the concession of the mining activity of exploitation of the gold and copper perimeter in Rovina, Hunedoara County. The license was granted by the National Agency for Mineral Resources (NAMR) in 2015, and at the time the value of mining production was estimated at USD 3.6bn for gold and USD 1.7bn for copper and the Romanian state was to receive royalties of USD 310.4mln. The gold deposit in Rovina, the second largest in Europe, contains measured and indicated resources of 204 tons of gold and over 635,000 tons of copper. The mine in Rovina is located 17 kilometres from the Certej mining concession, held by Canada’s Eldorado Gold, and approximately 50 kilometres from Rosia Montana, project which Gabriel Resources intended to develop. ■

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Hydrogen: Is This the Future? (II)

In the second part of the analysis ‘Hydrogen: Is this the future?’, we are going to be addressing the applications, technologies, distribution challenges and the future of Hydrogen.

by Evgenios Zogopoulos

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Applications

Hydrogen has the potential to serve as an energy source for different mobility purposes. It can be used as a combustion fuel in the internal combustion engine which is nowadays the dominant energy converter in road transport. However, the most important and promising combination for the future of the energy and mobility industry is the fuel cell as energy converter and hydrogen as the main energy source. In direct use, (pure) molecular hydrogen (H₂) is used by the transportation means directly, i.e. without further conversion, as an energy source. In this case hydrogen can be used both in internal combustion engines and in fuel cells (fuel cell systems). In indirect use, hydrogen produces final energy sources or is converted by means of additional conversion steps into gaseous or liquid hydrogen-containing fuels. Such PtG (Power-to-Gas) and

PtL (Power-to-Liquids) fuels can be used in heat engines.

In principle, hydrogen fuel cell systems are suitable for virtually all means of transport, but their technological maturity varies according to the means of transport and the way in which it is used. Industrial trucks such as forklifts or tractor units for material handling are technically almost fully mature and are already at the early stages of commercialization. Passenger cars have reached series production, while buses are close behind. Material handling equipment has been manufactured in the highest numbers. In North America there is a fleet of over 11,000 forklifts and tow trucks in operation. Fuel cell passenger cars are able now to offer the same features (performance, comfort, refuelling time or effective range) as those driven by internal combustion engines. Buses have been under intensive testing more than any other means of transport, thanks to public funding projects. There is still a lot of development work to be done with regard to trains, ships and aircraft: light rail vehicles and commercial vehicles (including lorries) may benefit from proven



Hydrogen H₂

Hydrogen H₂

bus or passenger car technology. There are no plans as yet for commercial aircraft or merchant ships, but they can use fuel cells as an efficient energy source for auxiliary power units (APUs). Taking into consideration the above, we should focus on a very important sector of our everyday lives, that is heavily hit by the recent pandemic and also from the uncertainty of the existing technologies: passenger cars and the potential of hydrogen mobility.

Along with battery electric vehicles, hydrogen-powered fuel cell passenger cars are the only zero-emission alternative drive option for motorized private transport. The first fuel cell passenger cars were tested back in the 1960s as demonstration projects. A new boost to fuel cell development came in the 1990s. In most cases the fuel cell test vehicles were converted cars that had originally been fitted with an internal combustion engine. At the time, however, the early test models were still not competitive, either technically or economically. In addition, up until about 10 years ago petrol engine prototypes were still being tested with hydrogen as an alternative energy and low-emission fuel. These

were vehicles with modified bivalent engines, which could run on both petrol and hydrogen (Eichlseder/Klell 2012). Owing to the fuel, hydrogen-powered internal combustion engines not only achieve significantly higher efficiencies than in petrol operation, they also emit almost zero levels of pollutants. Although hydrogen is a clean fuel with excellent physicochemical properties, it has been unable to gain acceptance as a fuel for motorized road transport. For passenger cars the focus is now almost entirely on hydrogen-powered fuel cells as a source of energy. Currently there is abundance of practical experience available with fuel cell prototype passenger cars. A number of major car manufacturers are starting to offer early series-production vehicles, which are in the same level as conventional internal combustion engine cars in terms of functionality. The number of fuel cell cars manufactured over the coming years is estimated to range from several hundred up to thousands of units (US DOE 2016). The prices for medium-sized vehicles fitted with fuel cells are still well above those for passenger cars with internal combustion engines – at around 60,000 EUR/USD (IEA 2015b). However, with the launch of FCEV series production, vehicle cost and prices are expected to fall substantially. The fuel cell stacks in the latest fuel cell models have an output of 100 kW or more. As compared with battery electric cars they have a significantly greater range (400 to 500 kilometres) and with a lower vehicle weight and

of course much shorter refuelling times of three to five minutes (US DOE 2016) compared to electric cars which sometimes might need more than 5-6 hours depending on the type of charger. FCEVs will be able to carry 4 to 7 kg of hydrogen on board, stored in pressure tanks at 700 bar.

Fuel cell electric vehicles are estimated to become less expensive because of technological development, learning curve effects and effects of scale in production (IEA 2015b). The hydrogen consumer prices could also fall as a result of a more cost-efficient hydrogen supply retail, refuelling infrastructure and rising demand. If the price for a fuel cell electric vehicle were to be reduced by 50%, combined with a moderate reduction in hydrogen refuelling station prices, the ownership costs for an FCEV would be lower than those for a petrol car after just 50,000 to 60,000 km. In addition, fossil fuels could also become relatively more expensive than hydrogen, and this could also increase the attractiveness of an FCEV compared with a conventional petrol car.

Coming to Battery electric vehicles (BEVs), it is a fact that this technology has a head start of several years over fuel cell electric vehicles in terms of market development. This head start is expressed in the greater variety of battery electric vehicles and in lower purchase prices. If the gap in purchase costs between FCEVs and BEVs starts to decrease, the costs for fuel cell electric vehicles and battery vehicles (per kilometre) would be very similar. Under these circumstances, and knowing the advantages in terms of range and charging time, some buyers would probably be attracted more to choose fuel cell electric vehicles. Hydrogen-powered fuel cell electric vehicles (FCEVs) are much more efficient than passenger cars driven by an internal combustion engine. Hence, FCEVs can make an important contribution to the diversification of the energy supply and to energy savings in motorized road transport.

Distribution

A major advantage of hydrogen is that it can be produced from (surplus) renewable energies, and unlike electricity it can be stored in large amounts for long periods of time. For that reason, hydrogen produced on an industrial scale could play an important part in the energy transition of our time. As a chemical energy store, hydrogen could act as means of sector coupling in integrated energy schemes. Physical storage methods are the most mature and the most frequently used. A distinction is made between high-pressure storage and cooled hydrogen storage. As hydrogen has to be cooled down to very low temperatures in order to liquefy, the term cryogenic hydrogen storage is also used. Finally, if compression and cooling are combined, this is also referred to as hybrid storage.

High-pressure storage Compressed Gaseous Hydrogen, CGH₂

From production through intermediate storage and on to distribution to the end user, hydrogen is handled at different gas pressures. A low-pressure storage tank operates at just 50 bar. For

intermediate storage in high-pressure tanks or gas cylinders, pressures of up to 1,000 bar are technically possible. Only special solid steel or steel composite pressure vessels are suitable for high-pressure storage. When it comes to the industrial storage of hydrogen, salt caverns, exhausted oil and gas fields or aquifers can be used as underground stores. Although being more expensive, cavern storage facilities are most suitable for hydrogen storage. Underground stores have been used for many years for natural gas and crude oil/oil products, which are stored in bulk to balance seasonal supply/demand fluctuations or for crisis preparedness (IEA 2015b).

When storing liquid hydrogen, the tanks and storage facilities have to be insulated in order to keep in check the evaporation that occurs if heat is carried over into the stored content, due to conduction, radiation or convection. Existing storage facilities are rarely able to prevent such effects completely, i.e. they can only delay them (EA NRW 2013). LH₂ tanks or storage vessels generally have a double hull design, with a vacuum between the inner and outer container. To regulate a pressure rise caused by evaporating hydrogen in the inner container, small amounts of gas have to be released (boil-off).

Cold- and cryo-compressed Hydrogen (CCH₂)

In addition to separate compression or cooling, the two storage methods can be combined for better results. When a gas is cooled, it follows from Gay-Lussac's gas law that the volume of an (ideal) gas held at constant pressure behaves proportionally to the temperature. This relationship also applies in principle to real gases. That is why hydrogen is cooled first. Depending on how much the hydrogen is cooled, it is referred to as cold-compressed hydrogen (above 150 K) or cryo-compressed hydrogen (CCH₂). Cryo-compressed hydrogen is cooled to temperatures close to the critical temperature, but it still remains gaseous. The cooled hydrogen is then compressed (US DOE 2006; BMW 2012). CCH₂ is a further development of hydrogen storage for mobility purposes. The advantage of cold or cryogenic compression is a higher energy density in comparison to compressed hydrogen.

Road transportation

Gaseous hydrogen can be transported in small to medium quantities in compressed gas containers



Meanwhile more and more green electricity is generated by windfarms at sea,

by truck. For transporting larger volumes, several pressurized gas cylinders or tubes are bundled together on so-called CGH2 tube trailers. The large tubes are bundled together inside a protective frame. The tubes are usually made of steel and have a high net weight. This can lead to mass-related transport restrictions. The newest pressurized storage systems use lighter composite storage containers for lorry transport. A tube trailer cannot store compressed gas as compactly as a tanker for liquid fuels (petrol or diesel fuel). This means that the available tank volume for hydrogen per tanker is lower. Single tube trailers carry approximately 500 kg of hydrogen, depending on the pressure and container material.

The largest tank volumes for gaseous hydrogen transport are currently 26 cubic meters. Taking account of the low hydrogen density factor at 500 bar, this results in a load of around 1,100 kg hydrogen per lorry. This figure extrapolates to approximately 12,000 normal cubic meters of hydrogen. At 250 bar, both the weight of hydrogen and its transport volume in Nm³ would be roughly halved. As an alternative, hydrogen can be transported in liquid form in trucks or other means of transport. In comparison to pressure gas vessels, more hydrogen can be carried with an LH₂ trailer, as the density of liquid hydrogen is higher than that of gaseous hydrogen. At a density of 70.8 kg/m³, around 3,500 kg of liquid hydrogen or almost 40,000 Nm³ can be carried at a loading volume of 50 m³. Over longer distances it is usually more cost-effective to

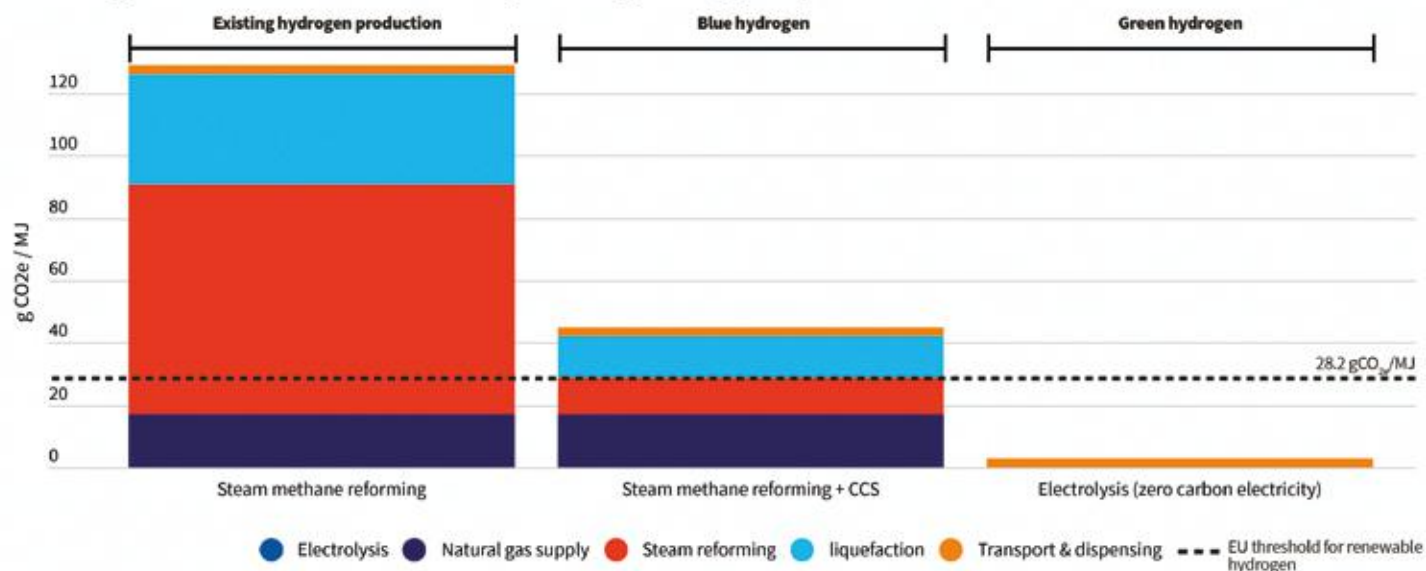
transport hydrogen in liquid form, since a liquid hydrogen tank can hold substantially more hydrogen than a pressurized gas tank. For the purposes of liquid transport, the hydrogen is loaded into insulated cryogenic tanks.

Pipelines

A pipeline network would be the most suitable option when it comes to an extended and large-scale use of hydrogen as an energy source. However, pipelines require high levels of initial investment, which may pay off, but only with large volumes of hydrogen passing through. Nevertheless, one possibility for developing pipeline networks for hydrogen distribution is local or regional networks, known as micro-networks. These could subsequently be combined into transregional networks.

When examining the above distribution methods, we should always consider that hydrogen may have several environmental advantages but it is a combustible gas. And if combustible gases are released, they can form explosive mixtures with air. Hydrogen is known from chemistry lessons in particular for the so-called oxyhydrogen or Knallgas explosion. It is therefore legitimate to ask how safe is hydrogen and what factors have to be taken into account to ensure it is handled safely. For the safe handling of hydrogen, it follows that: Unlike liquid fuels hydrogen is stored and transported in pure form and in closed resp. completely sealed systems/tanks. Hydrogen pressure tanks, which are most commonly used should have high safety margins and be fitted with relief valves. Ignition sources must be avoided. Since hydrogen is lighter than air, it escapes upwards. Therefore, hydrogen should either be stored in the open air or, if in enclosed spaces, with good ventilation. The use of special hydrogen sensors could also increase safety in these storage facilities.

Life cycle emissions of liquid hydrogen production



Sources: JEC WTT study (2014), and T & E LCA study (2020).

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The development and spread of hydrogen mobility will require a new infrastructure to provide a comprehensive supply network for fuel cell electric vehicles (FCEV). As of the beginning of 2017, there are around 280 hydrogen refuelling stations and some 4,000 FCEVs worldwide. Hydrogen refuelling stations and fuel cell vehicle fleets have so far been concentrated in the USA, Western Europe and Asia/Japan. The ambitious scenario '2DS high H₂' developed by the International Energy Agency, (shaped in line with the climate action goal of limiting the global temperature rise to 2°C), predicts that the number of fuel cell electric vehicles in three key markets (USA, selected European markets and Japan) will increase to about 113 million units by 2050. This scenario is based on an estimated increase in annual FCEV registrations in the EU and USA to 1 million by 2030, rising to a total of 10 million new registrations per year in the three regions by 2050.

As Wilhelm Ostwald (Nobel prize winner) at the 2nd annual meeting of the Association of German Electrical Engineers in 1884 (Verband Deutscher Elektrotechniker) said: "The fuel cell is a greater achievement of civilization than the steam engine and will soon banish the Siemens generator into the museum."

Is this the future?

It seems very hard to make prediction on such a highly complex and still evolving process like the hydrogen ascension in the global energy mix. We cannot really set clear timeframes before we see a robust global clean hydrogen market is outlined. Much will depend on whether the world will be successful in scaling up cost-

competitive production and use in the next ten years. In addition, key questions will be whether a clear winner will emerge from the currently considered transport modes and how fast the cost of shipping will come down. It is too early to tell how efficiently the cost of transport will develop and how fast this global hydrogen market will be established for good.

The very recent McKinsey report suggests a significant potential for intercontinental clean hydrogen trade already in 2030. Governments need to play a key role in setting the right framework conditions and stimulate common standards and guarantees of origin. International organizations like IEA and IPHE (International Partnership for Hydrogen and Fuel Cells in the Economy) can help to pave the way.

Green hydrogen can in principle be shipped around the world to places that are less well endowed with cheap renewable energy sources. Japan is leading several important pilot initiatives aiming at determining the best way to transport green and blue hydrogen over large distances by ship.

For Europe and its paradigm shift that may mean several things. First, that it may indeed take more time for the cost of green hydrogen to come down to levels near those of grey and blue hydrogen. The scale-up of electrolysis needs to drive down the cost. Even more critically, massive

production will require large amounts of cheap green electricity. The projected scale-up in offshore wind production in Northwest Europe is expected to take more than a full decade, if not two, leading to well past 2030s. Some big industrial players, like ENGIE, have set an explicit cost target for green hydrogen to reach grid parity with grey hydrogen by 2030. Danish power company Ørsted recently announced that its bid in an offshore wind auction in the Netherlands includes the production of green hydrogen for industrial use. That shows that new business models are being invented as we speak, raising the possibility of positive surprises ahead. Swedish power company Vattenfall has calculated that producing a EUR 20,000 car from CO2-free steel (using green hydrogen) rather than regular steel would add just EUR 200 to the price. That suggests premium markets could be developed for consumers willing to pay 1% to 3% more for products manufactured using green hydrogen.

In an increasing number of countries with ample low-cost energy resources, governments and companies are seriously reviewing the possibilities of developing a clean hydrogen export industry. Australia and Brunei have already been mentioned, with Australia explicitly focusing on exports in their recently published hydrogen strategy. But we observe similar trends, in several countries across all continents, where the focus is on green hydrogen from cheap solar or wind-energy. For others, it's both green hydrogen and blue hydrogen from fossil fuels with CCUS (Carbon Capture, Utilization and Storage).

As we are getting a sense of which countries are potential next-exporters of clean hydrogen, the same is the case for potential net-importing countries. In Asia, Japan and Korea have already clearly signalled the need for large-scale imports of clean hydrogen. For China and India, the situation is less clear so far. In Europe, Germany, the Netherlands and Belgium are among the countries where most experts think that if the scaling-up in the use of clean hydrogen in the next ten years is successful, the domestic production won't be sufficient to meet the demand. Potentially, the needs could be doubled compared to now.

This could complicate the evolutionary process but it is a very real and indicative sign for what the future might behold. Hydrogen seems to be indeed a very promising potential solution but there is no concretely clear roadmap yet and before thinking about the future, we need to take care of the present. ■



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Why Blue Economy Is so Important

The concept of 'Blue Economy' is one spreading fast throughout the globe and aims at transforming our economy, our habits and our planet during the 21st century. One of the key pillars of the notion is sustainability and many other are encompassed. With many similarities to 'Green Economy', the 'bluer model' aims at improving life as a whole, encompassing social aspects like social equity, along with reducing ecological risks and fuelling the economy through sustainable ways, for the sake of the current but also the future generations. The concept, evidently is tied to our oceans and seas; it encourages better stewardship of our ocean or 'blue' resources and highlights the close bonds between the oceans, global climate, and finally the wellbeing of humans.

by Evgenios Zogopoulos

Nevertheless, Blue Economy goes far beyond considering the oceans as a lever for economic growth. Numerous states across the globe fostered the development of their marine economies through the exploitation of maritime and marine resources (shipping, fishing, oil, gas, minerals etc.) often much concern of the effects of their activities on future generations. Evidently, multiple aspects of 'blue' emerge out of the need for sustainability, like preservations of traditional ways of life, carbon sequestration, and coastline resilience to help island (and not only) nations withstand the onslaught of climate change. Many of those island states, may have limited land surface but vast ocean resources at their disposal; this reveals immense opportunities for boosting their financial growth, not only tackling their social and economic challenges, but also preserving natural habitat.

But in order to reveal the sense of this 'window of opportunity', let's go over some facts: the global ocean economy is valued at around 1.5 trillion dollars annually, while more than 80% of global trade's volume is transported by sea. Fishing employs 350

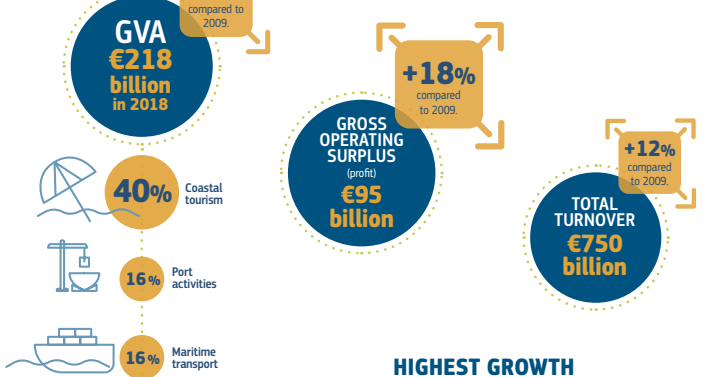
million people directly and indirectly. By 2025 it is estimated that 34% of crude oil production will come from maritime exploitation, while aquaculture is the fastest growing food sector right now and provides more than half of the marine products widely available to consumers.

Now when it comes to how Blue Economy is connected to the Green Economies and what the differences are, there is not a very clear answer; the differences are subtle but still recognizable. During the United Nations conference of Rio de Janeiro, in 2012, the 'Green Economy concept' was the focal point along with its Institutional Framework for Sustainable Development. In some of the declarations the participants claimed that: "Eradicating poverty is the greatest global challenge facing the world today and an indispensable requirement for sustainable development. In this regard we are committed

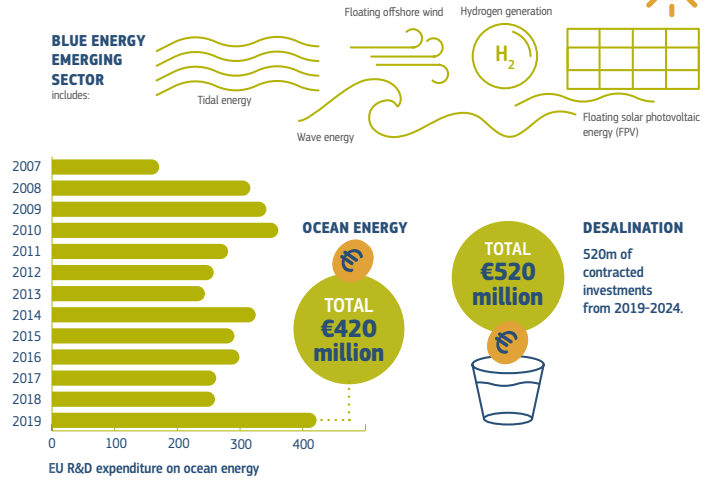
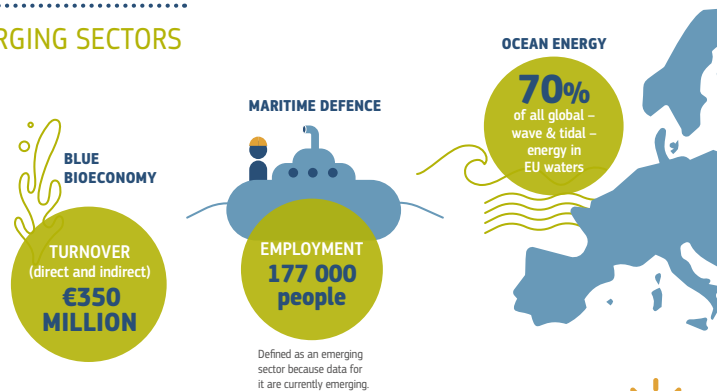
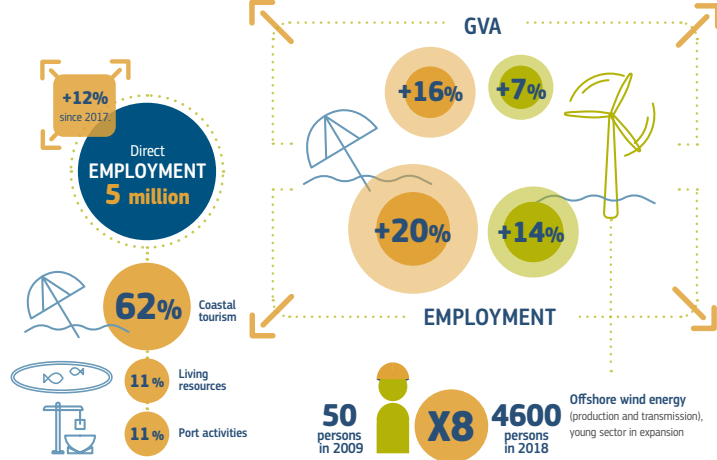
THE EU BLUE ECONOMY

ESTABLISHED SECTORS EMERGING SECTORS

The seven established sectors



HIGHEST GROWTH
compared to 2017



to freeing humanity from poverty and hunger as a matter of urgency. We consider green economy in the context of sustainable development and poverty eradication as one of the important tools available for achieving sustainable development. We emphasize that it should contribute to eradicating poverty as well as sustained economic growth, enhancing social inclusion, improving human welfare and creating opportunities for employment and decent work for all, while maintaining the healthy functioning of the Earth's ecosystems."

This was when multiple island and coastal states, during the preparatory work of the convention, pushed forward the agenda of incorporating the 'Blue' notion into the 'Green' framework, underlining the importance of the Ocean's role in a sustainable future. Therefore, the notions are

interwoven with the Blue Economy advocating the importance of the seas for sustainability and growth.

Shades of Blue

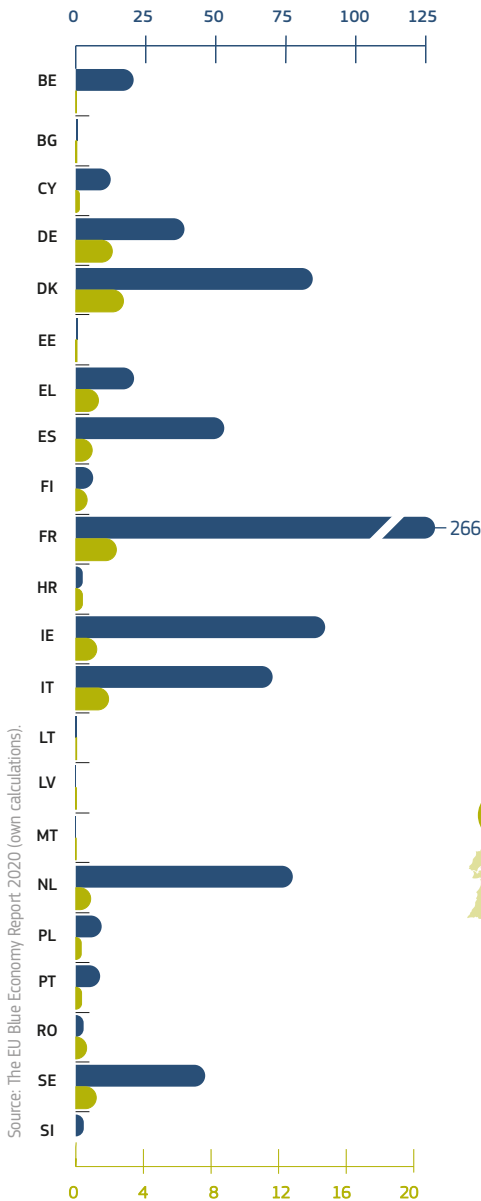
In order to better understand the notion, it should be examined under the prism of a strategic playbook, or framework. Australians consider the Blue Economy, at its core, to be about the "development of marine industry which ecologically, economically and socially benefit from marine ecosystem and ensure that the ecosystem-based management model should be the core in decision-making process of industrial and community development." Australia launched the 'Blue Well-being Initiative', having recognized that ocean-based development and the blue GDP is of immense importance for Oceania.

China, through the Director of State Oceanic Administration under the Ministry of Natural Resources of the People's Republic

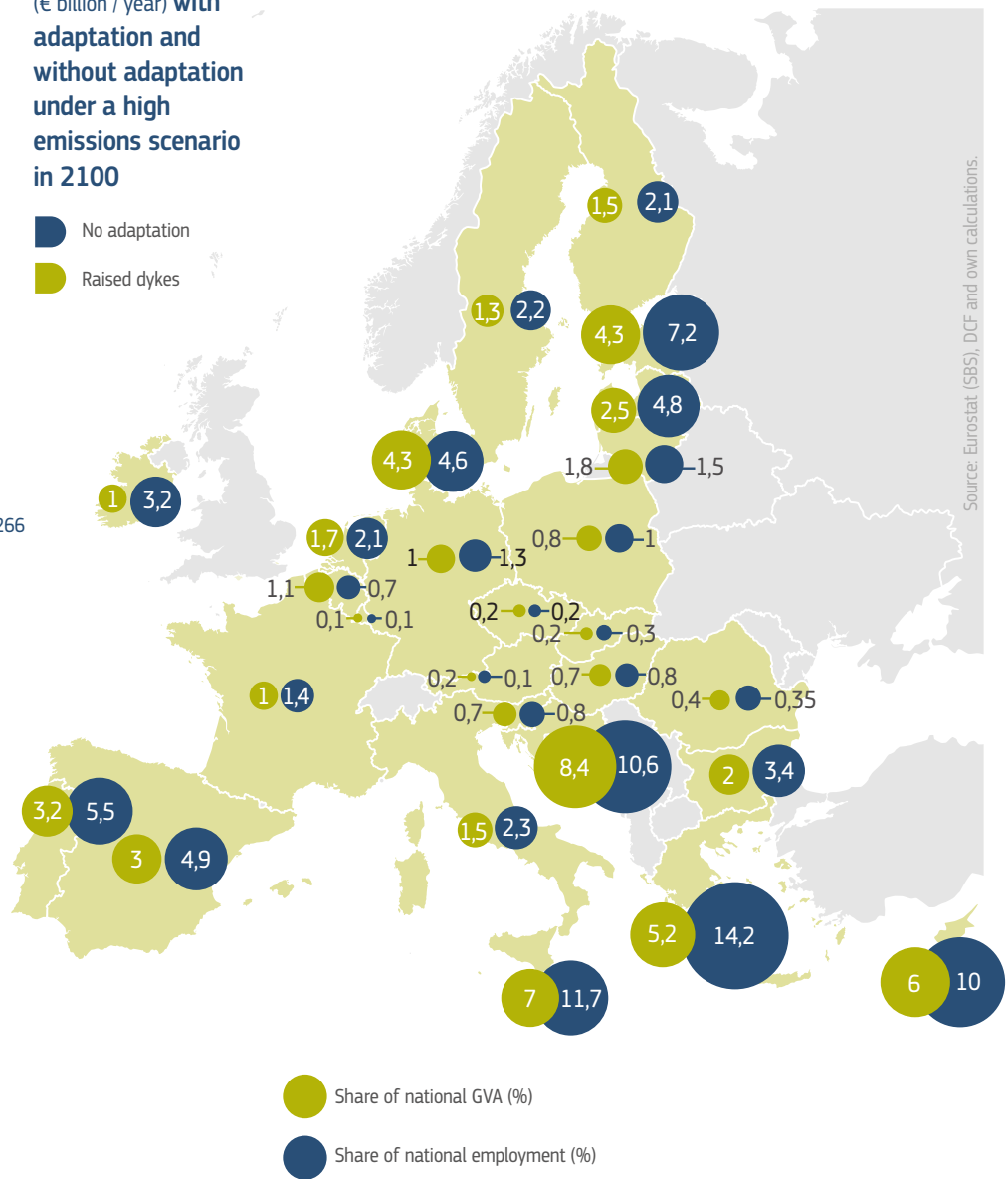
CLIMATE CHANGE ADAPTATION

Flood damage
(€ billion / year) with
adaptation and
without adaptation
under a high
emissions scenario
in 2100

■ No adaptation
■ Raised dykes



SIZE OF THE BLUE ECONOMY



Source: Eurostat (SBS), DCF and own calculations.

of China, Wang Hong, has underlined that the “Blue Economy is a sustainable marine economic development model. It is a new development mindset and its essence is to develop marine economy while protecting marine ecosystem well and finally achieving sustainable utilization of resources.”

On the other side of the world, Maria Cantwell, a United States Senator, defined it as a powerful policy for future growth focusing on “the jobs and economic opportunities that emerge from our oceans, Great Lakes, and coastal resources – is one of the main tools to

rebuilding the United States economy.”

The European Union introduced the term ‘blue growth’ back in 2012, focusing on revitalizing economy, the marine industrial activities, sustainable energy, marine tourism, fisheries and aquaculture. In addition to traditional activities, marine/ocean-oriented information and science sectors are boosting their roles and stretching their contribution to the blue economy development.

Why it matters and how it can be done

Blue Economy can and should be considered a macro-economic lever, involving multiple aspects of national and international governance, economic growth and development, environmental safeguarding and appreciation. It is essentially an effort for integration of sustainable development and green growth. It focused on the coordination and bonding between marine ecosystems and ocean and coastal zone economies.

This being said, Blue Economy is the epitome of sustainability, servicing and connecting what is needed on an economic, cultural and environmental level.

There are of course numerous challenges in achieving such an interwoven bond between so many sectors, with a newly introduced notion. That involves all sectors of the economy from private/ industrial to R&D and state policy. This level of complexity offers opportunities and challenges.

For example, the European Commission's 'Green Deal', lists extremely ambitious goals to lead Europe to the very front of environmental protection and in the achievement of the global Sustainable Development Goals (SDG). With this in consideration, this challenge encourages the submission of innovative proposals based on EU Space data that have the potential to contribute to environmental protection related to the so-called 'Blue Economy'. Some of the requirement is that the proposals should demonstrate 'added-value' in the use of Copernicus and Galileo/EGNOS data, the expected market impact and the extended (social, cultural, environmental) benefits. The use of Artificial Intelligence (AI), Data Analytics, Internet of Things (IoT), Machine Learning and Cloud Computing as supporting technologies is cherished.

The EU Space for 'Blue Economy' Challenge aims at increasing awareness of the potential EU Space data has to respond to global climate and environmental related challenges, but also to stimulate innovative projects that have the potential to open up new markets. This is an interesting and innovative attempt to gamify the transformation, involving the private sector.

European Blue Economy

The European Commission has long now proposed their 'Blue Growth' strategy, stating that Blue Growth will be at the very the core of marine policy and stating clearly objective key results and specific metrics for the future.

The Blue Growth Strategy has spearheaded multiple initiatives related to Europe's oceans and seas, facilitating the collaboration between maritime businesses and public authorities across borders, and aligning numerous stakeholders ensuring the sustainability of the marine environment. Back In 2014, the Blue Economy Innovation Plan was launched, underlining that the project would be executed with a triple axis:

- Prioritizing the development of sectors with sustainable jobs and growth;
- Supporting knowledge, on an informational and legal level, and

security in the blue economy;

- Developing sea basin strategies to ensure tailor-made measures and to foster cooperation between countries.

The EU issued a Report on the Blue Growth Strategy Toward More Sustainable Growth and Jobs in the Blue Economy, examining what has been learnt and what has been achieved since 2012, and the next steps. Five pillars are outlined in that report:

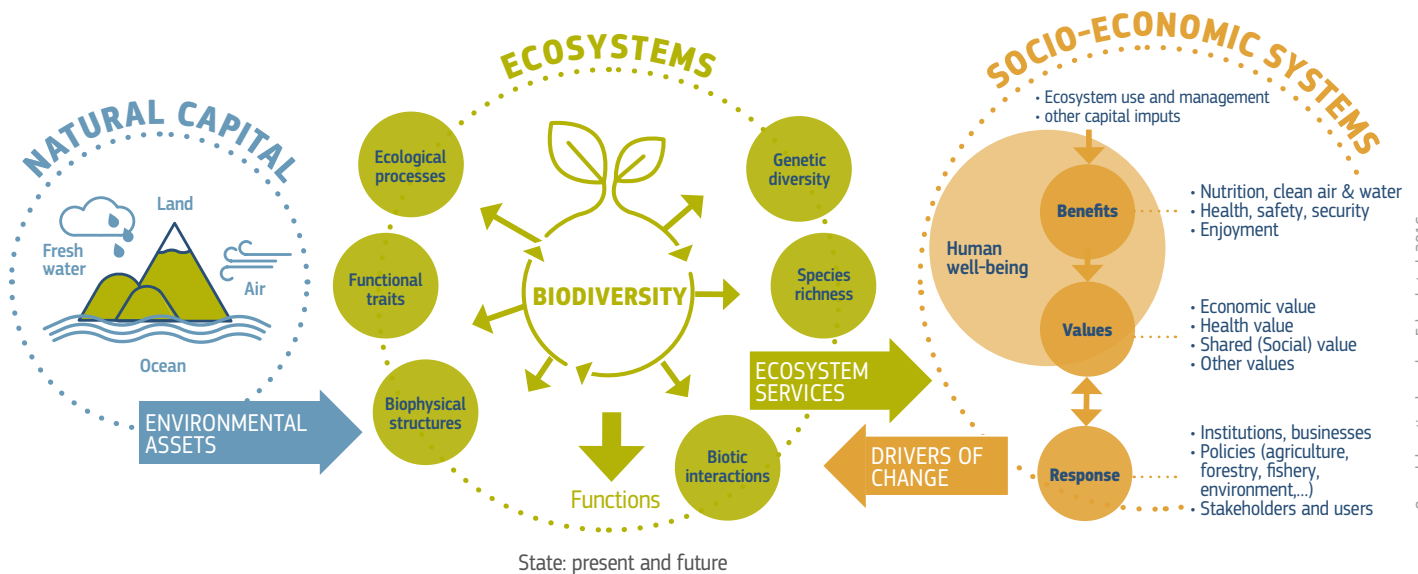
- The push for development in five focus areas, including blue energy, aquaculture, coastal and maritime tourism, blue biotechnology, sea bed mineral resources;
- The benefits of marine data, spatial planning and maritime surveillance to facilitate growth in the blue economy;
- The need to promote a partnership and win-win approaches;
- The urge for boosting investments;
- The idea to make blue growth strategy fit future challenge.

The numbers seem very good though; European economic activities connected to oceans, seas and coastal areas reached a record of 4 million persons employed and it keeps growing, a 7.2% increase compared to 2009 and 14% more than in 2014. This increase was largely driven by the coastal tourism and ports, warehousing and construction of water projects sectors. The blue economy's contribution in the EU reached almost 2% in terms of employment and 1.3% in terms of GVA. Gross operating profit reached EUR 74.3 billion, being 2% higher than in 2009. Total turnover reached EUR 658 billion, rising 11% more than in 2009. The contribution varies with the five largest EU countries, UK, Germany, France, Italy and Spain being the largest contributors to the EU Blue Economy, in terms of both employment (with a combined contribution of 61%) and GVA (a combined contribution of 70%). Other EU countries with remarkable contribution in terms of either GVA or employment include Greece, Holland and Denmark. The Blue Economy represents more than 5% of national GVA or employment in the island Member States and those with significant archipelagos: Greece, Croatia, Malta and Cyprus. Evidently, the Blue Economy's contribution to the national economy is very low for the landlocked Member States. Member States with a modest contribution to Blue Economy (up to 1% of GDP) are Belgium, Slovenia and Romania.

"Our major contribution to reducing regulatory burden has been the maritime spatial plan directive.

ECOSYSTEMS SERVICES

From natural capital to benefits to society



The 22 Member States of the European Union with a coastline are free to allocate their space as they see fit but are obliged to develop a plan by 2021 that takes into account the views of stakeholders and the plans of neighbours. The implications of the scenarios for Europe in 2050 highlight the urgency of doing this. They suggest that windfarms could take up 15% of the waters of Belgium, Netherlands and Poland. This will transform the nature and level of human activity on our seas and will surely require changes to where and how other activities such as shipping and fishing take place. The plans will need to be forward looking and flexible enough to take unforeseen circumstances into account. Our seas will be different to what they are today but not necessarily worse in terms of ecosystem health. In fact, they could be healthier. The space between turbines, undisturbed by other activities, could see a return to a pre-industrial state with wild oysters covering the seabed providing food for the sea-life higher up the food chain. By defining what activities can and cannot take place in a given area reduces the time for licensing and the risk for new investments,” Andreea Strachinescu – Head of Unit Maritime Innovation, Marine Knowledge and Investment in the Directorate General for Maritime Affairs and Fisheries, European Commission, said in her speech at Power & Energy Tech Exhibition and Conference Vision 2030 - PETEC 2019.

“We are looking at higher education - a blue career centre in the Eastern Mediterranean supports mobility, career advice, retraining and e-learning vocational skills, welders, electricians and expect to have a ‘blueprint’ for tackling the issue by 2021. Finally it is essential; that we bring the public on board. Public support was critical to our measures to reduce plastic in the ocean. We want to engage them now on other issues. Even many activists for the climate or the

marine environment are unaware of the potential contribution of the ocean for meeting their goals. We are thus developing measures to increase ocean literacy, particularly amongst young people. We are preparing material for teachers based on our Atlas of the seas and will begin testing it with focus groups next year,” she added.

“Oceans, coastal areas and marine activities are playing a crucial role now and in the future of the European Union and its citizens. Healthy oceans and coastal areas are vital for our societies and the future of our planet. They are the lungs of our planet, producing half of the oxygen we breathe. They are a source of healthy food, contributing 16% of the animal protein we eat and provide the basis for numerous economic activities that generate growth and jobs,” Mariya Gabriel, Commissioner for Innovation, Research, Culture, Education and Youth, responsible for the Joint Research Centre (JRC), underlined.

“Though our oceans cover more than 70% of the earth’s surface, we know less about what lies beneath the waves than we do about faraway planets. This prevents us from making the most of our resources while protecting marine ecosystems. The second Report on the European Blue Economy aims to change that. It reflects the importance that the European Commission attaches to a robust, evidence-based approach.

Our oceans and seas can help us in tackling the challenges facing humanity; creating prosperity without endangering that of future generations,” Tibor Navracsics, from the European Institute for Innovation, said.

During the 2019 European Maritime Day conference in Lisbon, Commissioner for Environment, Maritime Affairs and Fisheries Karmenu Vella underlined that the focus was on supporting a “blue economy, the sustainable use of ocean resources for economic growth, through entrepreneurship, investment, and research and innovation.” On this occasion, the European Commission launches the second edition of its Blue Economy Report.

“Coastal regions are home to 214 million people and generate 43% of EU GDP. Today’s report confirms the blue economy’s role as an exciting growth sector, with opportunities both in established sectors like tourism and shipbuilding, and in emerging areas like ocean energy or the blue bioeconomy. Yet we also know that blue economy start-ups and small companies often struggle to get their good ideas off the ground. That is why the European Commission is currently developing an investment-readiness support tool to help them mature and eventually access the funding they need to scale up,” Commissioner Vella stated. He also reiterated the key role of the sea and oceans – in particular ocean energy – towards achieving a carbon-free Europe by 2050.

The most recent blue economy report incorporates various new elements, including the maritime defence and the maritime military equipment sectors. A very interesting element was the in-depth case studies on the economic impacts of marine protected areas and the contribution of the research and development sector.

The financial performance of coastal tourism and exploitation of marine living resources have been steadily on the rise. For fisheries, this is partially due to low fuel prices and partial recovery of some natural populations. Port activities, shipbuilding and maritime transport have been severely affected by the economic crisis in 2008, due to the decrease in global production and trade. Offshore oil and gas extraction have also been hit by the low fuel prices and the oil price wars. Nevertheless, the actual blue economy goes well beyond the established sectors. New innovative and emerging sectors, such as wind energy and biotechnology, have witnessed exponential growth in recent years. However, they are also met with challenges (wind energy production continues to be cheaper on land than offshore).

Another very interesting aspect is the ‘Blue Indicators IT tool’, which will allow to the public to easily visualize, extract and download much of the relevant data. Users will also be able to download reports, as well as the accompanying infographics and the relevant methodology. In addition to the report launch, the European Commission used European Maritime Day to update participants in-depth about several other ongoing maritime policy initiatives:

- The Technical Assistance facility for Investment in the Blue Economy, which will support blue economy start-ups and SMEs to gain more access to capital within a Blue Economy Investment Platform;

- The launch of operations for the Common Information Sharing Environment (CISE), for the overall EU maritime surveillance framework, with the guidance of the European Maritime Safety Agency;

- The progress on the ocean literacy platform ‘EU4Oceans’, which will bring together European groups, networks and organizations active in ocean preservation and ocean literacy, thereby paving the way for a ‘European Ocean Alliance’.

According to the EU Blue Economy Report 2020, The Blue Economy is embedded in the overall EU economy and is therefore highly influenced by the economic cycle. The EU-28 GDP was estimated at EUR 15900 billion in 2018 (EUR 13500 without the UK) and employment at 224 million people (194 million people without the UK). The contribution of the Blue Economy established sectors to the EU-28 economy in 2018 was 1.5% in terms of GVA and 2.2% in terms of employment.

The relative size of the EU Blue Economy in terms of GVA with respect to the overall economy has remained stable at around 1.5% since 2012, while it has increased in terms of employment from 1.8% in 2015 to more than 2.2% in 2018.

A positive general economic environment supported the EU Blue Economy during the last decade, particularly since the end of the double-dip recession in 2013. However, the outbreak of the coronavirus pandemic in February 2020 represents a major shock for the global and EU economies, with severe socio-economic consequences. Despite the swift and comprehensive policy response at both the EU and the national level, the EU economy is expected to experience a recession of historic proportions this year, according to the latest Commission economic forecast. The different sectors of the Blue Economy will be significantly impacted.

Conclusion

Blue Economy can be seen as a policy, a project, a framework, a system and an idea. It has the potential to become one of the most viral ideas, spanning from the business applications all the way to cultural and environmental extensions. It is an idea that can also become a way of thinking, a way of acting and a way of designing a better future for the generations to come and the planet they will live on; maybe thinking and acting blue makes a lot of sense for the blue planet after all. ■

Schlumberger and CNPC Logging to Manufacture Wireline Downhole Technology

Schlumberger has entered into a collaboration agreement with China Petroleum Logging Co. Ltd (CNPC Logging), a subsidiary of China National Petroleum Corporation (CNPC), to jointly manufacture wireline downhole technology in China. The agreement will strengthen the commercial and technical collaboration between the two companies and aligns with Schlumberger's commitment to enable technology access in key basins.

The collaboration agreement will provide CNPC Logging with a license to manufacture fit-for-basin wireline technology. As part of the agreement, Schlumberger will support CNPC Logging on the manufacturing and sustaining activities for ThruBit through-the-bit logging technology at the CNPC Logging technology center in Xi'an, Shaanxi province.

"We are very pleased to continue evolving our relationship with CNPC Logging through this new technology access model, starting with ThruBit—one of our differentiated wireline technologies. This technology will enable CNPC Logging to significantly improve their logging capabilities in horizontal and vertical wells across all China basins. We look forward to continue working together with CNPC Logging to enhance value creation and performance through advanced wireline technologies," Djamel Idri, Wireline president of Schlumberger, said.

"CNPC Logging and Schlumberger have entered into an agreement to begin the co-manufacture of ThruBit logging tools marking a historic milestone in the relationship between the two companies. With the growing number of horizontal wells undertaken by CNPC each year, the ThruBit platform has become essential to our reservoir evaluation strategy. In today's low oil price environment, this partnership is more important than ever and this new business model will help us to achieve mutual benefits. I look forward to strengthening the collaboration between our management and technical teams, to continue delivering high-quality products in order to keep improving the efficiency and performance of the CNPC

oilfields," Li Jianhao, president of CNPC Logging, mentioned.

Full wireline measurement suite for logging geometrically complex and unstable wells

ThruBit through-the-bit logging services provide a unique conveyance platform for a set of nine slim formation evaluation tools to efficiently log difficult-to-access wells.

No longer are operators limited to time-consuming specialty conveyance or forgoing logging completely. A logging string comprising any number of the ThruBit services measurement tools can be conveyed through the drillstring and Portal pass-through bit to log the open borehole on wireline or as the drillpipe is tripped out of the hole.

Slim, multi-conveyance logging portfolio

ThruBit services formation evaluation tools provide a complete set of logging measurements packaged in a small diameter of 2 1/8 in. The measurements range from the classic triple- and quad-combo suites through advanced offerings: high-resolution laterolog; spectral gamma ray; dipole sonic; borehole imaging.

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Labour Pact - Together We Rebuild Romania

Employers' Unity, Social and Political Consensus for an Efficient Labour Market

Romania needs employers' unity, social and political consensus to prepare a medium and long-term employment strategy. This is the conclusion of the first debate this year of the 'Labour Pact - Together We Rebuild Romania', which took place in Timisoara, an event initiated by CONAF and FPPG, in strategic partnership with Concordia.

Representatives of employers, local and central public authorities, entrepreneurs and multinational companies debated in Timisoara the problems faced by the labour market in Romania and launched solutions to overcome the current situation.

"We want to work in Romania! We want to learn a trade in Romania!" said Cristina Chiriac, President of the National Confederation for Female Entrepreneurship - CONAF. She added that it was time to become aware of the fact that Romania's most important resource is represented by people and we have the moral duty to create for them all conditions to increase the quality of life in Romania. "The Labour Pact is a tool through which we invite to dialogue all the main actors, employers, trade unions, government, to determine and build with priority a medium and long-term strategy regarding the employment policy. It is often stated about the entrepreneurial environment that it fails to coagulate and act as a unit even when we have objectives of national interest. But now the Labour Pact is more than a tool, it is an integrator of forces, which can be suggestively be named the Entrepreneurs' Party," said Cristina Chiriac.

In turn, Franck Neel, President of the Oil & Gas Employers'

Federation – FPPG, showed that, although at government level measures had been taken for the post-pandemic economic recovery, much more measures are needed to help Romania's economy. "Investments are required, the only ones able to create new jobs. But, for that, legislative changes are required. And they are needed now! An example in this regard is Black Sea gas. Investments in this sector not only do they have the advantage of ensuring the country's energy security, but also of creating tens of thousands of new jobs, directly and horizontally," Franck Neel also said.

Secretary of State in the Ministry of Transport, Infrastructure and Communications Dragos Cosmin Lucian Preda announced that government authorities, together with representatives of the entrepreneurial environment, wanted to compile a list of opportunities in Romania. According to him, the pandemic gave Romania the chance to restart, to implement new technologies, digitization, 5G etc. "Probably a list of new trades will also be required, with the apparition of new technologies," Dragos Cosmin Lucian Preda also said.

Investment in education - Chance for Romania's future

Within the Labour Pact debate in Brasov, organized by CONAF and FPPG, having as strategic partner CONCORDIA Employers' Confederation, the representatives of employers, trade unions, academia, entrepreneurs, together with officials of local and central public authorities, as well as representatives of Romania in relation to the EU and UN, have concluded that the problems faced by the labour market in our country include education inadequate to the requirements of the real economy. Obviously, the need to develop the road, digital and health infrastructure and the need to amend the Labour Code to make the labour market flexible in the current context of digital development at global level, as well as cutting red tape are also necessary for a sustainable development of a long-term strategy of the labour market.

“The most vulnerable, but also the most important resource of the country is represented by people. We need to value them and we need to create a medium and long-term workforce strategy for them. We need to have qualified workforce, we need investments in all priority fields, from infrastructure to education and health, and we need to focus on the development of human skills to meet future challenges. Future can no longer be built in small steps. Children who go to school today will probably retire within 50 years, so we need a systematic thinking, with vision and anticipation of the crafts of the future, so that the adjustment of Romanian education follows the European trends of digital development and emancipation of society over time,” said Cristina Chiriac, President of CONAF.

Steven van Groningen, President of CONCORDIA Employers’ Confederation, is very confident in Romania’s potential: “First of all, we need confidence, because this is the only way to attract investments. Confidence also means predictability. Before the pandemic we had a significant deficit of the workforce. The ‘new normal’ after the pandemic could also bring a deficit of skills, if we fail to make sure we have trained people to work in a world transformed by digitization and automation. Therefore, we need to invest even more in training people and creating new skills,” Steven van Groningen also said.

Franck Neel reiterated the importance of investments, as they create new jobs and keep the existing ones. “An example in this regard is Black Sea gas. The effect of developing offshore projects would spread in the related sectors (transmission and distribution of natural gas), as well as in other industries (chemical and petrochemical industry and gas-fired power production), where new investments of almost USD 9 billion would be possible. In turn, these investments would lead to the establishment and maintenance of around 42,000 jobs, a total estimated impact of over USD 18 billion on revenues to the state budget and a total surplus of almost USD 100 billion in national production of goods and services.”

Luminita Teodora Odobescu, Romania’s Permanent Representative to the European Union, has extensively presented the plans of the European Commission for the economic relaunch of the Union after the global coronavirus epidemic. According to these plans, Romania will be able to access several billion euros to protect jobs.

The debate in Brasov was also attended by Government official - honorary adviser to Prime Minister Ludovic Orban, lawyer Remus Borza. He presented the evolution of the Romanian economy in time and pointed out the need to capitalize Romanian companies and the importance of banks’ support for these companies. A functional economy is built based on a solid banking system, willing to finance the economic players. He supported the idea of the need for youth education, so that they are able to adapt on the go to the new trends in the economy.

The project that could radically change the labour market in Romania

Romania needs a solid restart, structural reforms that are coherent and with vision, claim the representatives of the business environment



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Cristina Chiriac, President of CONAF

present at the debates organized during the two years in the major university centres in the country, such as Iasi, Cluj-Napoca, Bucharest, Timisoara, Brasov, Constanta.

Increasing the quality of life, employer unity, social and political consensus for an efficient labour market, correlating the education system with the needs of the labour market, predictable and favourable legislation for new investments to create new jobs, high-performance education adapted to real needs of the economy, the need for infrastructure and elimination of bureaucracy through digitalization, investments in all priority areas (infrastructure, education, health), reintroduction of protected units - are the main priorities of the reconstruction of the Romanian economy, solutions offered and discussed during the debates by almost two hundred entrepreneurs, managers of the major national and multinational companies, academia, trade unions, civil society, specialists in labour and taxation legislation, education, economy etc.

Protecting the human resource should be the main priority of any Government, says Cristina

Chiriac, President of CONAF.

“Through the process of privatization of the major state-owned companies, over time, over one million jobs have been lost. Added to these are the social effects of the recent period, over one million jobs endangered and a decline in the school population since the ‘90s to date of over 1,500,000 students, according to INS data, and thus a picture is outlined that highlights the social and economic vulnerabilities of Romania: labour migration, declining birth rate and poor correlation of the education system with the needs of the Romanian economy! Therefore, there is an urgent need for urgent measures to close the gap: between generations, regions of the country, rural and urban areas and, last but not least, between academia and the professional environment. We need to work together with all decision-makers on a medium-term strategy including the measures identified by the entrepreneurial environment through the Labour Pact conferences, so that together we contribute to a viable economic framework for a high standard of living, a declining unemployment rate, well-paid jobs and, of course, a new fiscal policy adaptable to current economic realities.”

Peter Rudolf Zeilinger, representative of FPPG, proposes a number of punctual measures: “We need to be aware that we are going through an economic crisis, caused by the health crisis. The period of state of emergency showed us how important digitization is. Even more so do we need digitization, to increase the competitiveness of Romanian economy. As representative of the oil and gas industry, I can say that offshore operations must be digitized, but it is even more important to digitize onshore operations! We refer to technologies such as ‘Cloud’, ‘Big Data’, ‘Cloud Computing’ etc. By limiting access to digitization for companies and authorities in the oil industry, they are disadvantaged in the competition for capital against other industries in the region or the global market. The need to use advanced information technology tools is even more pressing in the case of Romania, which has mature fields in operation, with a significant natural decline of production. Also, most suppliers of industry-specific solutions provide solutions only in Cloud, the current solutions, installed locally, following to no longer be subject to maintenance or present in the offer for services. However, this can only be achieved by updating the legislative framework to technological progress.”

Ludovic Orban, Romania’s Prime Minister, presented during the conference some of the measures that the Government is preparing: “Although legislation provides for consultations, there haven’t been real consultations and debates between the business environment and the academic or administrative environments. For example, consultations between the business community and local authorities are needed to establish the tuition figure, but these have been rather formal. We support any form of dialogue and partnership between the private environment and educational institutions, for example with regard to the dual system. Let’s not forget that we have a proverb - A handful of trade is a handful of gold; that’s why I think that every person should earn a decent income. We also support lifelong learning mechanisms: training, retraining etc. In the Community budget 2021 - 2027 there are important funds and tools for companies, precisely to ensure this system of lifelong learning and adaptation to the new

requirements of the labour market. Let’s not forget that the world has a dynamic evolution, crafts disappear, new ones appear. We need to adapt the education system to the new requirements; we need to connect the education system to the demands of the labour market.”

Dragos Pislaru – Member of the European Parliament, referred to some of the problems faced by Romanian economy. “From July 1, the new skills agenda came into force. There are three major problems we face: qualitative (related to skills), quantitative (related to birth, but also emigration) and territorial (labour market is not homogeneous; in one area there is a labour shortage, and in another - surplus). These three problems must be solved, through the involvement of all actors.”

“Before the shock of COVID-19, the Romanian emigrants of working age exceeded 2.6 million people, representing almost 20% of the working age population in Romania. The World Bank’s estimates were made on the basis of Eurostat data, but also on the basis of national censuses in the destination countries,” said Andrei Silviu Dospinescu, economist in the Romanian office of the World Bank. Romania ranks 52nd out of 140 in the Global Competitiveness Ranking compiled by the World Economic Forum and records one of the lowest scores in the 2020 European Competitiveness Ranking. This is due to a sharp demographic decline, in particular a decline in the active population, a high emigration rate, including highly skilled labour, and a labour market participation rate of 67% (compared to the EU average of 74%).

According to World Bank data from recent years, among Romanians with higher education, perhaps the worst situation is among doctors - over 50% of emigrants who are doctors and working abroad, are under 40 and, in addition, a very large number thereof are resident doctors.

At the end of two years of Labour Pact debates, the conclusions and solutions found during the discussions will materialize in an agreement - Memorandum of Understanding - agreed by the participants in conferences. The document will be submitted to the Romanian Government and Parliament and include the main solutions identified for a flexible, efficient and competitive labour market, with beneficial effects on the entire economy, as well as on the standard of living of Romanians.

The debates took place in large university centres, because a correlation of labour market needs with the education system is a first step to have an effective workforce strategy. ■

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