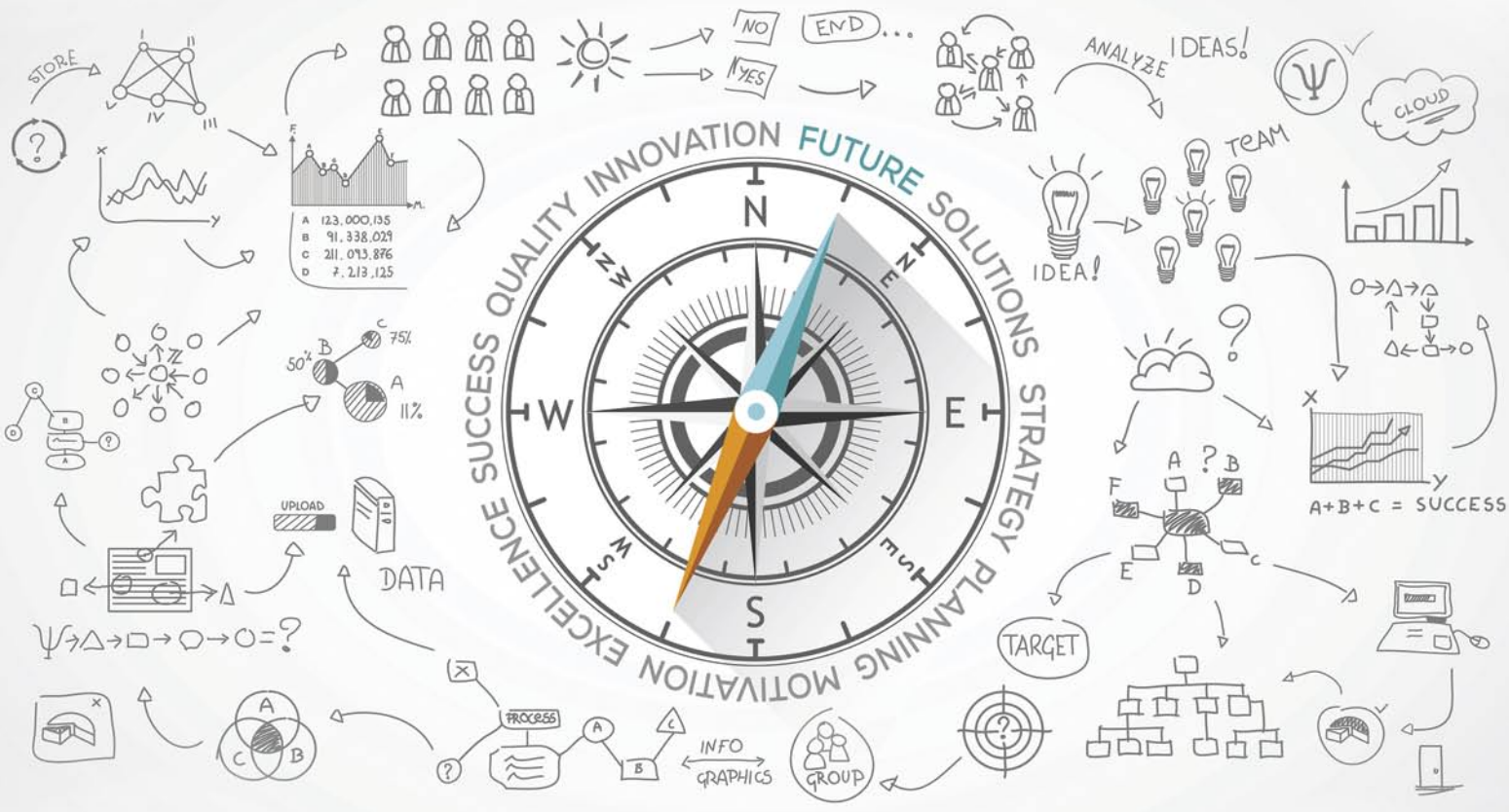
ENERGY PARTNER

CORPORATE MAGAZINE CENTRE OF ENERGY PARTNERSHIP | # 1 SEPTEMBER-NOVEMBER 2018 |



THE "GREEN REVOLUTION"

OUTSIDE THE POLITICAL PROCESS

THE MAIN TOPIC

POLITICAL DEVELOPMENTS IN THE USA OFTEN DO NOT ALLOW SEEING THE MAIN CHANGES WHICH HAD TAKEN PLACE AND ARE GOING ON IN THE REAL ECONOMY AND AT THE FINANCIAL MARKET

CENTRE
OF ENERGY PARTNERSHIP

The restructuring of the European energy system continues to move forward. Energy supplies in the future will become more decentralized with a larger share of renewable sources than today.

Consulting agency “Centre of Energy Partnership” represents the interests of energy generating companies and energy consumers from the countries of Central and Eastern Europe and the Baltic.

How can security of supply, access to energy sources and climate policy be combined in the future? What are the promising approaches to building an energetically independent, socially stable society, serving as a platform for economic success of the country? Such questions arise before the Centre staff.

The Centre of Energy Partnership seeks to play an active role in structuring the transformation process and creating the necessary framework conditions for sustained economic success. The main objective of the Centre is to strengthen the energy security of the region, cooperation of regional energy companies in the framework of the energy and climate policy of the EU, the European energy security policy and the European energy community.

For this purpose, the Centre is expanding into the most important places on the energy map of the region.

The main tasks of the Centre are:

- promoting the development of joint opportunities for power generating companies in Central and Eastern Europe and the Baltic region with Western European energy intensive companies;
- development of cooperation between the research institutions of the countries of Central and Eastern Europe and the Baltic in the field of identification and advocacy of common problems and the search ways of solutions of these problems, promotion of integration of energy markets;
- representation of the interests of energy companies in the countries of Central and Eastern Europe and the Baltic States (coal, gas, oil, nuclear power, renewable energy, transit of electricity and hydrocarbon resources, etc.);
- promoting the implementation of the provisions of the 3rd EU Energy Package and enhancing the involvement of the countries of Central and Eastern Europe and the Baltic in shaping the policy of the European Energy Community.

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THE “GREEN REVOLUTION”
OUTSIDE THE POLITICAL PROCESS

Political developments in the USA often do not allow seeing the main changes which had taken place and are going on in the real economy and at the financial market

The attention of the world community is focused on the outstanding people and political decisions. This does not allow seeing the real state of affairs and estimating the processes which take place in the real economy.

In particular, Donald Trump decided to withdraw from the Paris Agreement on climate change (the Paris Agreement hereinafter) right after he was elected the President of the United States. Indeed, this could have set the international process in combat with climate change several steps back since one of the biggest emitters of the greenhouse gases could have remained as observer.

Lively debate on possible consequences of this decision began almost immediately, however, it became evident quiet early that under the terms of the Paris Agreement there are technical difficulties hampering quick application of this decision. In fact, withdrawal from the Agreement under its terms requires years to pass until it becomes possible. In practice, leaders of the federal states and major cities pursued the green policy notwithstanding the decision at the highest level. They were active participants of the COP24 in Bonn, where they assured the international community of the proclaimed policy support.

|THE MAIN TOPIC|

Economic impacts of climate change

The following important sign was the desire of the US President to limit the production of renewable energy for the reason of numerous cases of migrating birds' mortality.

Back to the times of Barack Obama's presidency the "The Migratory Bird Act Treaty", which released the producers of wind energy from liability for birds mortality, was adopted.

In August 2018 the United States Environmental Protection Agency announced its plans regarding introduction of new policy in the sphere of climate protection. In particular, the adoption of a new plan on reduction of greenhouse gases emissions is provided for at the federal level, which will be considerably weaker than corresponding documents of Donald Trump's predecessor. The United States will be provided with the opportunity to design its own plans on reduction of greenhouse gases emissions in a more flexible manner. Right after the announcement of such plans the representatives of New York and Virginia prosecution reported about intentions to appeal this decision before the court.

Domestic price on greenhouse gases emissions

According to the World Bank data there are dozens of examples of application of price on greenhouse gases emissions at the moment: tax or market pricing instruments. At this time, the level of prices remains lower than the costs of reduction of greenhouse gases emissions (especially with respect to the EU, where the actual market price is two times lower than the one recommended by the OECD – 30 EUR per ton).

That's why the level of activity of companies in such jurisdictions is very low since the existent surplus at the market enables fulfillment of undertaken obligations through the acquisition of permits at a low market price.

The use of price for a quite specific resource (greenhouse gases emissions) is an important prerequisite for the receipts of these expenses at the time of accounting net financial results and for determining the direction of further business development as well. This accounts for the desire of many companies (especially financial sector companies) to extract its financial resources from projects with considerable climate risks. In particular, this regards extraction of fossil fuels (oil, coal). The American banks are the most actively involved in this process (for instance, JP Morgan, Bank of America, Wells Fargo and other).

Apart from that, the representatives of the biggest stock exchanges, following the signing of the Paris Agreement, decided to establish requirements regarding presentation of non-financial reporting and corresponding rankings for those wishing to be placed on the list. Even though such requirements in many cases are voluntary, the participants of stock exchange market realize all advantages connected to fulfilment of those requirements (sustainable development indices, discount for leveraging of finances).

That's why the representatives of the corporate sector of economy apply their own domestic prices actively. At the same time, companies apply three possible approaches: domestic tax/fee, efficiency prices and shadow prices for the greenhouse gases emissions. The most widespread approach among the companies is the so-called shadow price, which is the reflection of expected price in the further periods. In a number of countries, rate of shadow prices is more than 300 EUR per ton of greenhouse gases emissions. According to the Carbon Disclosure Project (CDP) data, the amount of companies using a domestic price for the greenhouse gases emissions is dramatically increasing.

For example, while the amount of such companies in 2014 achieved more than 150, this number exceeded 600 in 2017. At the same time, almost 800 companies point to the plans to establish such instruments in the nearest future.

American companies rank second after the EU in relation to approaches applied to domestic pricing on greenhouse gases emissions. In comparison, while there are almost 400 such companies in the EU, this number only exceeds 200 in the US. Among the representatives from the USA the highest domestic price comprises of 150 USD (Stanley Black & Decker).

Interestingly, the World Bank uses the minimal price of 80 USD per ton of emissions during the estimation of investment projects. For this reason financing in such countries as Ukraine, Belarus, Kazakhstan and etc., shall be accompanied by preparation of non-financial indicators and fortified with corresponding reports.

Economic impacts of climate change

As is well known, following the signing of the Paris Agreement in 2015 under the auspices of G20 a special working group was created, which was in charge of preparation of recommendations for the representatives of real financial economy regarding climate risks introduction in its activity. The TCFD (Task Force for Climate — related Disclosures) in 2017 during the G20 meeting in Hamburg presented its recommendations aimed at establishment of financial system sustainable to climate-related risks.

One of the points, in particular, sets forth the necessity of introduction of domestic price for greenhouse gases emissions by big business representatives and its reflection within the frames of non-financial reporting. Besides that, the use of analysis of business development scenarios based on different options of warning paces and greenhouse gases emissions prices. Interestingly, analysis of climate risks (greenhouse gases emissions) is conducted in several ways: domestic emissions; emissions deriving from used energy; emissions which the company receives along with accepted goods and services from suppliers.

The last constituent, in particular, is the direct evidence of general and complete globalization of economic relations where risks from one side of the world through movement of goods and services are transported to the other continents both within the limits of one company and from supplier to customer.

The significant value of such risks are visible in the case of "Volkswagen" company where according to the data of RobekoSAM almost 30% of environmental, social and managerial risks are born by the suppliers. Such cases are one of the reasons of intensification of efforts on behalf of transnational companies regarding combatting non-financial risks in developing countries.

This tendency accelerated at the European market after enactment of Directive as regards disclosure of non-financial information which makes big companies (more than 500 workers) present non-financial reports annually.

The other important act of the representatives of the financial sector in response to the Paris Agreement is the decision to stop insurance of projects with significant non-financial risks (in particular, refusal in insurance services of coal projects).

Enforcement of the EU Directive 2016/2341 which regulates the activity of pension funds made the biggest investors at the green financial market invest into those projects where analysis of non-financial risks took place (including climate risks). This influences the financial market significantly where the green loan segment has developed rapidly and more than 15 different kinds of green debt financial instruments emerged. It is they that make the presence of the biggest investors possible at the financial market within the limits of legislation.

Having had a quite high level of domestic prices for greenhouse gases emissions, American companies became one of the biggest emitters of green bonds. In particular, Apple became one of the biggest companies which conducted placement of financial instruments of such type in the amount more than 1 billion USD in 2016. Interestingly, accumulation of funds was used for funding of "green projects" around the world. As a result, according to the Climate Bonds Initiative data part of green bond emission at the US market in 2017 comprised of about 27% (more than 40 billion USD), which is the best figure in the world. China comes second, representing 16% of the total volume of issued green bonds.

LET'S REVIEW: WHEN IT COMES TO REAL ECONOMY AND FINANCIAL MARKET ITS WORTH CONSIDERING THE FIGURES RATHER THAN WATCHING POLITICAL NEWS.

|INVESTMENT MARKET|

UKRAINE AS RENEWABLE ENERGY INVESTMENT MARKET

Botievo Wind Farm | renewables.dtek.com/business/

Reforms in the energy sector are one of the most complex and long-term which is common for most of the EU member states, as opposed to post-Soviet states, where the energy sector is the source of wealth and political tool to retain power and convert it into financial and property dividends.

Renewable energy positions itself as a leader by right in the structure assets increase within the energy sector of many states in the world, especially the EU, since renewable energy involves opportunities for generation decentralization, reduction of greenhouse gases and hazardous materials, use of natural sources of sun, wind, water, animal, vegetable wastes and firewood as well as products with short term of regeneration and CO2 circulation.

Notwithstanding the evident benefits of renewable energy, it is still underestimated and in not sufficient enough quantitatively for full competition with traditional fossil fuel energy. Responsible states introduce financial, tax and regulative preferences, which increase attractiveness of renewable energy in order to stimulate its development.

Nowadays within Europe Ukraine belongs to states with the most attractive preconditions for funding of solar power plants and wind farms, objects of bioenergy and corresponding production lines.

Enactment of a legislative package on bringing into line of market prices for most fossil fuels along with the incentives of renewable energy — "green tariffs", tax and customs preferences, opportunities of engaging credit resources from leading international financial institutions and commercial projects and even household power plants contribute to a quite rapid growth of this segment of energy sector.

In the coming years the set of above-mentioned aspects will allow the highest growth of generation from renewable energy sources and one of the highest investment volumes accordingly. Both national companies like "DTEK" and international companies, which aim to invest their funds profitably and expect a rapid (6-7 years) payback, are willing to undertake the most perspective objects.

What shall the investor willing to enter renewable energy market of Ukraine be aware of?

1. Nowadays the most financially attractive are projects in the sphere of solar and wind energy since one of the highest "green tariffs" in Europe are applicable to them and buy-back of all produced energy is guaranteed by the state.
2. There are still significant bureaucratic burdens in Ukraine which can substantially increase the term of project implementation, in particular, regarding the procedure of chain connection and obtaining of license from National Commission for State Regulation of Energy and Public Utilities. In order to expedite the process cooperation with Ukrainian company, which is familiar with implementation of one of such even small projects, should be considered.
3. The most efficient seems to be cooperation with investors and state company "Ukrenergo" which attempts to implement a one-stop window for investor willing to implement a project and also the company offers to prospective investors a map with perspective areas of connection and corresponding price proposals regarding the cost of such services (connection to Single energy system in Ukraine is paid by the investor).
4. It's important to consult the city council on time for the purpose of defining opportunities of leasing a necessary land plot on a long-term basis. Ukraine does not have a land market nowadays, therefore up to 49 years long-term land lease agreements are common.
5. In case the approval from the city council is received, public hearings and information campaign within the local community shall present in simple terms information about applied technology, its possible influence and ways of minimizing such influence, benefits for the local budget, expected quantity of work places and necessities of services from local business.
6. It's worth saying that public discussion on shift from current system of incentives of renewable energy to practices which are used by certain EU member-states — green auctions of perspective areas with the principles of defining winner according to the minimal price of produced kW per year has been started in Ukraine.

The possible window of opportunity for investment in the frames of current legislation of Ukraine will have ceased by 2020 at the latest.

7. "Green tariff" introduction is taking place after the object is put into service by certain architectural and energy institutions be means of receiving of corresponding license from the National Commission for State Regulation of Energy and Public Utilities. "Green tariff" has been nominated to the Euro currency exchange rate which protects foreign investments effectively from financial losses as a result of devaluation of the national currency of Ukraine.
8. In the middle of 2019 the launch of new energy market is expected as a result of which the producers will face liability of non-balance which should be minimized by introduction of a unit dealing with meteorological issues and backup power source for accumulation of produced energy in the form of battery unit or additional generating facilities based on biomass.
9. Bioenergy has started to play a vital role in provision of hot and cold water for consumers. More and more population centers, especially cities, introduce projects cogenerating plants based on local kind of resources, primarily solid biomass from wood industry waste and greenery. Local city councils, accordingly, are looking for investors to fund such projects. Information about such projects is placed on the map of State Agency on Energy Efficiency and Energy Saving of Ukraine*.
10. Territorial communities and local city councils due to decentralization have got wider powers in the sphere of budget formation, funding of which has increased substantially, which expands opportunities for investor refund guarantees.
11. Ukraine as a state which signed The Ukraine–European Union Association Agreement is among the members of the Treaty establishing the Energy Community, which introduced the Energy strategy for the period till 2025 to increase the share of renewable energy up to 25%, cumulatively having approximately 6% as of 2018, including high hydrogenation. This suggests long-term obligations of Ukrainian authorities to conduct policy of fullest promotion of investments into renewable energy.
12. Investors, who will place production plants at the territory of Ukraine , can cut logistics costs and benefit from additional allowance to the "green tariff" due to use of products produced domestically, which is from 5% to 10% kW per year of produced energy additionally.

Thus, Ukraine is gradually becoming attractive market for companies from leading countries due to reforms in line with fulfillment of the obligations undertaken under The Ukraine–European Union Association Agreement. The potential of local entrepreneurs is unlocked, to whom access to the EU market is open due to inclusive free trade zone; as well as customs restrictions and other trade restraints are removed for the establishment of mutually beneficial cooperation with foreign partners, particularly, EU member states.

Huge agricultural potential and favorable climate conditions make the market of renewable energy of Ukraine extremely attractive and perspective for European companies, which possess corresponding technology and aim to invest their capital beneficially. The first investors will receive benefits long before the expected changes of national legislation according to practices of Western European states.

*** http://www.uamap.org.ua/**

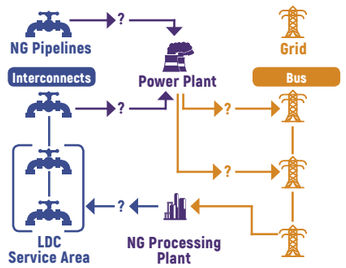
|GAS MARKET|

THE ROLE OF GAS
IN THE FUTURE IN THE EYES OF EUROPE AND MOSCOW

In the middle of June (14-15) 2018 Bucharest has become a place for the key players of European gas sector to come and meet. Within the framework of 16th Gas Infrastructure Europe Annual Conference the attendances learned about how the European gas infrastructure will look like beyond 2050, how the most important actors of European gas industry see the future energy mix in their businesses and how the renewables will change the future energy mix in Europe.

As it's Prof. Dr. Klaus-Dieter Borchardt, Director on Internal Market in European Commission's DG Energy mentioned the natural gas industry in the EU is undergoing a period of substantial uncertainty regarding it's future role in the energy balance of the European Union. The transition to a low carbon economy involves substantial changes along with the entire gas value chain in order to move towards decarbonisation, energy efficiency and full integration of the European energy market, provision of security in energy supply for all the EU members.

As Dr. Borchardt highlighted, subsequently, we move at the Gas Commodity Markets, where the traditional use of natural gas (electricity generation and heat) will coexist with use of other gas forms (LNG/CNG) in the transportation sector and renewable gases (or green gases) that can substitute natural gas such as biomethane or hydrogen.



Model of interdependencies between the electric power and natural gas infrastructure

In the meantime, the perception of the future of gas in the European energy mix is changing. In European Commission's DG Energy seriously consider hybrid energy infrastructure building on both electricity and gas generations as more efficient, resilient, sustainable as well as cheaper than an all-electric energy system for Europe. There is now a large majority believing that gas can play a significant role in the decarbonisation process: Gas is the ideal back-up technology for variable renewables characterized by a high flexibility for balancing the integration of renewable generation (more flexible compared to nuclear production); and by the lowest CO2-intensity of fossil fuels. In addition, natural gas has to win the economic competition against coal. Winning that competition would secure the use of natural gas in the short to mid-term as a "bridging fuel" for the development of renewables until 2035. By Dr. Klaus-Dieter Borchardt, transition to an "all-electric world" is neither technically feasible, nor economically efficient and acceptable to consumers and the broader energy public. Furthermore, it is impossible to give up gas infrastructure which is well developed in large parts of Europe and has a remaining lifetime far beyond 2050. The gas assets built in Europe worth billions of Euros. Nevertheless, the answer about the long term future of gas in the EU depends on whether we manage to decarbonize natural gas and develop renewable gases.

As Dr. Klaus-Dieter Borchardt mentioned, "Power to Gas" we need for the development of renewable gases. This is a technology for the production of renewable hydrogen and methane notably in periods with an abundant supply of wind and solar power. It is also the link between the power and the gas infrastructure. It might be the most promising technology for integrating the different energy related sectors of transport, heat production, power generation (so called sector coupling) and carbon capture and storage technologies.

Power to Gas appears to be the all-in-one solution addressing the crucial problems of the European Energy system. Surplus power from wind and photovoltaic can be transformed by electrolysis intro hydrogen and then methane, which can be fed into the gas grid and into existing gas storages. Hydrogen can be produced in a simpler way than methane but methane can be better integrated into the gas grid (without any restrictions).

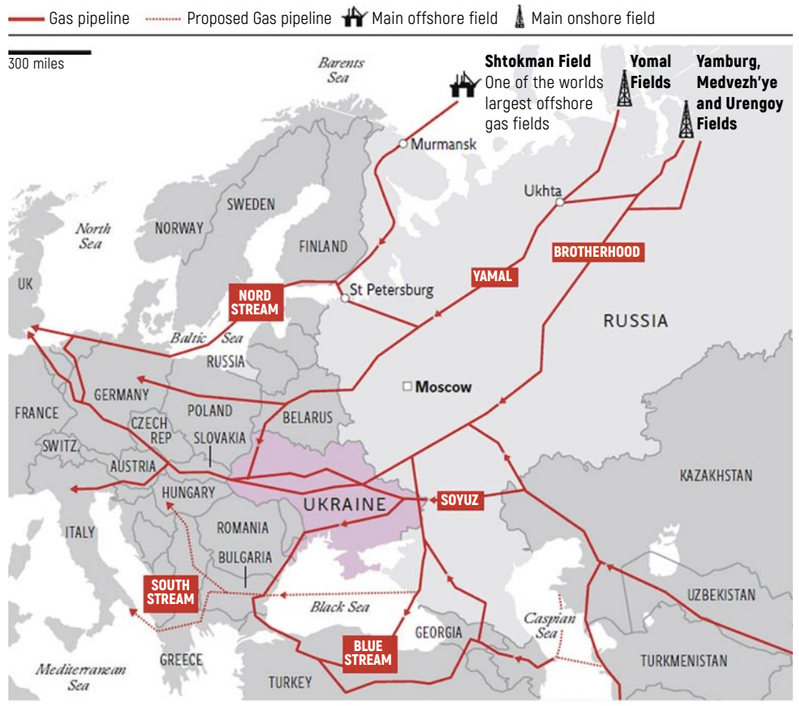
If to speak about regulatory system for European integrated gas market, it was developed in 2010-2016 and now the rules are working at the gas market quite well. As a further step of improvement of functionality of integrated gas market in the EU, DG Energy considered to push the tariffs to the entry borders of the EU. But, such system would require to establish an EU inter-TSO compensation scheme at EU level and this is, at this moment, look impossible. Instead, EC consider to set a harmonised framework to foster cooperation among TSO and more efficient planning of network use and its operation for the benefit of the final customers.

It is also worth mentioning that after years of gas market dominance in Central and Eastern Europe (CEE), the energy relationship between primary gas supplier Gazprom and the CEE countries have been gradually equalized thanks to market liberalization and gas infrastructure integration in the EU. Greater gas trade at energy hubs and diversification of gas supply to LNG and Caspian gas have exposed Gazprom to competition, forcing it to adjust its pricing mechanisms and revise its export strategy to maintain market share in Europe. As a result Russian gas at European gas market became the cheapest option for consumer market players.

The adoption of the Third Energy Package in 2009 radically reshaped the European gas market and shortened the abilities of Gazprom to speculate with its dominant gas supplier role in Europe. In 2011 to lunch a constructive dialogue and to reflect on the key gas issues important for both parties, the European Commission and Russia have established a joined Gas Advisory Council (GAC) laying out a series of intensive workshops that served as the basis for developing an EU-Russia gas cooperation roadmap until 2050. They started discussion how the new evolving EU paradigm "renewable electricity and decarbonized gas" can be developed for the mutual interests of the two, since both parties are bound together by gas interdependence as primary consumer and supplier of gas. But Russia's 2014 annexation of Crimea and aggression in Ukraine stopped the process and returned the energy relationship to its frosty state.

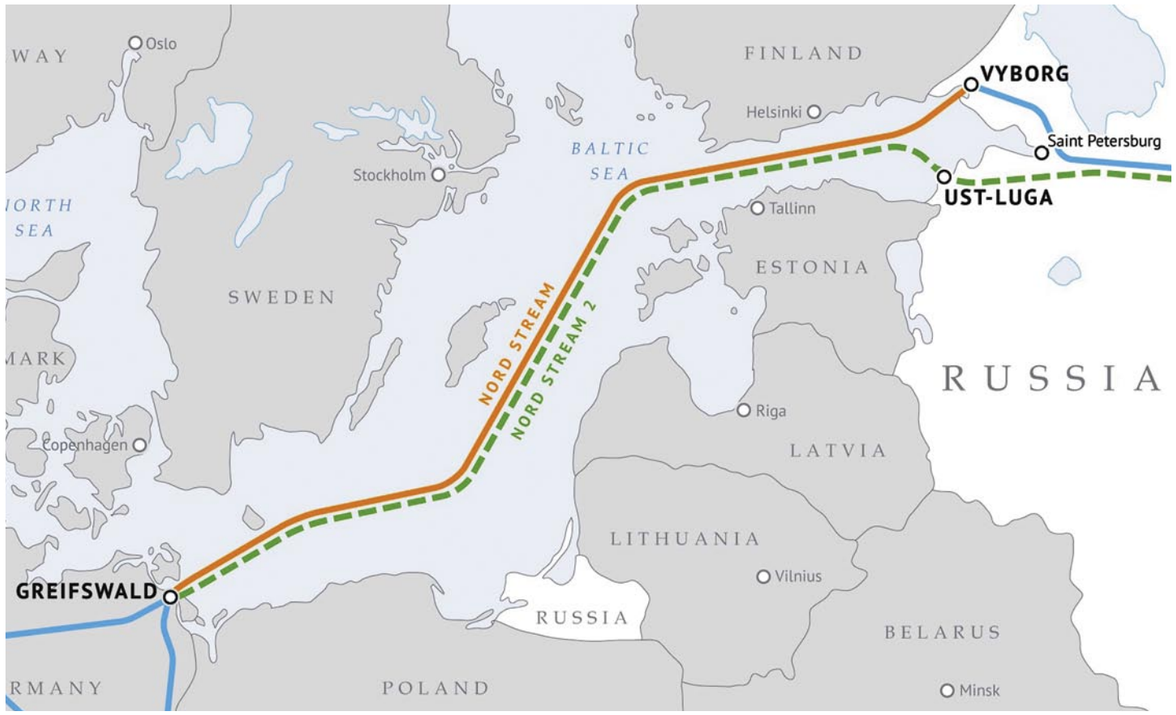
Speaking about resent Russian

Been deeply affected with dependence on exporting energy resources to Europe, Russia regularly "tests



Main Russian gas pipeline to Europe

|GAS MARKET|



Nord Stream 2

the water" for possible new energy initiatives that huge infrastructure projects like the South Stream, Nord Stream 2 or Turk Stream 2. And those huge projects can potentially have an influence on the European energy markets. Such line of behavior creates mistrust on both sides which is not a good basis for a trustworthy relationship.

It is quite easy to recognize that removing gas flows from the Ukrainian Brotherhood pipeline network will likely result in its significant degradation. Its current maximum carrying capacity makes around 140 bcm; with much smaller gas-transit flows, much of the network will no longer be able to be maintained, and will quickly degrade. Once gas-transit flows to Ukraine are lost, it will be difficult to resurrect them, leaving the EU with a significantly more concentrated and controlled by single gas exporter delivery system.

After Brotherhood route diversity will be restricted the concentration of transported gas on Nord Stream will significantly increase a supply-security risk. This risk was illustrated by the September 2017 maintenance work on Nord Stream 1, which took place over two weeks. As the Brotherhood pipeline network remained operational, gas flows could be increased vi Brotherhood to maintain supply into Germany and other European countries.

No doubts that Nord Stream 2 is a commercial project for Germany which become a hub for the importation of Russian gas into the EU, its market will obtain a much greater degree of liquidity, and, as a consequence, gas prices will be lower. But it's no doubt as well that supply security risks will pay other members of the EU and first of all the states of Central and Eastern Europe.

When we try to evaluate the term that Nord Stream 2 is a commercial project, the first thing that comes to mind why any energy company would seek to build an entirely new transmission pipeline to deliver the same gas to its customers when one already exists. However, Gazprom is proposing to spend €9.8 billion on building an entirely new pipeline, to provide an alternative supply route. Furthermore, this price tag only includes the cost of the 1,200-kilometer pipeline from the Russian Baltic coast, through the Baltic Sea to Greifswald on the German Baltic coast. It does not include the cost of the 3,100-kilometer overland pipeline from the gas fields on the Yamal Peninsula to the Russian entry point of Nord Stream 2 and many other unspecified expenses. If commercial interests of participants in project are unclear we came to political or geopolitical interests.

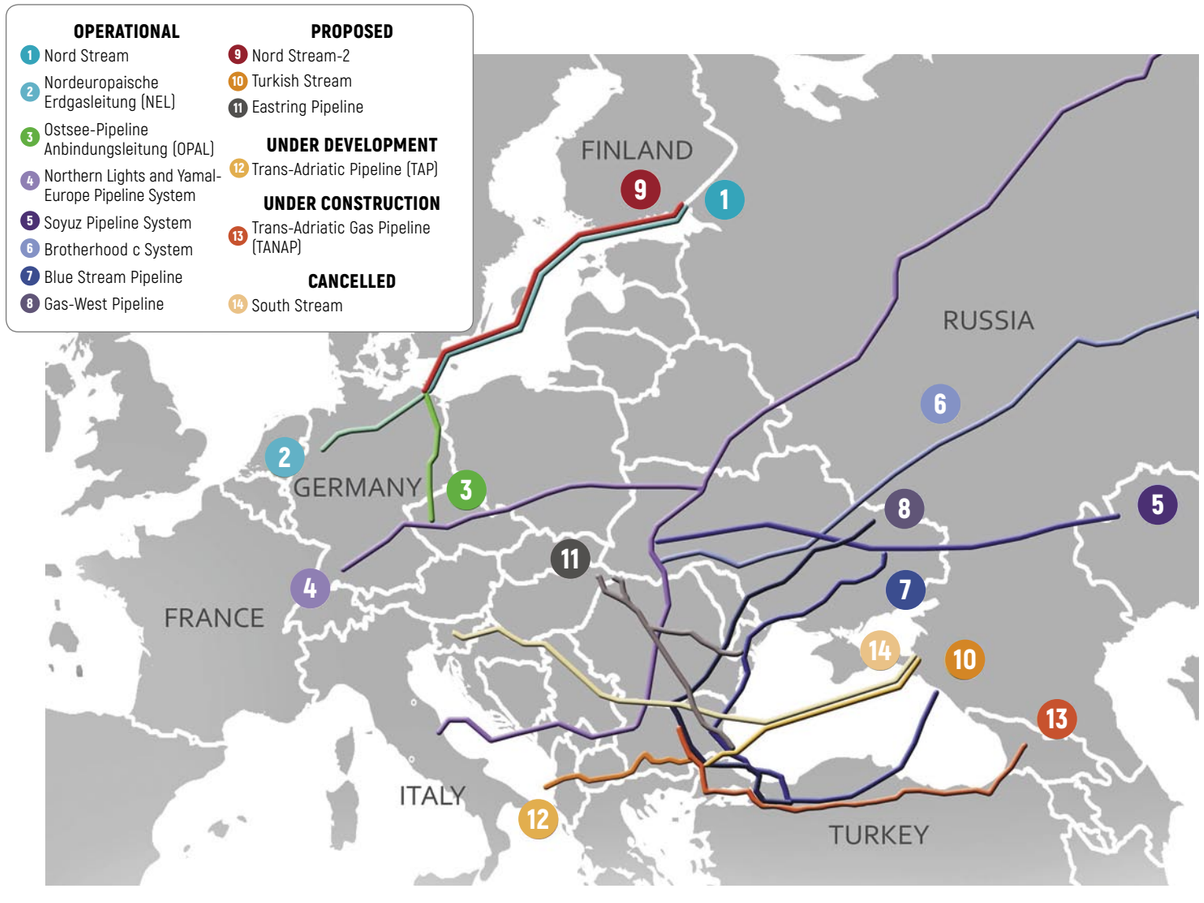
CEP comments

The picture describes only part of existing European gas transmission network, mainly from the East (Russia, Asia, Caucasus) with further proposed expansion via Black Sea and Baltic Sea. There are no pipelines from Norway as well as existing routes from European LNG terminals in South-Western Europe.

Asian gas from Kazakhstan, Uzbekistan and Turkmenistan has no direct access to the European market so far due to restrictions regarding passing through Russian territory, is sold to "Gazprom" on respective Eastern border and enters the EU gas market as Russian source.

The map also does not have any signs for existing and emerging LNG terminals, which will change significantly in coming years the gas market landscape in Europe. The above infrastructure will be used to ensure direct state-to-state contacts between Russia and respective European countries. However, expected growth of competition on the gas market due to more LNG will make existing business model less if ever attractive, pressing the prices for gas further downturn. To ensure payback for investments, especially into new planned infrastructure, "Gazprom" should already today consider reducing gas prices and propose long-term flexible contracts for many consumers in Europe.

Given recently adopted legislation on further steps toward green and energy efficient Europe, very urgent issue remains search for new markets or new-old markets with Ukraine as one of the biggest markets.



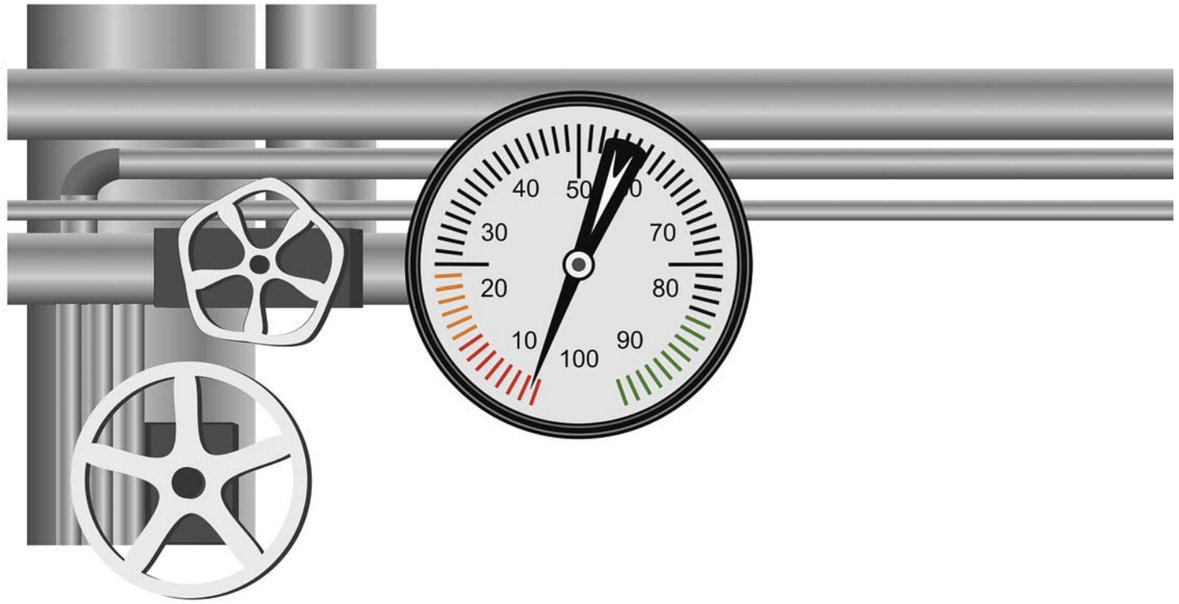
A gas pipeline network of the European continent | Soutfront.org

|THE ISSUES OF THE BRANCH|

THE MARKET FOR NATURAL GAS DISTRIBUTION IN UKRAINE

WHEN WILL IT BECOME TRANSPARENT AND ATTRACTIVE TO THE INVESTOR?

Ukraine has been implementing a large-scale gas market reform since October 2015. During this time, a competitive market for industrial consumers with the right of free choice of supplier was introduced, diversification of natural gas imports took place, and the difference in prices for domestic and non-residential consumers was significantly reduced.



A formal division of the areas of natural gas transportation on the domestic market and its supply (distribution) to end users took place as well. However, the sensitivity of introduction of a unified approach to the formation of the price of natural gas for all categories of the population due to the low income of a large number of citizens impedes the process of the reform, which in turn undermines free competition, maintains the practice of non-transparent relationships at the market as a result of regulated and lower than regulated natural gas prices and impedes the formation of a distribution market with real competition between many suppliers.

The core problems of the industry

The difficult economic situation, caused by the destruction of economic ties between enterprises in different regions and the difficult process of restoration of the national economy, is one of the major restraining factors in establishing gas price formation in unified pricing order.

Although the increase of the regulated price in recent years has led to an increase in interest in energy conservation and a significant reduction in consumption volumes; for individual participants in the natural gas market, the consequence was a collapse of financial performance due to reduction of operating activity while the infrastructure maintenance work remained the same against the background of the cost of goods and services and the minimum wage increase.

The slow growth of the national economy in the current and following years, as predicted, as well as a number of election campaigns, do not contribute to completing the process of equalizing prices in the near future.

According to the results of the visit of the International Monetary Fund mission to Ukraine in September 2018, an agreement on the gradual increase of regulated prices to the level of import parity over the next few years was reached.

At the same time, Ukraine should introduce incentives for growth of economic activity and level of incomes of citizens while simultaneously reforming the system of subsidies through monetization of state aid for the financially vulnerable groups of the population, where in turn each such consumer should be included in the single national register.

At the same time, the parallel direction of the state policy is to stimulate citizens to save energy by means of winterization of houses, use of more energy-efficient household appliances and changes of energy consumption habits.

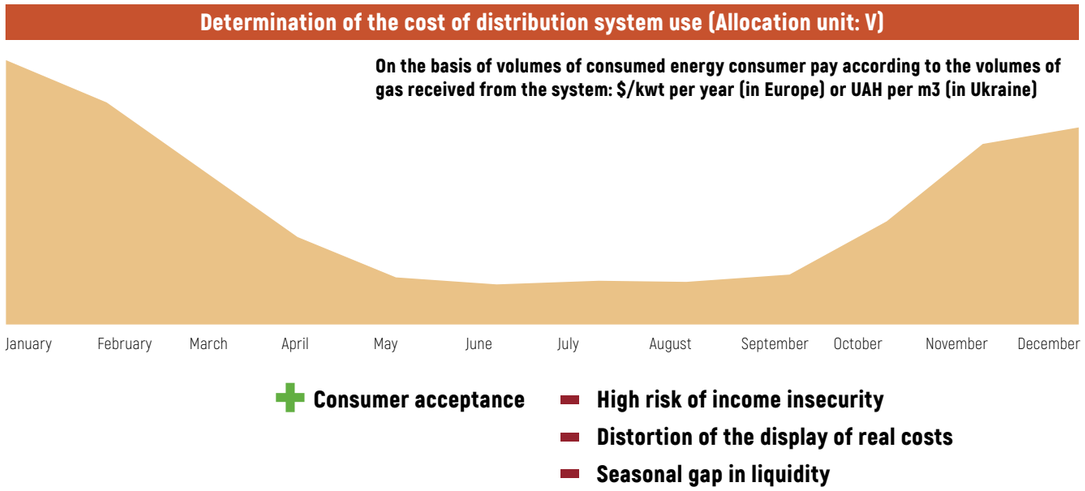
Delays in introduction of a distribution tariff based on the actual cost of providing services, ensuring the return of incurred costs by suppliers, predictability for consumers in the context of calculating future payments, the absence of discrimination and the simplicity and transparency of the tariff formula.

At present there is a significant disproportion in the volume of payments depending on the seasonal fluctuations of consumption, first of all from the side of the population and utility companies.

It is caused by a formulaic approach which is based on the actual energy consumption, as a result of which the operator of the gas transmission system and distribution companies receive huge gaps between seasonal peaks and failures in the consumed volumes of natural gas and, accordingly, in working capital, which they can operate (see picture).

At the same time, enterprises should ensure the financing of constant expenses at the same level, primarily for remuneration and accounting, as well as carrying out scheduled repair and maintenance works of the transportation infrastructure.

Meanwhile, it is very important at this stage to find out the order of calculation of production and transportation costs in the structure of the tariff to prevent abuses on behalf of unscrupulous distribution companies and create the preconditions for the gradual increase of their energy efficiency.



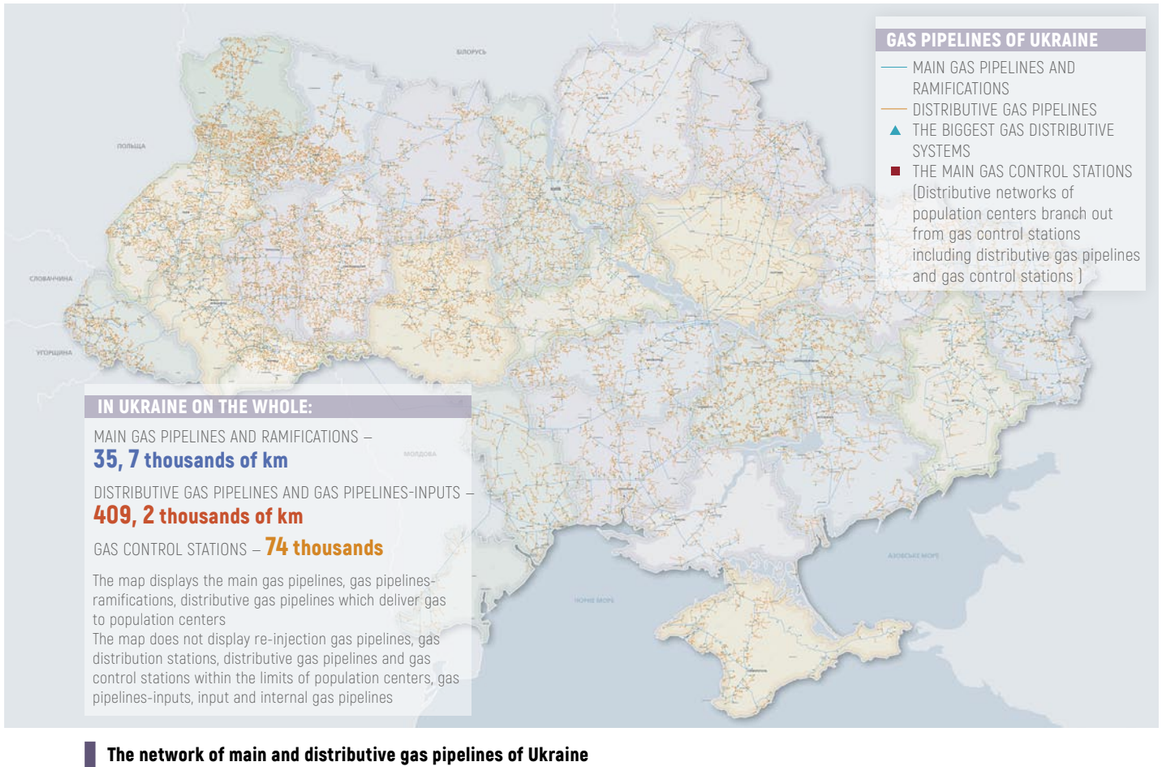
Seasonal fluctuations in delivery of services based on actual consumption
| Reference: the official web-site of the National Commission for State Regulation of Energy and Public Utilities

In accordance with the updated order of formation of the price for distribution services, it is assumed that the tariff is divided into two components. Within the first, distribution services will be paid on the basis of the joined capacity, and the second will reflect the actual volumes of the delivered resource. This approach is planned to be implemented in several stages over the next three years. By April 1, 2019, the tariff formation formula based on the actual distribution services will be applicable, and each subsequent year, a new model of price formation will be introduced until they are brought to a single level between domestic and non-residential consumers (approximately from April 1, 2023).

The presence of a significant number of unresolved debt cases between distribution companies and the operator of the gas transmission systems, which arose at different times for a number of reasons of objective and subjective nature.
In Ukraine, according to the decree of the Cabinet of Ministers of Ukraine No.187 (as amended and supplemented) the procedure for the formation of a regulated price for certain categories of consumers from April 1, 2017 until October 1, 2018, (for utility companies and households is 5930.4 UAH per one thousand cubic meters) in accordance with special supply duties assigned to the state-owned company "Naftogaz Ukrainy".
It is forbidden to stop the supply of natural gas to utility companies in accordance with the decree of the Cabinet of Ministers of Ukraine No. 322 as of April 29, 2016, subject to the following conditions: the producer of thermal energy is not in debt to "Naftogaz Ukrainy" (excluding penalties), it conducts current gas payments; the capacity of the utility company in completing transactions for the supply of natural gas under the signed agreements is not less than 90%; the utility company provided "Naftogaz Ukrainy" with a schedule for paying off its arrears in equal installments by January 1, 2021 (approved with the executive body of the local council), as well as the utility company conducts current payments for gas.
This problem can be minimized after the introduction of consumer subsidy monetization and the establishment of a single formula approach to the price of natural gas for all categories of consumers.
The introduction of the mechanism of balancing of gas transportation networks on the basis of monthly reconciliation was carried out after the approval of the Gas Transportation System Code on September 30, 2015, by the Resolution of the National Commission for State Regulation of Energy and Public Utilities No. 2493. This document contained a number of issues, in particular, the concept of national gas balance was excluded, which was previously within the competence of "Naftogaz Ukrainy", instead, the notion of imbalance with significant gaps of responsibility for various reasons for the use of natural gas exceeding the declared volumes as a result of which debts for balancing services increased to more than 25 billion UAH in the following years.
The deficient Gas Transportation System Code is an obstacle to further steps in reforming the gas market in Ukraine, in particular, the introduction of daily balancing, which would allow responding more quickly to the differences between declared and actual volumes of natural gas use. The national regulator of the energy sector and key players at the market — Ukrtransgaz and regional gas distribution companies continue working on this issue. The preparation of the technological capability and software of the market participants, as well as the synchronization of work at all levels is taking place gradually.
The practice of some participants in the gas market needs to be improved due to outdated approaches to monopoly suppliers. This work shall to a large extent be performed by the National Commission for State Regulation of Energy and Public Utilities by means of studying the results of various companies and developing a balanced approach to tariff formation, which would include the attractiveness of the distribution sector for private companies, where the "Regional Gas Company" is currently the largest player. It can also create conditions for minimizing abuse and shadow gas sales.

> "Regional Gas Company" LLC specializes in management consulting in the gas distribution sector. The "Regional Gas Company" unites gas distribution companies to solve complex problems that will improve servicing of gas consumers, modernize the industry and introduce modern standards of work. The project's participants provide gas to more than 8 million Ukrainian families and 60 thousand industrial enterprises and organizations. The "Regional Gas Company" started its work in 2010 and already unites more than 20 gas distributing companies, among which there are: PJSC "Kyivoblgaz", PJSC "Lvivgaz", PJSC "Dneprogas", PJSC "Volyngaz", etc.

Regional Gas Company



The network of main and distributive gas pipelines of Ukraine
| Reference: https://104.ua/ua/gas-map

An important issue is the completion of the process of ***establishing energy consumption accounting for all categories of consumers***, where currently the least cover group are apartment-block buildings with a centralized heating system and the use of gas for cooking in accordance with the normative average monthly figures of the Cabinet of Ministers of Ukraine Resolution No. 203 of March 23, 2016 (as amended and supplemented). At present, according to the relevant regulations, from 500 million to 1 billion cubic meters of gas is accounted, with estimates ranging, which leaves considerable room for abuse at the expense of the difference between the actual consumption and paid-up volumes of natural gas, even at regulated prices.

In addition to the above-mentioned problems in the sector, the dangerous trend that is rapidly spreading among regional gas distribution companies is the loss of professional stock due to the noncompetitive labor market remuneration of employees of technical and repair and maintenance services. Specialists in this sphere of services are massively resigning, with the prospect of significantly better employment in other sectors, in particular, taking into account new opportunities in the context of the Association Agreement with the EU and growing preferential conditions in certain member states of the community.

As a result, regional gas distribution companies are at crossroads: either they need to substantially revise the level of their employees' remuneration and optimize costs for other areas, or decide to leave this type of business and sell it to competitors among Ukrainian or European players.

The question about the state of the gas distribution networks arises in such circumstances. The cost of their maintenance is minimal. Avoiding the impending crisis in the industry is possible by establishing on behalf of Ukrainian regulator an objective tariff for gas distribution or a gradual planned reduction of gas distribution networks.

The experience of Georgia, which in the second half of 2000s, through the establishment of market rules in this sector, has taken its own gas distribution branch out of crisis, testifies that the Ukrainian market of natural gas distribution can become transparent and attractive to the investor.

THE ISSUES OF THE BRANCH IN FIGURES

IN THE CASE OF PJSC "KYIVOBLGAZ"

PJSC "Kyivoblgaz"

The current tariff for the operators of the gas distribution system, which was last reviewed in 2015, sets forth the cost of gas for industrial and technological needs of about 6 thousand UAH per one thousand cubic meters.

Since then, the cost of gas has grown more than twice: in September 2018, NJSC "Naftogaz Ukrainy" announced the price for industrial enterprises at the level of 13 thousand UAH per one thousand cubic meters. Thus, at present, the current tariff for gas distribution covers the company's economically feasible expenses by 31%.

This resulted in the turnover of personnel last year, which in comparison with 2016-2017 years has not changed this year and amounts to 13,17-12.26%. At present, the company has a shortage of skilled workers. Vacant posts often remain pending due to low wages.

PJSC "Kyivoblgaz"

At current tariffs for gas distribution, the level of wages in gas companies is by one third lower than that of industry in general, and it lags behind the average wage in the energy sector by 50%. Wage costs constitute only 30,2% of tariff revenues.

The average monthly salary of the region's industry in comparison with the average monthly salary in the company in 2016 is higher by 1366 UAH, or by 27, 22%; the average monthly salary was higher by 1376 UAH in 2017, or by 20,39% and during 6 months of 2018, it is higher by 1614 UAH or 22,45%.

The salaries of gas companies are limited by the tariff for the distribution of natural gas, which is a component of the gas price. This component has not changed since 2016. The revenue of Kyivoblgaz in accordance with the current price of natural gas for the population in the amount of 6.96 UAH per cubic meter, on average is only 0,51 UAH.

The low tariff for gas distribution and the reduction of natural gas consumption makes the company lose development opportunities and the ability to guarantee consumers safe use of natural gas, since the absence of working capital and significant losses endanger the high-quality and reliable operation of gas networks and implementation of investment programs.

THIS FALL THE REPRESENTATIVES OF THE CENTRE OF ENERGY PARTNERSHIP TOOK PART IN A NUMBER OF EVENTS,

PARTICIPATION IN WHICH CONTRIBUTED TO A DEEPER UNDERSTANDING OF THE PROCESSES

ON THE ENERGY MAP OF EUROPE

The 13th Gas Forum of the Energy Community Secretariat

The main issues discussed by the participants of the event related to the role of natural gas in the policy of decarbonization of the European Union countries, the development of the gas transmission infrastructure of the Energy Community, the problems of reforming the gas industry of Ukraine and the transit of natural gas from the Russian Federation, as well as the status of implementation of network codes of operators in Albania, Bosnia and Herzegovina, Georgia, Macedonia, Moldova, Serbia and Ukraine.

On September 20th, the 13th Gas Forum of the Energy Community Secretariat was held in the capital of Slovenia

The Head of the Energy Community Secretariat, Janez Kopac, identified the main trends in the development of the natural gas market community during the opening of the Forum. In particular, the official noted the lack of progress in Ukraine, Serbia and Bosnia and Herzegovina. The formation of the gas market, as well as the separation of independent operators of gas transmission systems is defined as a cornerstone.

In the further discussion the participants and speakers expressed uncertainty in the role of gas as an energy source related to its future in the European energy complex, as well as the ways of making the domestic gas market the maximum available social benefit for the consumers.

IHS Markit Energy Group spokesman, Simon Blakely, emphasized the potential for innovative gas use: while medium-term forecasts confirm the relevance of natural gas, the outlook becomes less clear in the long-term and depends on the progress of decarbonization.

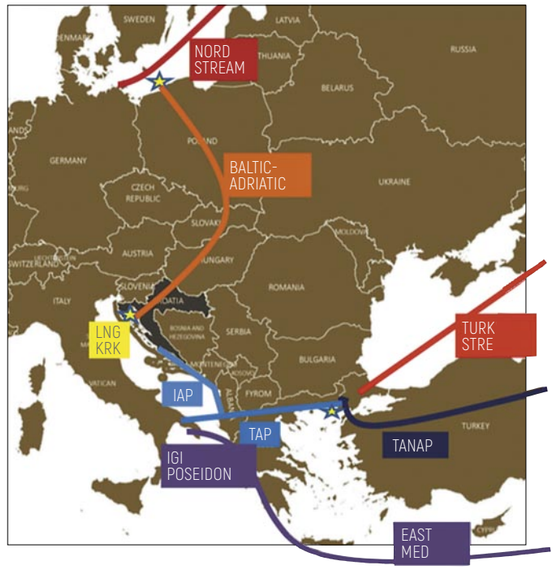
The official of the Ministry of Innovation and Technology of Hungary, Peter Kaderjak, noted the fact that despite the decarbonization policy, it is cheaper for some countries, in view of their economic priorities, to develop even the coal industry in the short term.

However, the Energy Community Secretariat recommended harmonizing the legislative framework of the EU countries and the Energy Community with the Clean Energy for All Europeans package.

The report on the plans and progress of Georgia in reforming of the gas market, attracting investments in modernization of gas transmission infrastructure projects and underground gas storage facilities was rated by the Forum participants very positively. At the same time, the parties emphasized the need for further implementation of reforms in this country.

The most debated issue among the organizers and participants of the Forum was the plan of building the Ionian Adriatic Pipeline and the problems of transit of Russian gas through Ukraine after 2019.

In particular, during the discussion of the report of Florjan Dedovic, the representative of the Croatian gas transmission system operator, it was noted that the problems of development of gas infrastructure in the Balkans, which still exist, continue to impede integration in the regional market.



The project of the Ionian Adriatic Pipeline, as a branch of the Southern Gas Corridor, will provide additional security of supply and development of gasification to the territories of the involved countries.

| Sourse: Plinacro

NOTE

In the future, the Ionian Adriatic Pipeline (IAP) should connect the existing Croatian gas transmission system with the Trans Adriatic Pipeline (TAP) through the territory of Montenegro and Albania. The total length of the gas pipeline from Split (Croatia) to Fier (Albania) is 511 km (the length of the Croatian section – 252 km). It is planned that Croatia will receive about 2.5 billion cubic meters of gas per year through IAP with a total capacity of 5 billion cubic meters of gas per year.

Sourse: Plinacro

Regarding the role of Ukraine in the transit of Russian gas, it should be noted that the possibilities and problems of the current reform of this market in Ukraine were assessed during the discussion. Participants agreed that stakeholder confidence in a fully independent, certified and functional gas transmission system operator is crucial for the sustainability of natural gas transit through Ukraine in the period after 2019. Also, the Forum participants called for creating a favorable regulatory and legislative framework for the creation of the Ukrainian gas exchange.

The Energy Community Secretariat provided an update on the process of introducing network codes. In particular, progress has been made towards transferring the network code to interoperability and data exchange, as well as a guide on congestion management principles in Albania, Montenegro and Moldova. At the same time, the legal norms of Bosnia and Herzegovina, Serbia and Ukraine are subject to further implementation.

On September 25th, the 10th Oil Forum of the Energy Community Secretariat was held in the capital of Serbia

The forum was devoted to the latest changes in the oil price policy, its impact on the cost of oil refining and storage, as well as the role of oil in the energy transition.

In particular, the Secretariat presented the main steps in the evolution of the "Oil Dimension" over the last 10 years, which led to the adoption of Directive 2009/119 / EC in the Energy Community in 2012.

The participants of the Forum recognized that the progress in the implementation of this Directive in different countries is significantly different, and most of the countries have not met the expectations yet.

Bosnia and Herzegovina is still at an early stage of considering possible options of a system of oil and petroleum products; **Albania, Georgia and Ukraine** have prepared their promising primary and secondary legislation, while Kosovo has not been able to resolve and approve the most appropriate legal framework on emergency oil reserves.

Moldova has drafted a law on creating and maintaining the minimum level of oil and petroleum products reserves, which will allow developing subsequent secondary legislation immediately and in accordance with the law. **Macedonia** is close to approving the rest of the secondary legislation, which is supposed to take effect on January 1st, 2019. The current reserves of petroleum and petroleum products corresponded to 65 days of average daily consumption, which is less compared to the same period last year, when the reserves were 70 days.

Despite the fact that **Montenegro** developed the corresponding basic law on stocks in 2016, it failed to adopt the new draft law and subsequent secondary legislation in accordance with Directive 2009/119 / EC. **Serbia** has achieved the greatest success in the implementation of this legislation and the only remaining secondary act is the Response Plan in case of disruption of oil supplies, which, as expected, should have been developed and approved in 2016. At the moment, the amount of emergency reserves of oil and oil products is about 19 days.

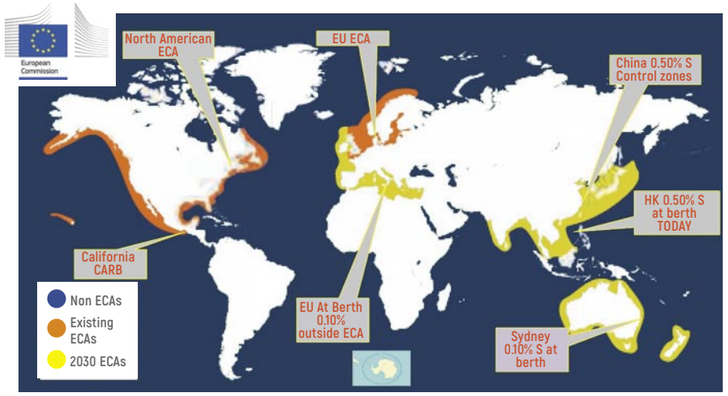
The report of Rosa Antidormi, the representative of the European Commission, addressed the future development of fuel in maritime transport. In particular, the participants were informed about the potential consequences of the innovations of the International Maritime Organization (IMO) in accordance with Annex VI of the International Convention for the Prevention of Pollution from Ships, MARPOL.

According to the document, the percentage of sulfur from 2020 should constitute 0.50% in marine modes of transport.

Following the Resolution of the Energy Community Council of Ministers in 2016, the EU sulfur consumption requirements for fuel, including the global limit, are also covered by the energy community alliance. Participants were reminded of the activities carried out by the International Maritime Organization to ensure that this new requirement is consistently implemented worldwide, which will provide guidelines for administrations, port authorities, shipowners, shipbuilders and suppliers of petroleum and petroleum products.

NOTE

The International Convention for the Prevention of Pollution from Ships identifies the SOx Emission Control Areas (SECA) – the Baltic and North Sea, the coasts of Canada and the United States of America. From April 1st, 2015, the sulfur content of the fuel used in this zone should not exceed 0.1%. Outside these regions, the maximum level of sulfur presence in marine fuels is set at 3.5%. As of 2020, the International Maritime Organization's Marine Environment Protection Committee introduces a limit of 0.5% sulfur content in marine fuels outside the SECA. The NOx emission control areas (NECA) are the coasts of Canada and the United States of America, as well as US territorial waters in the Caribbean. From 2021, the Baltic Sea and the North Sea will also be declared a zone for monitoring emissions of nitrogen oxides.



Global SOx control, SOx ECAs worldwide

In the shipbuilding area, under the influence of economic, technological and political factors, there is an innovative upgrade that changes the structure of the consumption of marine fuels, which involves the increasing use of low sulfur fuels, liquefied natural gas, as well as the transition to electricity. Innovation leads to a change in the design of the vessels and even to the restructuring of the industry. Modernization of ships under new environmental standards requires the use of a large number of new equipment and the introduction of several complex and costly technologies at once. Limitations on sulfur will make it impossible to use conventional fuel oil as marine fuel without the need for extra treatment of exhaust gases in special devices – scrubbers.

THE NEW 0.50% FUELS: IMPACTS (1)

- A number of higly aromatic/cracked blends of hydrocarbons will enter the marine market and in significant quantities: varying blend formulations
- High densities, low viscosities, propensity to cause instability in blends (not necessaraly so in the separate components)

Major oil suppliers are already working on 0,50% fuels formulations with rigourous testing in progress to meet ISO 8217

Suppliers must meet ISO 8217 (2017) which broadly covers 0,50% fuels, Public Available Specification to address blend variety categorisation in 2019 (mandated by IMO to ISO)

Note: 0,50% fuels already existing, sold and used globally

The introduction of the 0,50% fuels presents challanges and complexity for both maritime and oil industry. These are, however, are NOT unsourmontable and can be managed, but they come at a cost to industry

THE NEW 0.50% FUELSYTTNPACTS (2)

Acknowldedge

- Big game changer for the oil sector (higher yield switch towards diesel from gasoline and fuel oil, higher global refinery runs)
- Commitment to the IMO decision, added value of Joint Industry initiative

in the IMO context to adress the mentioned aspects (to develop guidance

and best practice for fuel oil suppliers)

BUT It is important NOT TO Overemphasise the operational challenges which can and will be addressed as this would send wrong signal to the market

Addressing such challenges requires(ed), however, preparation, ahead planning and investments

REGULATORY SCHOOL TRAINING – ENERGY MARKETS AND TRADING,

VIENNA, AUSTRIA, 17-18 OCTOBER 2018

Energy markets are characterized by continuous evolution that makes them more complex, hence difficult to understand. A continuous knowledge building of national energy regulatory authorities is very important having in mind the broad expertise required for pro-effective and effective regulation of the energy markets.

This training is tailor-made for the national regulatory authorities from the Contracting Parties of the Energy Community and aims at providing an understanding on energy markets and wholesale energy trading. Speakers on this event are highly experienced professionals with excellent understanding on regulatory developments and operational processes. A training on energy markets and trading was organized in December 2017 and due to very good feedback, Energy Community Secretariat is repeating it in a very similar format.

The training starts on the afternoon of 17 October 2018 with a session on basics of energy trading to continue with group activity on trading. The day will end with a visit at the trading floor of Verbund located across the Secretariat's office.

The program in the 18 October 2018 aims at giving an insight on electricity and gas market design and market evolution, with particular focus on risk management, trading and trading places.

Energy Community Secretariat
Am Hof 4, Level 5/6
1010 Vienna, Austria

REGULATORY SCHOOL TRAINING – FUNCTIONAL UNBUNDLING OF DISTRIBUTION SYSTEM OPERATORS,

VIENNA, AUSTRIA, 20 NOVEMBER 2018

Context – effectively safeguarding and supervising functional unbundling of distribution system operators requires national regulatory authorities to develop in-depth understanding of company structures and operation.

Scope – the training will focus on legal aspects of functional unbundling of distribution system operators, including EU practise knowledge sharing. It will also address the role of national energy regulators in this context.

Duration – 1 day.

Target group – the course specifically targets legal experts of the Contracting Parties' and Observer countries' national regulatory authorities.

Reimbursement – one legal expert per Contracting Party regulatory authority.

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Dear Reader,

Centre of Energy Partnership would like to express your great honor and invite to the Presentation&Reception event, which will be held on 1st decade of November, 2018 in Bratislava, Slovak Republic.

Centre of Energy Partnership seeks to play an active role in structuring the transformation process and creating the necessary framework conditions for sustained economic success. The main objective of the Centre is to strengthen the energy security of the region, cooperation of regional energy companies in the framework of the energy and climate policy of the EU, the European energy security policy and the European Energy Community. More information about our Company you could find on the website: **https://cepconsult.com**.

Our vision of energy market development in gas, oil, electricity, renewables, cooperation in Europe, risks, challenges and opportunities – all those topics are among our spheres of analysis and consulting.

We are looking for new partners in Slovakia and Europe for fruitful cooperation and common business.

We would kindly appreciate your interest in our event from your company/ministry/representation under the **e-mail: cep@cepconsult.com**. Please do not hesitate to ask additional questions or send requests, including logistics and possible presentation of your companies.

Sincerely yours,
Oleh Hychka, COO