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Energy independence - opportunity or risk

Energetická nezávislosť – príležitosť a risk

Elena Cristina Anghel (Vladescu)[a*]

[a] University of Petrosani, Romania, ORCiD: https://orcid.org/0009-0001-2686-3619

Abstract: The current geopolitical framework has forced European countries to redefine their energy relations and take rapid steps to become energy independent. In recent years, Europe has relied on Russian oil and gas, especially countries like Germany or Italy, but this must change and Europe must find a quick solution to achieve energy independence. Lack of investment in gas production will increase dependence on imports and affect the path to energy independence.The paper highlights the impact that costs have in the investment field. Technologies related to alternative sources of energy to the consumption of crude oil have been developed and are supported in the policies of the EUregarding the reduction of carbon emissions.If changes are not made in the way energy is produced, transported and consumed, humanity could face a major energy crisis.The aspects addressed in this paper are aimed at highlighting the sensitivity of oil companies to the mutations of the markets in which they operate, respectively raising interest in a preventive - anticipatory approach to future challenges.The type of research used in this paper is a descriptive one, with the aim of documenting and understanding the phenomena, and observation, document analysis and SWOT analysis were used as research methods.

Key words: *Investments. Energy. Renewable Sources. Energetic efficiency.*

JEL Classification: N7. P48. Q42.

Introduction

The transition to a low-carbon economy and increased energy efficiency are key coordinates of the Energy Union strategy. The energy transition requires the mobilization of

[*] Corresponding author: Elena Cristina Anghel (Vladescu)
University of Petrosani, Petroșani, strada Universității, nr. 20, România
e-mail: Cristina.Vladescu@conpet.ro

considerable investment in Europe, namely: in the electricity sector, the energy efficiency of buildings and industrial innovation (around 21% for electricity grids, almost 27% for electricity generation and around 51% for Energy efficiency).

The European Fund for Strategic Investments (EFSI), which underpins the Investment Plan for Europe, can support investments in energy infrastructure, energy efficiency and renewable energy. (The European Fund for Strategic Investments, www.eif.org)

Although public funding at the EU and national level can play an important role, it is clear that the largest share of investment will have to be mobilized from the market. Consequently, the main challenge is to ensure the smooth functioning of energy markets, the availability of adequate investment warnings for companies and the facilitation of access to financial markets.

The growth and development of the economies of the countries of the world are strongly influenced by the volume and dynamics of investments made or underway. Investments represent a complex concept, with multiple approaches and implications, the issue of which is difficult to address.

The transition of the Romanian society and its registration on the coordinates of the market economy implies new approaches in the relationship between economic theory and practice. As Alvin Toffler shows in the work "The Third Wave" "groups of anonymous decision-makers, who handle the levers of investments, constituted the super-elites in all industrial societies".(Toffler, 1980)

In the previously mentioned conditions, the problem arises of choosing the optimal method of investment, which best corresponds to the goals and expectations of the investor. Here, two notions very often encountered in the investment process come into play: profitability and risk.

Business models and the classic structure of organizations are changing under the impact of new technologies, as well as other factors, such as geopolitical uncertainties (Brexit, US-China trade tensions, Russia-Ukraine armed conflict, etc.), over-regulation, labor shortages, global competition. At the same time, companies have their own development strategies involving innovation, market differentiation, higher profitability, attracting and retaining talent or social responsibility projects. In this uncertain and challenging environment, leaders must resist the temptation to adopt a defensive posture and take actions that help the organization succeed.

Energy for Romania, at the current stage of the country's economic development, must be seen as a support, as a stimulus for the national economy and not an obstacle to economic and social growth and development. The inclusion of the criterion of national interest in the process of selecting strategic objectives will bring the necessary motivation to the decision-makers to

achieve the desired that the strategy does not accentuate the phenomenon of poverty and impoverishment of the population and does not alienate investors, whose economic objectives are dependent on energy (electrical, thermal, natural gas).

At its core, transformation means changing the way business has been done for decades. There is a constant need for innovation that generates new products or services and supports entry into new markets, operational improvement or new ways of working with technology. Without massive investment in research, re-engineering, upskilling of employees and repositioning in the market, such advances are not possible.

It all starts with strategizing and focusing efforts to build those capabilities that allow the company to grow and strengthen its competitive advantage. Companies should be nimble enough to trade when they have the opportunity, not just when they must. In this regard, organizations should focus on acquiring technologies, products or operations that strengthen their core business. In many large industries – technology, energy, resources, financial services, transportation, trade, volatile regulation has a significant impact. In order to be flexible to these changes, a close collaboration with the representatives of one's industry and with the authorities is necessary.(Leca A., Musatescu V., 1997)

According to the data held by the IEA, the evolution of consumption in relation to the proven resources discovered could generate a crisis in the market of primary energy resources around 2035. A projection of the costs of energy resources until the year 2035 shows that a very good period is ahead for countries that own natural gas deposits, the demand is continuously increasing for the next 4-5 years. After 2025, the demand for natural gas will stabilize. (Oilmarketreport2022)

The general objective of the energy sector strategy is to meet the energy needs both now and in the medium and long term, at the lowest possible price, adequate to a modern market economy and a civilized standard of living, in conditions of quality, safety. in food, respecting the principles of sustainable development.

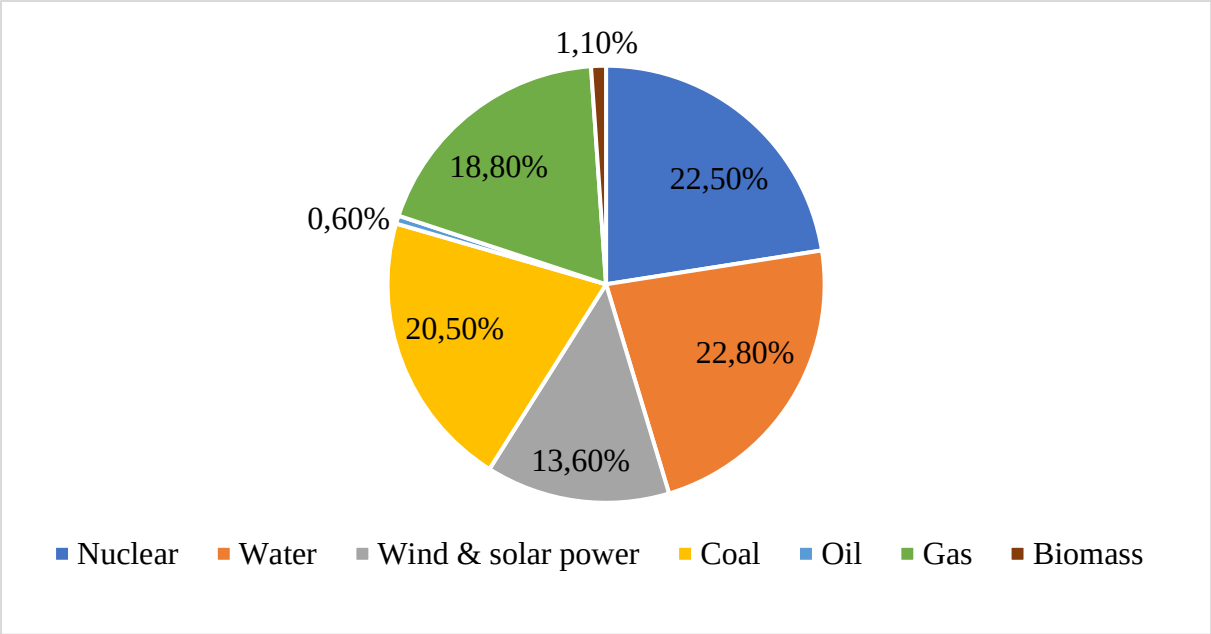

Figure 1 The structure of the global energy mix by 2030
Source:https://www.iea.org/reports/world-energy-outlook-2022/executive-summary

1. The priority objectives of the development of the energy sector

In order to reduce its dependence on energy imports, estimated to cover almost half of its consumption in 2030, Romania needs annual investments of 4 billion euros until 2022. The scenario considered foresees a decrease in the next two decades in the production of crude oil, gas and coal, a sustained increase in renewable energy production and a more modest one in nuclear. Our country has a relatively good position in terms of energy independence, the dependence on imports was relatively low, at a level of 22% of the gross consumption of energy resources.

Short-term solutions could represent steps backwards in achieving decarbonisation and sustainable development. An eloquent, local example is represented by the Oltenia Energy Complex's intention to increase coal production for 2023, at the same time submitting projects from the Modernization Fund worth 895 million for the development of electricity production capacities, including renewable energy.(www.energynomics.ro)

This is also due to the lack of viability of alternative options. Thus, the Neptun Deep Project is currently on hold pending changes to offshore law. So far, the project to amend the offshore law has been submitted to the Parliament, being supported by the governing coalition. In the best-case scenario, Romania could start extracting natural gas from the Black Sea in 2026. Until then, the lack of investment in natural gas production will increase dependence on imports and consequently affect the country's path to energy independence.

The biggest opportunity is to accelerate the transition to clean energy, and increasing electricity generation from renewable sources will reduce both fossil fuel consumption and energy market prices. To achieve these goals, national governments and the European Union should focus on financing renewable energy, energy efficiency and new technologies.

The Black Sea has a massive potential for wind energy generation - according to a study published by the World Bank, Romania can establish wind farms with a capacity of up to 72,000 MW.

Both offshore wind and onshore as solar energy is of strategic importance for Romania's energy system: by 2030, as part of the National Energy and Climate Plan, Romania aims to implement an additional wind energy capacity of 2,302 MW and a solar energy capacity of 3,692 MW.

Hydropower also plays a very important role in Romania's energy mix, representing approximately 30% of the national electricity production mix. In the long term, the modernization of existing plants would ensure a constant share of production coming from a renewable source.

On the other hand, nuclear plays a very important role on Romania's agenda. Given that Nuclearelectrica consistently holds a share of almost 20% in the electricity generation mix, the renovation of Cernavodă NPP Unit 1 by 2030, as well as the construction of the future Nuclear Units 3 and 4 show that nuclear still represents a solid opportunity to diversification and eventually achieving energy independence.

The connectivity of electricity networks at European level is an important topic with precise objectives: a target of at least 15% interconnectivity by 2030.

Towards a green Europe, the solution of last resort that has received attention in recent years and has become more relevant in the current situation is the creation of green hydrogen power plants.

Crude oil is an indicator of the most significant processes taking place in the world economy. Thus, after a collapse in the price of oil at the end of 2008, it recovered and remained above 100 USD/barrel until 2014. The year 2014 marked the beginning of a new period of collapse in the price of oil, against the background of increased production of oil from unconventional sources in conjunction with the decision of the OPEC oil exporting countries. Thus, from 115 USD/barrel in June 2015, a price of 57 USD/barrel was recorded at the end of the same year. The beginning of 2016 was marked by continuous decline, up to 28 USD/barrel. In May 2016, the price of oil rose to USD 50/barrel, and at the end of the year it reached a quote of approx. 60 USD/barrel. The first half of 2017 was characterized by maintaining the quotation

in the range of 45-60 USD/barrel, reaching in 2018 quotations of 75-78 USD/barrel, and in 2020 an average value of 60 USD/barrel.The 2022 annual average OPEC oil price stood at 100.08 U.S. dollars per barrel. This is up from 69.89 U.S. dollars the previous year and comes in the wake of an energy supply shortage and sanctions on Russia following the Russia-Ukraine war. (Average annual OPEC crude oil price from 1960 to 2023, www.statista.com)

Crude oil price volatility is accompanied by economic and social events, the long-term evolution as well as the effects generated by this tandem being difficult to predict.

At the global level - the horizon of the 2030s, it is estimated that the demand and supply of oil/ oil products will be influenced by the following factors: the cost of production from non-conventional (shale) sources, the impact of new technologies in the exploration and production of offshore continental shelves in deep waters, the increase in the production of non-OPEC countries, the return of Iran to the market after the lifting of sanctions, the increase in the production of Iraq as well as the dynamics of oil demands in the emerging economies of Asia.

1.1. Sources of energy assurance – Perspectives

At the level of the European Union, the policy regarding energy in the perspective of the years 2022-2030 is closely related to that of the environment and climate change, the reference framework comprising several key elements: the reduction of evening-effect gas emissions; policy of renewable energy resources; Energetic efficiency; promoting a sustainable, safe and competitive energy system at affordable prices; security of energy supply. In the long term, the aim is to reduce dependence on oil, especially in the transport sector. (CRESC 2016-2030)

The European Union's refining sector faces significant challenges, as evidenced by the reduction in refining capacity and foreign investment, particularly by Russian companies. The recession of this sector is significant, the total refining capacity being reduced from 765 million tons/year to 691 million tons/year, through the closure of 12 refineries. Nine refineries were closed (2 in UK, 2 in France, 2 in Italy, 1 in Hungary, 1 in Poland, 1 in Switzerland), with total EU refining capacity falling by 13%. (The outlook for the refining industry in a post COVID world, www.infineuminsight.com)

Current realities have shown that large consumers have understood that they must give up the utopia of total energy independence and accept energy interdependence. This objective will be achieved by stimulating investments to increase energy efficiency starting with energy resources, production, transport and distribution and last but not least, the rationalization of consumption, by promoting and using liquid biofuels, biogas and geothermal energy.

If current energy laws and policies remain unchanged over the period to 2035, global energy demand will increase by almost 50%. Non-OECD countries will have the largest share in the increase in energy consumption until 2035, at 84%, compared to only 14% for OECD countries.(OECD Green Growth Studies Energy, www.oecd.org)

The evolution of the energy sector will have to take into account all energy sources, from fossil fuels (oil, gas and coal) to nuclear and renewable energy (solar, wind, geothermal, hydroelectric, etc.) in order to build an economy based on low energy consumption. Both energy security and climate change have implications for the foreign and security policies of states.

A profile report by the HSBC bank mentions that humanity would still have oil reserves for a maximum of 49 years. Even harsher predictions come from the US Department of Atomic Energy and the International Energy Agency, which have warned of an oil crisis in the coming decades. This will occur against the background of the gradual exhaustion of the large oil fields as well as the increase in the price of access to such resources.

The movements in the black gold market made those from Erste Group appreciate that the very delicate situation of oil-dependent countries, which superimposed on the economic crisis makes the price of oil very unstable and turns into one of the aggravating factors of the crisis.

The IMF also appreciates that oil will be increasingly difficult to find, will have an increasingly high price, and then the economies of all emerging countries will suffer or be close to collapse. China is one of the countries in full economic expansion and towards which all the eyes of economic analysts are directed.

The European Commission believes that by 2050, alternative fuels have the potential to gradually replace fossil energy resources; in this sense, the EU must develop energy sources without oil and without CO2 emissions by 2050. The production of biofuels is seen by Western countries as a method to get closer to the targets set for renewable energy and for the security of energy supply.

In conclusion, due to the fact that primary energy resources, such as coal, oil and natural gas, are on the way to extinction, it follows that covering the increase in primary energy demand will be possible by increasing the degree of use of renewable sources and the success of measures to increase energy efficiency.

In the context of the establishment and functioning of the internal market and from the perspective of the need to protect and preserve the environment, the EU's energy policy aims to: ensure the functioning of energy markets under competitive conditions; ensuring the security of energy supply in the EU; promoting energy efficiency and energy saving; the development

of renewable energy sources; reduction of greenhouse gas emissions; promoting the interconnection of energy networks.

The oil reserves of EU member countries are very limited, which explains the concern for securing large quantities of hydrocarbons from the areas of the Near and Middle East, Central Asia, and the Caspian Sea. EU resources are limited to oil and natural gas reserves in the North Sea, the Netherlands, Poland and Romania.

As in any other field of activity, the evaluation of investment proposals in the energy sector is based on analytical tools and techniques.

As a rule, the term capital investment refers to the following elements: the investment involves substantial investment costs; investment recovery takes place over several years; there are elements of risk and uncertainty regarding future income and expenditure flows; the investment involves the procurement or expansion of facilities or the realization of expenses that directly determine the strategic objectives of the respective company. (Stancu I., 2003)

Applying economic principles to energy systems and environmental problems is essential for identifying and implementing the most effective solutions. In the decision-making process, costs are compared with anticipated revenues to establish the viability of the proposed project.(Leca A., Musatescu V., 2010)

In general, in order to be able to make a decision, two conditions are necessary: a) the existence of several solutions for the realization of a project; b) the existence of a goal (some results are expected, as a result of the consumption of time and effort). As long as these conditions exist, the decision can actually be made after evaluating the solutions. Economists say that the prosperity of a business depends more on the ability to create profitable investment opportunities than on the ability to promote them.(Leca A., Musatescu V., 2008)

Renewable energy sources are characterized by the present high investment costs. Because of this, their promotion requires incentive implementation and financing schemes. Incentives are promoted through government policies.

Investment costs are still high for technologies that use renewable resources, causing high amortization and interest costs for projects that use leveraged financing. Fuel costs are major for plants using exhaustible fuel resources; they are practically non-existent in the production of energy from renewable sources, except for the groups that use biofuels.

Maintenance and operation costs are generally high for groups using exhaustible sources compared to those using renewable resources. Future technological trends will continue to reflect manufacturers' desire for improved performance by reducing environmental impact, fuel costs (by increasing yields), operating costs (by increasing reliability) for classic technologies,

as well as by reducing investment expenses and increasing the size of installations (in particular for wind turbines) for technologies using renewable resources. Increasing the size of wind turbines will also help reduce their visual impact by reducing the number of economic wind turbines to be located on a site.

An energy efficiency strategy is a political instrument that highlights the priorities and means of improving energy efficiency in the various sectors of the economy, and which develops in coordination with other national objectives regarding economic development, energy security and environmental protection.

The regulator must inevitably take into account the need for new investments, as well as a better use of the existing capacity and the need to stimulate energy efficiency among the beneficiaries of network services. But the most important effect must be felt by the consumer, and the magnitude of this effect depends on the dynamics of energy prices.

In principle, energy investment projects are part of the large category of infrastructure projects, a sub-branch of network industries. They are characterized by high amounts of capital involved, long lead times and - due to limited but certain profits - recoveries of the initial investment over a long period of time. The only exception is energy efficiency projects that reduce energy costs and/or those related to primary energy resources. In these, in general, the investment is small, the cash flow is generated by the energy savings, and the investment recovery period can be much shorter. In addition, when applying energy efficient measures, not only the long-term effects and impact on energy use systems, but also on their associated operating and maintenance costs, as well as useful effects at the level of society they generate.(Vasilescu, I., Gheorghe Al., 2004)

Depending on their origin in relation to the country where the investment is made, the sources of capital to cover the investment needs of the energy projects can be domestic and/or foreign. Domestic ones include budget allocations, self-financing, the internal capital market (primary or secondary) and internal credits. One such example is the Cernavodă nuclear group, where apart from government credits from Canada and Italy, the local component was covered by budget allocations, without which the project could not have been realized. A similar scheme was used to complete group 2 from the same plant.

On the other hand, a powerful financial instrument is the public-private partnership, which seeks a balance in generating mutual benefits for the two sectors: public and private. The project of Units 3 and 4 at the same nuclear power plant could be a good example of this.

The second internal source is the self-financing of this type of projects. However, there are also positive experiences, the most often cited being the listing of a minority percentage of

Transelectrica SA and Transgaz SA shares on the BSE, which was a real success. External sources can be: bilateral and stabilization loans, raising funds from the international capital market (usually through bond-type instruments), sector loans and foreign direct investment.

The ability to identify and quantify risks is essential in the construction and understanding of any project financing. Many risks can be mitigated through legal, financial and contractual means. Other risks can be studied and accepted but must be well quantified.

In the situation of limiting primary energy resources, in order to achieve sustainability in this field, it is necessary that energy be produced, supplied and consumed in a more efficient way than before.

Energy policy must adopt the concept of sustainable development and refers to the following important aspects: consumer access to energy sources at affordable and stable prices, sustainable development of energy production, transport and consumption, security of energy supply and reduction of gas emissions with greenhouse effect. The need to promote renewable energy at the European level was imposed a long time ago due to the fact that its large-scale exploitation contributes significantly to the slowing down of climate changes which have started to be felt more and more recently due to the fact that they will be considerably reduced greenhouse gas emissions.

Romania's Energy Strategy 2022-2030, with the perspective of 2050, takes into account environmental constraints, the limitation of hydrocarbon resources and comes to complement the energy strategy of the European Union.

The section that addresses the international transport and transit of natural gas and oil shows that Romania must focus on pipeline projects that are realistic in terms of supply sources, transit assurance, construction financing and market demand. (Investigation report on the natural gas sector in Romania,Competition Council, February 2018)

The Romanian energy sector is today at an inflection point, with economic, political and social valences. We are the potential beneficiaries (stakeholders in the field of energy, both from the public and private sectors) of a wealth of opportunities that can generate sustainable social development, economic dynamics, energy security, regional collaboration and prestige at the European level. The extent of the benefits will depend on the quality of the decisions we make as a political and administrative system, as economic actors and why not, as citizens.

1.2. Analysis of the oil and gas industry

The aim of the work is based on the analysis carried out on the oil and gas industry to highlight the options taken by the oil companies to cross the current climate.

Today's world is fighting for a safer, sustainable economy, a more efficient industry, working towards net zero. Facing big challenges - not just the global energy crisis and geopolitical conflicts, but all climate change issues, energy companies are transforming their business model, adapting to a low-carbon world.

In addition to declining demand for some hydrocarbon products, there are other factors driving the acceleration of the energy transition, such as consumers pushing companies toward sustainability and pressure for environmentally responsible energy supplies. Activist investors are also pressuring companies to become ecological.

Oil and gas companies are diversifying and expanding their businesses into the renewable energy sector. They focus on renewable energy sources, electric vehicle charging solutions, hydrogen and carbon capture technologies.

To align with the The Zero Emissions objective of the European Union until 2050, OMV Petrom is addressing new energy technologies – carbon and hydrogen capture, use and storage to meet an increased demand for low-carbon energy from the Black Sea and is making significant investments in renewable energy, biofuels and alternative mobility.

The Black Sea ClimAccelerator program, intended to finance the most promising start-ups in Romania and Bulgaria that innovate for a more sustainable future, is also accessed by OMV Petrom to benefit from grants for the implementation of the proposed solutions totaling 300 thousandEUR of mentoring and specialized consulting for attracting investments.

Eligible solutions in the Black Sea ClimAccelerator aim to support the circular economy through technology, carbon reduction solutions, green technologies for a cleaner environment, waste management and others in order to build a sustainable and low-carbon future. Through the OMV 2030 Strategy, OMV Petrom directs to low-emission and zero-carbon solutions for a sustainable and cleaner future, approximately 35% of total investments, more than EUR 11 billionEUR (Annual report 2022 – OMV PETROM Group).

In the vision of the Zero Emissions Objective of the European Union until 2050, through the infrastructure that MIDIA GREEN ENERGY owns, it can increase the production of green energy without emissions, contributing to cover the demand for renewable energy.

The SCHLUMBERGER Transition Technologies portfolio for reducing emissions includes technologies for sustainable, reliable, high-performance and efficient operations, being focused on reducing combustion, minimizing the CO2 footprint, electrifying the infrastructure. Transition technologies support the UN Sustainable Development Goals and are mapped to quantifiable solution attributes that enable customers to make informed choices.

SCHLUMBERGER - part of the Black Sea Neptune Deep Project addresses climate change and the energy transition by decarbonizing the oil and gas value chain and investing in low carbon energy, being the first company in the upstream E&P services sector to announce in December 2019 its commitment to a scientific GHG reduction target aligned with the environmental goals of the Paris Agreement, and in June 2021 its commitment to Net Zero by 2050. To reduce operational emissions, they converted facilities to renewable energy and electrified the fleet.

With experience in the industrialization of technologies and their implementation in challenging environments, industry-leading digital capabilities, SCHLUMBERGER has developed activities in lithium, hydrogen, energy storage, carbon capture and geothermal energy. (Annual report 2022 –SCHLUMBERGER)

Major European companies TOTAL, BP, ROYAL DUTCH SHELL, EQUINOR, ENI and REPSOL continue to add renewable sources to their portfolios.

The World Economic Forum's Energy Transition Index (ETI) showed that the world has been moving towards an energy transition over the past decade to mitigate climate change that has intensified.

The COVID-19 pandemic, the subsequent economic recovery, the war in Ukraine have impacted national and regional energy systems creating imbalances between energy demand and supply, resulting in high energy prices, with a severe effect on both households and businesses.

The rehabilitation by TRANSELECTRICA of the Hasdat 220/110 kV transformer station (Hunedoara county), put into operation in 1970, an investment of over 60 million lei, brought the installations to an appropriate level of safety and reliability from the point of view energy, leading to an increase in the frequency and quality of the energy transport service and to an increase in the safety of consumers connected to the electricity transport network.

TRANSELECTRICA SA operates a network of over 9,000 kilometers of high voltage overhead power lines (400 kV, 220 kV and 110 kV) and 81 transformer stations in Romania. (Annual report 2022 – TRANSELECTRICA)

TRANSGAZ follows the transition to clean and affordable energy for Romania. TRANSGAZ's gradual transition to climate-neutral activities is being done with the help of the EIB and external experts in the context of the European Investment Advisory Hub (EIAH), through the preparation and development of a decarbonisation strategy. The strategy includes measures to help reduce carbon emissions in the transport network, mitigate climate risks, establish the level of investment and sources of financing.

The completion of this agreement with the European Investment Bank regarding the transition to a green economy, to a climate-neutral activity, is particularly timely, given the current geo-political context.

Considering Romania's extensive domestic oil and gas reserves, the House of Three Seas Agreement signed in Davos on May 24, 2022, recognizes and supports the strategic and economic importance of investments in natural gas pipeline infrastructure, thus ensuring European energy security and the energy transition in the Three Seas region.

As such, a partnership with The Three Seas Initiative Investment Fund which aims to accelerate economic development, connectivity and cooperation in the Baltic, Black and Adriatic Sea area would be an important step towards achieving the objectives of TRANSGAZ SA interested in developing strategic gas infrastructure projects in Romania to contribute to energy security and the transition to carbon neutrality.

The total estimated value of the projects is up to 626 million euros, and upon completion they will be sold to TRANSGAZ SA, which will operate the project assets in accordance with the applicable Romanian legislation.

Energy security in the Three Seas Region comprised of 12 EU CEE member states bordering the Baltic, Adriatic and Black Seas has never been more important, requiring next-generation energy infrastructure to support growing economies.

2. Material and methods

The research methodology aims to describe the activities of the company CONPET SA (the only pipeline transporter of crude oil in Romania), the collection of empirically quantified and statistically structured qualitative data, which are used to present the management of investment projects in the energy field. We also analyzed the implementation of energy projects at CONPET SA (initiation, organization and implementation).Energy has become a strategic factor in global politics, a vital component and a cost factor for economic development and the progress of society as a whole, generating a series of major concerns worldwide.

The main challenges for the pipeline transport system are the increase in demand, the replacement of non-performing and end-of-life capacities, operational safety and integration into the regional and European market.

Also as a research method, we present the SWOT Analysis prepared as a part of the professional activity in order to prepare by Deloitte the study "The contribution of the Black Sea hydrocarbon exploration and production projects to the development of the Romanian economy", 2018.

Table 1 The SWOT Analysis

STRENGTHS	**WEAKNESSES**
Natural monopoly on the crude oil pipeline transport market, CONPET being the only provider of pipeline transport services at national level; Appreciable stock market performance associated with a strong shareholding structure on the capital market in Romania; Implementation of corporate governance principles; Very good operational performance of the company, with significant improvements recently; Creating and maintaining a positive image within the national energy industry; Experience +20 years within the company of 51% of employees and stability at the level of key employees.	Dependence on a limited number of customers; Core activity with a high degree of dependence on regulatory authorities acting as an arbiter; Dependence on ANRM not only from the point of view of tariff regulation, but also for making decisions (e.g. decommissioning of pipelines, etc.); High degree of dispersion of the transport infrastructure on the national territory (24 counties); Advanced age of employees – average age: 49 years; High costs of decommissioning facilities and preserving unused pipelines; The absence of contingency plans for possible negative market situations.
OPPORTUNITIES	**THREATS**
Opportunities to improve the efficiency of the basic activity (e.g., renegotiation of contracts with suppliers); Opportunities to diversify the basic activity on the value chain of the domestic oil industry (crude oil and oil products storage services); Defining the company as a strategic player at the regional level by interconnecting the National Oil Transport System with the zonal systems; Possible financing at a competitive cost for the company, being a listed company with access to various sources of capital; Possible favorable legislative changes; The possibility of outsourcing certain services.	The risk of the customer portfolio (e.g., the possibility at a given moment of the relocation of the activity of the Lukoil refinery in Romania); Lack of interconnection of the transport system with neighboringsystems; Potentially disruptive strategic decisions of the main customers (reduction of respective exploration - production, refining - distribution activities); Degradation of the National Pipeline Transport System as a result of the low level of use; Petroleum law – no changes and no separate regime for pipeline transport; Unfavorable influences in the regional geopolitical and geostrategic context.

Source:own processing, from primary data

The comparative analysis with other profile companies that operate both regionally (European) and internationally is intended to briefly present the scope of activity carried out by CONPET S.A. within the value chain of the oil industry. Based on it, the advantages and disadvantages of the companies analyzed in the various business segments can be highlighted.

The comparative positioning on the upstream (exploration-production) - midstream (transportation and storage) - downstream (refining, petrochemical, storage, product sale) segments of the oil industry is presented in the figure below:

Figure 2. Comparative analysis of European refining
Source: own analysis

With the exception of CONPET S.A., all the analyzed companies also cover other activity segments, outside of crude oil transportation.

Comparatively, the Croatian company JANAF is the closest in size and structure to CONPET S.A.

At the level of 2018, JANAF Croatia operated a crude oil transportation system through pipelines of 622 km, with an installed capacity of 20 million tons/year, having a number of 391 employees and transporting approx. 5 million tons.(www.janaf.hr)

From the point of view of complementary activities, the company has a total storage capacity of 1.54 million m3 of oil and 202,000 m3 of refined products, which are valued both within internal contracts (storage of crude oil and petroleum products in the structure of minimum safety stocks for the national specialized agency HANDA) as well as international (ticketing services). In 2018, crude oil transportation represented 62.6% of total revenues, while crude oil storage represented 26.3% and petroleum product storage 11.1%.

The national context of the oil industry

OSCAR Downstream is the largest independent player in the oil market in Romania (a Romanian company, not affiliated with an international name) whose main activity is the trade and distribution of oil products (especially diesel). Oscar Downstream has been present on the local market since 2001, through its own network of fuel stations, and is one of the first companies to introduce the system of on-premises stations that allow the supply of large consumers exactly in the areas where they operate (transport companies, construction, farmers, agriculturists or any other type of business).

Oscar Downstream is developed around three activities: the supply of large customers (through contracts won predominantly on the Commodity Exchange), medium customers (generally independent or group fuel stations, but outside the large networks) and end users (customers with own fleets that use the Diesel Point service and the own network of stations Oscar Downstream - DIESELpoint Access). Oscar Downstream competes with the trading divisions of major Romanian oil companies, such as Petrom, Rompetrol or Lukoil.

SOCAR Petroleum Romania S.A. is the oil and natural gas company owned by the State of Azerbaijan (The State Oil Company of Azerbaijan Republic). The company is involved in activities along the entire value chain of the oil and gas industry, from the exploration of oil and gas fields, the production, processing and transportation of oil, gas and condensate, the marketing of petroleum and petrochemical products in domestic and international markets and the supply of natural gas to the industry and the public in Azerbaijan. It comprises 3 major production divisions, an oil refinery and a gas processing facility, a deepwater production platform, two trusts, an institution and 23 subdivisions that operate as corporate entities within SOCAR.

From the point of view of collaboration with Romanian companies, SOCAR is much more present in the natural gas segment, being involved in the development of huge exploitations in the Caspian Sea area (eg Shah Deniz). Thus, SOCAR has concluded collaboration protocols with the national companies Transgaz and Romgaz for the transit of Azerbaijani natural gas to the European market on the southern corridors (eg the AGRI project).

NIS Petrol Romania SRL is a branch of the company NIS a.d. Serbia, in turn controlled by the Russian giant Gazprom Neft which owns 56.15% of the shares. NIS operates two refineries in Serbia, at Pancevo and Novi Sad, power plants, plus oil fields in Serbia, Bosnia, Hungary, Romania and Angola.

In Romania, NIS Petrol has concessioned several oil and gas exploitations concentrated in the west and north-west of the country: two in Bihor county (Tria and Băile Felix) and 4 in Timiș county (Periam, Biled, Jimbolia and Crai Nou), being also the operator of these perimeters. In 2017, NIS Petrol started test operations at the exploration wells in the Periam (Teremia) – Timiș perimeter, which confirmed the existence of crude oil accumulations in the Teremia Nord field.

Serinus Energy Plc. is an international oil and gas company controlled by Kulczyk Investments, an investment fund that owns several projects in Tunisia, Ukraine, Syria and Romania.

In Romania, the subsidiary Serinus Energy - WinStar Satu Mare SRL holds a direct 60% stake in the Satu Mare concession, which covers an area of 2,949 square kilometers on the border of Romania with Hungary, respectively the production facility at Moftinu (a deposit estimated at over 100 million m3 of natural gas). Three wells were drilled in the Moftinu geological structure (Moftinu 1000, 1001 and 1002bis).

Mazarine Energy Romania SRL is a subsidiary of Mazarine Energy BV, a company controlled by funds managed by Carlyle Group L.P. affiliated companies. In Romania, the company owns a portfolio that includes 28 oilexplorationslocated in the Muntenia - Moldova areas, these being taken over from OMV Petrom starting in 2017.

The last 9 fields were taken over during 2019 and are located in the Moinești - Zemeș area, they have a cumulative production of crude oil and gas of approximately 1,000 boe (barrels of oil equivalent - n.r.)/day, and are part of the second field package to be outsourced within the upstream portfolio optimization program of OMV Petrom.

Value added chain analysis - Production (Operation) CONPET SA

The data used in the analysis are the data provided by Conpet representatives. The quality of the analysis and conclusions is directly influenced by the quality and accuracy of the data provided.

Conpet's mode of operation is divided into four main modes of transport: direct pipelines, direct Railroad, combined and import.

Profitability analysis by types of transport:

Preliminary information leads to the hypothesis that the operation is unprofitable on certain types of transport, having different factors that influence the recorded losses: Monopoly of crude oil transport; out of the 4 types of transport only 2 are profitable.

The loss of 163% for combined transport is influenced by the small volume transported and operational costs high at 241% of revenues.

The unit rate, low transported volume and high operational costs negatively influence the profitability of combined transport.

Thus, we find that the small volume transported (3% of the total transported) determines low revenues. Due to the characteristics of the market (refining capacity, decrease in oil reserves, tariff regulation by ANRM), the tariff is one of the factors on which Conpet can act to increase revenues and profitability.

However, the method of establishing the tariff is not adequate, considering the fact that there is only one tariff for the country, without being differentiated by type of transport or distance. Even though combined transport costs have decreased, their share in combined transport receipts is high -241%.

From the cost structure of the combined transport, the most significant weight is represented by the expenses with the personnel and those with works performed by third parties.

We found that fixed expenses have a weight of over 80% of the total, a situation that rarely occurs in organizations with high profitability. This, combined with low volume, turns combined shipping into unprofitable shipping. The other types of expenses that hold an important percentage are service expenses (approx. 35%) of the total.

A detailed analysis of the factors influencing the loss of 98% of the revenue collected for rail transport is needed.

The increase in railway transport costs is higher than the increase in revenues, and their share in the total is the highest, reaching 39% in conditions where the transported volume is constant, revenues register an increase (21%), but not as high as cost increase (35%). The long-term trend may lead to higher losses, given that revenues may increase at an average rate of 10% and costs at 16%. The share of transport costs by rail has the largest share (39%) of the total costs and the smallest volume transported. In conclusion, the increase in income is influenced by the annual increase in the tariff; the unitary establishment of the tariff does not allow differentiated collection according to distances - something that negatively influences the collection for this type of transport.

The unit tariff for rail transport must be modified to ensure a tariff corresponding to the services offered. Currently, the cost structure is normal considering that 80% are variable expenses. The absolute value of expenses compared to receipts for rail transport shows a loss of 98%.Only the tariff set with the railway transport service provider (GFR) is too high compared to the revenue collected. The evolution of rail transport costs is increasing, and if no action is taken, the loss will deepen from year to year.

The 34% profitability of cross-country pipeline transport is influenced by the higher volume transported.

The decrease in volume even in the context of the tariff increase caused a decrease in the revenue collected for the transportation of pipelines in the country. The 20% decrease in volume determined the decrease in revenues when the price increase could no longer replace the decrease in transported volume. If this trend (falling revenue) continues in the context of high fixed costs, the profitability of pipeline transport in the country will decrease.

Although cross-country pipeline transportation is profitable, the cost structure must be changed to maintain the profitability of this type of transportation.

In the context where fixed costs are over 80%, profitability is highly exposed to variations influenced by sudden drops in volumes. Salary expenses are the highest, 50% of the total, followed by expenses for works performed by third parties. This is where steps can be taken to improve the cost structure.

With a profit of 47%, import shipping is the most profitable, even if it has a high level of fixed costs.

Import transport has the highest transported volume, the lowest costs and revenues representing 38% of total receipts. Import transport is the healthiest, having the largest volume, 63% of the total, however, it has a share of 38% of revenues, which can be considered small compared to the share of the volume transported. This fact is also influenced by a lower rate compared to other types of transport. The existence of several clients and a differentiated tariff ensure this type of service a higher income stability compared to other services. The disappearance of a customer will not have major effects compared to domestic shipping. Currently, the evolution of costs is positive with a decrease of 9%, if the trend is maintained, profitability will not suffer.

The cost structure is not healthy, and the 51% share of wage costs is the highest among all types of transport. Even if the fixed expenses are higher than 80% of the total import transport expenses, this type of transport is the most profitable. Salary costs are the highest with a share of 51% of the total, even if a new technology (SCADA) has been implemented. Cost optimization corrective actions can be applied to salary expenses and third-party work expenses.

3. Results and discussion

For the proper functioning of CONPET SA, the profitability of the company must be followed from the perspective of the four types of transport, the mode of organization being mainly regional - by divisions.

Aligning the way the production area is organized with the way profitability is pursued will lead to increased company performance. The share of fixed and variable costs in total costs does not allow Conpet to be a flexible organization in crisis situations. Only by changing the current share of fixed and variable costs from 80% to 20%, Conpet will be able to become a flexible organization ready for changes in the industry.

To meet the estimated cost reduction potential, we have identified a number of major measures that will help Conpet increase its profitability. The first step is the optimization of personnel costs - by optimizing the compensation and benefits system and the number of personnel, it is estimated that salary expenses will be reduced by 30-35%.

The second step consists in optimizing the costs of rail transport services - the profitability of rail transport will be improved by introducing contracts based on three factors (time, quantity, distance) and allowing the transfer of penalties to Petrom. And last but not least, reducing maintenance service expenses by: Reviewing and determining the types of activities that can be outsourced; Review of the outsourced maintenance plan; Search for suppliers that meet the quality criteria, Selection and negotiation; Monitoring of execution, evaluation of works and services; Evaluation of suppliers.

The main challenges for the pipeline transport system are the increase in demand, the replacement of non-performing and end-of-life capacities, operational safety and integration into the regional and European market. In this sense, it is necessary to implement the projects (Developmentstrategy, www.conpet.ro).

Projects for the development of the current activity (transport of crude through pipelines and railways)

The project to interconnect the national crude oil transport systems through pipelines from Romania and Serbia (Pitesti – Pancevo oil transport pipeline) - under the current conditions, a pipeline between Pitesti and Pancevo would provide an alternative transport route for the Pancevo refinery whose shareholder the majority is the company NIS Gazpromneft, under conditions of increased efficiency (reduction of the transport tariff and reduction of the total supply time compared to the traditional route).

Projects to develop some activities related to the current one:

1 Transport of finished products (gasoline and diesel) through pipelines on the Pancevo-Timișoara link - Gazprom Neft Serbia Company (the majority shareholder of the Pancevo refinery) owns a significant number of fuel stations in Romania, which is in the process of expanding towards a target of 120 stations. Practically, the company is interested in replacing the transport by road tankers from the refinery to the distribution stations in Romania, with the transport through pipelines, this being recognized as the most efficient from an economic point of view.

2 Participation in the activity of establishing minimum mandatory stocks (oil or petroleum products) by using existing capacities or building new capacities - The obligation to maintain minimum stocks of oil and/or petroleum products is regulated by EU Directive

119/2009, which is transposed at the level national through Law 130/2013. According to the provisions, the responsibility for storing crude oil and petroleum products rests with private companies that introduce on the market more than 1,000 tons of crude oil and/or petroleum products per year (500 tons from 2018, with the amendment of Law 130/2013).

3 Leak detection and location system. For the period 2023-2025, Conpet proposes to continue the works for the realization of a "System for the detection and localization of product leaks from the main crude oil transport pipeline system", for a number of 21 sections with an estimated value of 12.6 million lei.

4 SCADA system optimization and CONPET Telecommunications. For the period 2036-2040, Conpet proposes, once again, to implement the optimization of the SCADA system (completed in 2021) and the Hard and Soft upgrade of the Data Transmission and Automation System used by CONPET S.A., with an estimated value of 18.8 million lei and a duration of 4-year implementation. For the period 2032-2035, after the expiration of the 15-year lifespan, a new modernization of the own telecommunications system is required (completed in 2017).

5 Patrimonial Geographical Evidence System (GIS) within CONPET. By installing such a system, benefits are obtained regarding the reduction of losses in case of breakdowns as well as the impact on the environment and the impact of the environment on the potential for aggravating the effects of an operational incident, the system will contribute decisively to the optimization of the maintenance activity and implicitly to the efficiency of the national system of Transport.

6 Rehabilitation of the Pipelines that undercross the Danube River and the Borcea Branch. For the period 2022-2040, Conpet proposes to start the execution of the pipelines that will cross the Danube/Borcea in the version resulting from the completion of the solution study. The realization of the sub-crossings related to the 28" and 20" Constanța-Bărăganu pipelines, on a total estimated length of 4 km, has an estimated value of 116 million lei with an estimated completion period of 4 years.

7 Modernization of the national crude oil transportation system by: Continuation of the pipeline replacement program, based on the inspection of pipelines with intelligent go-devil and damage history; Program for the rehabilitation and resizing of the tank parks in the heritage of Conpet SA in accordance with the quantities to be transported.

The investment works are financed from own sources representing the modernization quota and other own sources of financing (profit and depreciation).

The volume of investments required to implement projects to develop new activities, related to the basic one and to define the Company as a regional player, requires access to the financing programs of the European Union, the non-reimbursable funds, definitely representing a priority in this regard. Romania's geostrategic position and crude oil resources can help CONPET become a significant player in the region, but only if it will be able to develop and adapt SNTT to real and safe transport scenarios, and its own financial effort will be reduced by attracting non-refundablefinancing.

In this context, CONPET will continue the efforts to identify financing opportunities from European funds, will monitor the operational programs and priority axes that may target possible access to structural funds and will manage the necessary procedures for accessing non-reimbursable financing for projects aimed at modernization/re-engineering/ SNTT development.

In addition to the operational programs, CONPET S.A. will also monitor other funding programs (e.g., the Juncker Investment Plan, the European HORIZON 2020 Program).

As regards the risks at the national level, in the last half-yearly reports of the essential players on the national oil market (OMV Petrom, Rompetrol and Petrotel Lukoil) it was found that all of them recorded significant losses generated by the sudden drop in demand, syncope in supply with raw materials and the evolution of crude oil prices.

Conclusion

Following the analysis of the contextual framework in which CONPET S.A. operates, and the SWOT Analysis (Table 1), we structured the conclusions at the international and regional level (European Union) and at the national level.

At the international and regional level (European Union) the unpredictability of crude oil price evolution will continue to affect the global economy. For the horizon of the 2030s, globally, it is estimated that the demand and supply of oil/oil products will be mainly influenced by: the production cost of crude oil from unconventional sources, the impact of new technologies in offshore exploration and production in deep sea waters, such as and oil demand dynamics in emerging Asian economies. In Asia there is a tendency to build new large capacity oil refineries.

According to the directors of the oil refining industry interviewed by Bloomberg, of the 104 refineries in Europe, 10 will be permanently closed by 2021, in countries such as France, Italy and the Czech Republic. (source: www.mediafax.ro)

Within the European Union, the perspective of the years 2022-2030 will focus on reducing dependence on oil, a policy closely related to climate change and the massive promotion of renewable energy resources. Technologies related to alternative energy sources to the consumption of crude oil have been developed and are supported in the European Union's policies on reducing carbon emissions.

In the downstream European/regional refining segment, it is expected to reduce the decline of refining capacities, by increasing investments in the field of making existing capacities more efficient and implementing superior technologies that allow the increase of refining margins.

At the national level in the upstream segment - exploration and production of crude oil, the downward trend will continue until the years 2025-2030 after which a steep decline is expected. According to the data presented in the Energy Strategy of Romania 2022 – 2030, with the perspective of 2050, the decrease in crude oil production will reach approximately 1.7 million tons in 2030 and up to 1.15 million tons in 2050.

The massive decrease in domestic production and the moderate increase in the consumption of petroleum products - especially in the short and medium term, will generate an increase in the amount of imported crude oil (assuming the country's refining capacity remains the same). This fact is also supported by the future programs of the main domestic producer - OMV Petrom, which constantly evaluates the benefits obtained by supplementing the quantities processed with imported crude oil.

The projections of specialized analysis of the downstream segment-refining and sale of fuels take into account a relatively constant consumption until 2025, the arguments being the balance between demographic decline and energy consumption and the impact of electromobility at the level of important economic sectors.

Under normal operating conditions in a stable business environment and without major disruptive events, the cessation of refining activity in Romania is unlikely. A decrease is possible due to the evolution of demand and pressure from other competitors.

After 2025, an important decrease in fuel consumption is expected, generated by the major impact of the expansion of electromobility and in the freight transport / industry sectors.

In the evolving context of the national energy sector and the oil industry, for CONPET S.A. it becomes evidently necessary to identify and expand the activity in new development areas / markets. Ex: The production of electricity from renewable sources, by building two microhydropower plants on the Prahova river and by using natural gas; Conveying water for irrigation by converting unused pipes. The investment works are financed from own sources

representing the modernization quota and other own sources of financing (profit and depreciation).

Also, in order to expand the activity at the regional level, it will be necessary to rigorously monitor some opportunities to take over some possible regional/international players and/or participate in partnership in possible international mixed projects, both from the scope of the company's core activity and the markets identified as relevant in said analysis.

In this paper, we aimed to highlight the impact that investments can have on the potential for improving energy efficiency and the impact on consumption, knowing or making assumptions about the technological level, the cost of equipment, the degree of their penetration on the market and the behavior of consumers.

In the situation of limited primary energy resources, to achieve sustainability in this field, it is necessary that energy be produced, supplied and consumed in a more efficient way than before. Unless changes are made in the way energy is produced, transported and consumed, humanity could face a major energy crisis in the coming decades.

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