

THE REGIONAL IMPORTANCE OF EFFICIENT ROMANIAN NATURAL GAS STRATEGIC PLANNING. STUDY CASE – THREE SEAS INITIATIVE

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Abstract

This study provides a critical analysis regarding the Romanian national strategic planning, focusing on its implementation within the energy field (strictly concerning the natural gas). Thus, considering the high development potential of the Black Sea Romanian natural gas resources, the vulnerabilities arising from the governance level should be efficiently tackled in the future. Based on the national strategic planning theory, the research design will briefly analyze the main characteristics of inefficient public planning framework, while insisting on the current effects. The energy national strategic planning is even more vital in Romania, where the state partially owns the primary natural gas producer and distributor (Romgaz - 70%) and the only natural gas infrastructure developer and transporter (Transgaz - 58,5%). Thus, implementing risk-reducing strategies becomes critical. Furthermore, the paper supports immediate action for Romanian natural gas sector development, 2020 being considered as the last opportunity. In the last section, the Romanian strategic planning will be defined as essential for a secure regional energy environment. The main research question aims to tackle how Romania can improve its national strategic planning, starting with assuming past lessons and moving towards a coherent framework and immediate policy implementation. The methodology will focus on qualitative instruments, briefly analyzing within a study case the regional impacts within the Three Seas Initiative context. The results will emphasize that Romanian institutions should consider business experience for efficient strategic planning, being concerned about how to deal with new competitors, deploying assets, and restructuring its planning framework, while changing its strategic perspective. All the process would help the Romanian energy sector to design their future actions for obtaining better results within a new European green policy and a highly competitive market for energy developing projects.

Keywords

Black Sea; natural gas resources; national strategic planning; Romanian energy sector; Three Seas Initiatives.

Introduction

In a highly changeable and globalized world, it is more and more challenging to separate the national matters from the external ones. Regarding the energy dimension, no country can strategically plan its energy resources without taking into consideration outcoming implications. The current context is affected by substantial technological, economic, and political changes, more effects being visible following the current global economic crisis.

During the last decades, Romania has enjoyed an excellent energy opportunity in the offshore natural gas field discoveries. The first gas fields discovered in Midia block (Doina in 1995 and Ana in 2008) reach 10 bmc (billion cubic meters), while significant findings from Neptun Deep Perimeter (approximated to 42-84 bcm in 2012), and

Trident perimeter (estimated at 30 bcm in 2015) (Investment Reports, 2019) overpass 100 bcm together. Romania has been facing a great chance to be an active part of the European energy security effort. However, efficient national strategic planning is mandatory. Thus, how has been Romania tackling strategic energy planning, and how can it improve its regional status?

Business experience: important lesson for efficient national strategic planning

Starting from business experience, Paul Bracken emphasized how the American military sector can be improved by implementing basic concepts of strategic planning. He analyses three types of existing strategic planning (the simple and the standard one), adding a more complex framework composed of *core, environmental and hedging strategies* (Bracken, 1990, p. 2). His central assumption is that states should learn from business experience how to efficiently plan their national resources, being aware of current and prospective problems, and foreseeing opportunities.

Within the simple type, for defining its strategy, the interests are statically linked with their environment. As a critic, Bracken emphasizes that simple strategic planning does not distinguish between operations (methodically responding to short term changes) and strategy (sophisticated analytical approach for reacting, preventing, or determining long term changes).

The standard strategic planning is evolving from the simple one, including *the construction of alternative environments* (Bracken, 1990, p. 10). It implies secondary action plans that can be accessed within a changeable environment. Though, the critic is that alternative environments are not fully included within the strategic planning, or they are not objectively defined. Misunderstandings can appear when national actors confuse alternative strategies with the principal one (there is only one strategy that can be followed at a time) or when they ignore the long-term effects of short-term actions.

As an improvement from the previous types of strategic planning, Bracken proposes an advanced model of strategic planning composed of *core environments, alternative environments, and possible exogenous contingencies* (Bracken, 1990, p. 12). Thus, each environment has defining features, representing the core elements. For example, in the case of the Romanian public sector, a high level of bureaucracy can be considered a core characteristic, which can influence communication efficiency between public energy actors and foreign investors. From this point, Bracken distinguishes among core, environmental and hedging strategies, all of them being complementary. The first type is defined starting from the policy nucleus, which is static and common to all existing or alternative environments. Usually, national policies focus on changes rather than explaining why a particular situation remains the same. However, the process of national strategic planning should start from the question: What are the unchanging features of future Romanian energy security? What will remain stable even in the long term?

Starting from a static core, Bracken insists that efficient strategic planning can favorably shape a specific environment through an *environmental-shaping strategy* (Bracken, 1990, p. 14). This concept is focused more on foreseeing opportunities and creating supportive contexts. Even so, external contingencies can arise anytime, imposing

difficulties. For handling them, creating *hedging strategies* (Bracken, 1990, p. 15) is an instrument of combatting possible future crises and increasing crisis management capabilities (allocating the needed resources). They also have a significant purpose in finding a balance between conflictual policies over time. The planning success comes from being prepared for combating uncertainty. Furthermore, most importantly, it should provide very realistically, what decision-makers can do for implementing effective policies.

The foremost critics regarding Bracken's theory express that, within continuous change and uncertainty context, it still provides an imperfect framework to cope with it. It is challenging for national public institutions to act as easily and quickly as companies, from bureaucratic, legislative, and other prerogatives. Though, it is essential to emphasize that national strategic planning complex framework could create adequate national policies.

Integrating energy security into national strategic planning

How is energy security defined in the Romanian literature? Cristian Băhnăreanu analyzes it as part of economic security, considering that achieving it "depends on the capacity of the state to both aggregate resources internally and to gain or to maintain its access to external economic resources" (Băhnăreanu, 2008, p. 13). Thus, prices and diversity of energy supply sources are both critical and necessary. Moreover, correlating his vision with energy market globalization, states should exceed the national goal of achieving energy independence and focus more on developing sustainable energy interdependence. At this level, intermediary states could play a key role in managing the producer-intermediary-consumer relation, with substantial implications for consolidating regional energy security. Here comes the most significant opportunity for the Romanian energy sector: becoming a regional supplier (see BRUA projects) and an intermediary state (within European energy projects).

Continuing in the same note, Vasile Iuga addresses, through policy papers, to the Romanian political actors. As a reaction to ongoing Romanian political debate, Iuga aims to explain the differences between energy security and energy independence, emphasizing that the latest has a strong autarchic valence and can contribute only partly to achieving energy security (Iuga, 2014, p. 4). To reshape its energy policy, Romania should act both at the national level by supporting cooperation between the public and private sector; and on the regional level, by continuing its interconnecting projects. Massive investments in energy transmission and exploitation infrastructure, as well as a more active presence within European energy policies, is vital.

Main issues within Romanian national strategic planning

Even if Paul Bracken's theory was released in the '90, in the Romanian case, public strategic planning has not yet overcome the standard type, a clear distinction between short and long-time vulnerabilities lacking. There is an ongoing practice to ignore changeable environments and not define hedging strategies. Mostly, changes within national policy arise only after the environmental ones are more than obvious, decreasing adapting instruments' efficiency.

Legislative unpredictability in national energy sector

As an example, Romanian Energy Strategy 2016-2030 mainly focuses on core strategies (mandatory step for policy standardization). When planning from a static perspective, it determines national policymakers to remain focused on results and ignore possible environmental changes, losing great opportunities. As stated within the strategy (Figure 1), 2016 considers onshore and offshore natural gas production a priority, essential for a competitive gas market (Ministry of Energy, 2016, p. 1).

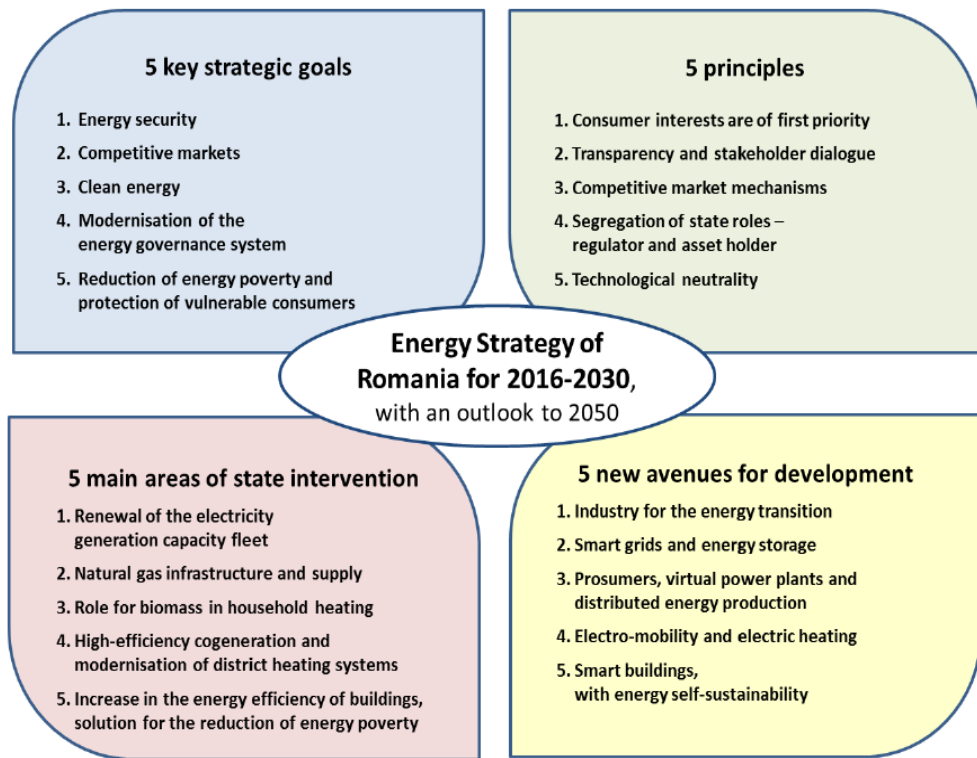


Figure 1 – Elements defining the Energy Strategy of Romania for 2016-2030, with an outlook to 2050

Source: Romanian Ministry of Energy, *Romanian Energy Strategy 2016-2030, with an outlook to 2050* (2016), p. 1.

Two years later, the Emergency Ordinance no. 114/2018 switched focus towards short-term financial benefits coming from natural gas exploitation and wholly ignored that a more and more competing international market may arise in the future. Its main action was to establish a centralized gas market (The Government of Romania, 2018), from a liberalized one (see Article 43). Centralizing the energy market for the next three years strongly affected its natural mechanisms. Based on the debate about whether resources should be capitalized immediately or maintained for the future, the Romanian Government decided to limit natural gas exports, strongly affecting foreign investors' confidence regarding their supposed investment recovering. As stated within the theoretical section, the concept of energy security has been wrongly implemented within national policies, both owning monetized natural resources and being highly interconnected with neighbors representing mandatory pillars.

Defining vulnerable consumers also revealed a case of legislative unpredictability. The regulations from 2018 expressed above did not state the exact criteria of how the Government can support its vulnerable consumers. During State Emergency (March 16 – May 14, 2020), adverse effects came, the 4th Military Ordinance (March 29, 2020) capping all energy prices (Romania Insider, 2020). Thus, the Romanian Parliament aimed to defer utility bills for individuals and legal entities whose incomes have been declining in the past three months. Alternatively, all energy consumers were able to benefit indiscriminately, imposing real financial deficits for energy companies. As a spontaneous correction, a clear definition of vulnerable consumers was required within the Law on Utilities Postponement in April 2020, stating that until May 1, 2020 (in time of international pandemic), the Romanian Government must finalize the process.

Thus, Romanian policymakers have a long-going intervening practice without completely taking into consideration medium and long-term consequences. The risk is that, while intervening, some policies can have severe long-term effects. The Offshore Law no. 256/2018 has emphasized that, once a series of normative acts were adopted in 2018, it is still challenging to correct their effects (two years later, in the summer of 2020, national institutions are still in the process of reviewing it).

Delayed Actions

Within the last year, Romanian energy institutions recognized that the Energy Strategy is not adequate to the current context, working on updating it under the name Energy Strategy of Romania 2019-2030, with an outlook to 2050. However, it is still in process because of new needed national studies, which clearly emphasizes organizational adjusting incapacity to a changeable environment. Moreover, it also shows that Romanian national actors have an insufficient capacity to learn their lessons to increase future efficiency.

Institutional capacity deficit

After more than a decade since natural gas offshore discoveries, Romanian policymakers were not able to offer both legislative stability and a win-win situation for foreign investors. Assuring mutual economic benefits is highly essential for final investment decisions since every company is interested in a stable and sustainable profit. For example, since 2012 (Neptun Deep field finding), Romanian policymakers have negatively affected their collaboration with Exxon Mobile, the principal foreign investor, which last year announced that it would sell its concession rights (50%).

Current effects of inefficient national strategic planning

As an effect of 2018 legislative restrictions, one year later, the internal market was already affected, importing gas becoming cheaper than producing it. The natural gas imports increased (with around 6% only in the first semester), later market liberalization not bringing advantages to domestic consumers.

The Government failed to understand that foreign investors were waiting for improved national legislation. Inadequate conceptualization has been jeopardizing the whole national planning. Thus, in July 2019, ExxonMobil gave up on its investment plan from

Neptun Deep offshore perimeter (estimated in 2018 of being able to reach 6.3 bcm annual production), representing more than half of Romania's current gas production (11 bcm per year) (Reuters, 2020). Considering that Exxon Mobile was the primary investor owning both financial resources and know-how, its departure will delay offshore exploitation.

Currently, Romgaz should be part of the new managing Neptun Deep consortium. Participation acquisition is significant for continuing offshore implementation. In 2019, Romgaz repeatedly expressed its interest in buying a 15-20% minority stake from the 50% Neptun Deep concession rights that Exxon Mobile owns. Considering that Exxon Mobile invested 750 mil USD until the current date, 15%-20% would represent 112-150 mil USD. Additionally, another 3 billion USD should be invested in this project by 2025, from which Romgaz should contribute around 450-600 million USD. Taking everything into consideration, Romgaz should spend at least 600 million USD until 2025 only for Neptun Deep perimeter, while its 2020 budget allocates only 1 million USD for both Black Sea offshore partnerships and electricity production/storage (Romgaz, 2020). It is important to emphasize that its budget was defined in March 2020, not taking into consideration the impact of the international crisis.

Nevertheless, Romgaz has other simultaneous projects, focusing on developing Mintia gas powerplant and increasing its national storage, injection, and natural gas extraction capacity. Thus, it is clear that Romgaz does not have resources to be a central stakeholder in the Neptun Deep perimeter. Considering that the Russian company Lukoil is directly interested in this project, the stake also becomes geopolitical.

Another vital energy company aiming to invest in Midia Black Sea offshore is Black Sea Oil & Gas (65% share), which previously announced that gas production would start in mid-2021. In February 2020, it warned that the Offshore Law should have been changed until that time; otherwise, legal action against the Romanian state would be opened (Romania Insider, 2020). Most recently, in March 2020, within the new international context, it already announced that its investment would be adapted to new economic changes, the 1st Romanian offshore gas project after 1989 suffering delays.

OMV, another critical investor (owning 50% concession right in Neptun Deep Perimeter), is also reducing its total global investments in 2020 with 200 million euros. Regarding Romania, unclear and unfavorable offshore investment legislation determined it postpone its exploiting project until further progressive legislative changes (Global Business Club, 2019).

As briefly demonstrated, not having a clear energy strategy was very harmful to Romania, creating political disputes, increasing national fiscality, and bureaucracy. The opportunity of massive Black Sea investments was missed, which could have been a real plan for economic recovery during the current international crisis.

Unlocking the potential of the Black Sea natural gas - 2020, the last opportunity

Why is it a vital moment to change the strategic planning approach, defined as the last existing opportunity for Romania?

1) According to the experience, Romania has difficulties in defining and following a coherent policy path for achieving its strategic goals. Almost a decade has passed since discovering the most considerable offshore natural gas resources and no real benefits were monetized in the national economy.

2) It was declared into the national discourse that achieving better energy security is directly linked to exploiting Black Sea resources. Energy is representing Romania's long-term prosperity (Ministry of Energy, 2016, p. 4). Using natural resources would provide significant progress for achieving regional energy security (influencing Romania's regional status), opportunities for re-industrialization, and a more sustainable and decarbonized economy (exploited natural gas could replace the current amounts of carbon).

3) Romania should do anything possible to regain investors' trust, which was continuously jeopardized in the last years. The recent legislation regarding offshore gas resources has determined several large energy companies (OMV, Exxon Mobile, Black Sea Oil & Gas) to rethink their willingness to invest. It is imperative to emphasize that Romanian companies do not own either necessary know-how or financial resources to replace foreign investors.

4) Starting in 2021, the European Investment Bank will financially support only projects focused on renewable energy, following European green policy. Considering that natural gas energy is not regarded as sustainable, how will Romania manage to continue its developing projects after 2020 in the eventuality of further delays? Romania received a large loan (150 million euro) for developing BRUA phases on its territory. At the moment, the project is not yet finalized (new expected deadline in December 2020), even if the first due deadline was in 2019. Also, regarding other European financial mechanisms (such as Transition Fund and Projects of Common Interest), the European competition for accessing them is highly increasing.

5) The natural gas international market has continuously transformed: more and more natural gas fields are discovered (especially in Africa and South America), and fewer funding sources are available (during the global crisis, all international actors will rethink their investment projects). The LNG trade is gaining more and more international influence, which can determine future lower demands for natural gas exports.

Three Seas Initiative – emphasizing regional implications of inefficient national strategic planning

Can the Black Sea region be considered one of the principal vulnerabilities of the Three Seas Initiative?

Since its initiation in 2016, Three Seas Initiative has gained more attention on the European level, connecting subjects of high interest for all 12 member states: transport and energy, with substantial implications in other sectors (especially economy). Considering the complicated Black Sea geopolitical context, its future developments are critical for successful results. Thus, the Black Sea region can be viewed as a geopolitical

vulnerability of the entire regional cooperation framework, imposing severe implications. The main sustaining arguments are:

1) The geopolitical context is sensitive: The investment projects are indirectly affected by Ukrainian conflict proximity and its insecure borders. Even if the Crimean annexation is mainly unrecognized, the Russian Federation influences de facto more than 50% of Ukrainian offshore resources, increasing Ukrainian dependency on its gas. As a replica, Kyiv is focusing on developing several large offshores with different Western companies (see Dolphin field), but the implementation phase takes time. From the Romanian side, the Black Sea natural gas map has a substantial impact on national investment projects (especially offshore ones). For example, the largest Ukrainian gas field – Skifska - which detains more than 250 bcm, is situated in the area close to the Romanian Neptun Deep offshore perimeter (Cohen, 2019). With a de facto controlled Crimea, the Russian Federation might inquire new prerogative within the Black Sea area, profoundly affect all existing exploiting activities. Moreover, borders insecurity can determine foreign investors to postpone their operations, with effects on the entire regional energy security.

2) The lack of resources at the regional level: Some members have the lowest incomes and European funds absorption capacities from the whole initiative (Romania and Bulgaria), determining less available national funds for implementing interconnecting projects. The decision to create the Investment Fund is welcomed, but, as it can be witnessed, during the international crisis, the implementation timeline can be affected.

3) The uncertain energy security status: Ukrainian company Naftogaz and Russian Gazprom renewed their agreement on using the Ukrainian transport network to continue exporting Russian gas to Western countries only one day before expiring. Both Ukraine and European countries are heavily dependent on Russian exports (Naftogaz Group, 2019). Moreover, interconnecting projects between the Republic of Moldova and Romania (pipeline Ungheni-Iași) have not been finished in time, adding more influence for the Russian energy companies, which have already secured their future transactions.

4) Nevertheless, the high dependence on Russian gas of Hungary and Bulgaria (100%) emphasizes the need to provide alternative energy sources. If the Black Sea Romanian natural gas is not exploited and distributed, both countries will continue to import Russian gas massively. Both countries have high importance for natural gas transit, which makes them vital for successful regional development. Considering that the Russian Federation is not willing to sacrifice its national interest for regional cooperation (see the Ukrainian crisis), alternative energy sources should be secured.

The regional role of Romania for energy projects

Romania assumed an active role within the Three Seas Initiative in 2018 during its presidency, supporting a series of integrated projects. As a strategic goal, Romania can play one of the central roles in achieving regional objectives of the Three Seas Initiative, starting from its potential role in providing regional energy supply and becoming, through interconnection projects and strategic investments, a regional hub.

First of all, the BRUA pipeline project aims to improve the Romanian National Transmission System, integrating it within the Bulgaria-Romania-Hungary-Austria corridor (phases 1 and 2). Theoretically, phase 3 should increase transit capacity in the eventuality of a heavily exploited Black Sea natural gas. Considering the current context, phase 3 remains uncertain, being highly dependent on Romanian offshore and onshore exploitations prospects (Three Seas Initiative Summit, 2018, p. 14). The project would assure that the exploited Romanian gas is distributed at the regional level, transforming Romania into a connection point for Caspian gas coming from Bulgaria towards the Central European market (Hungary and Austria).

BRUA project has been submitted to the Three Seas Initiative board by Romania, promoting a permanent two-way flow between Romania-Bulgaria and Romania-Hungary. According to the official plan, the Romanian gas transmission capacities would reach 1.75 bcm annually to Hungary and 1.5 to Bulgaria (in the first phase) and 4.4 bcm to Hungary, and 1.5 to Bulgaria (in the second phase) (Three Seas Initiative Summit, 2018, p. 16). Though, considering that initial deadlines for both stages have been consequently delayed (the first phase should be finalized at the end of 2020 and the second one most probably in 2022), additional pressure appears for Romanian transmission system development and raises questions regarding Transgaz's efficiency. It is important to emphasize that, compared to other competing gas transmission projects from the region, BRUA transmission capacities are modest. However, they are mandatory for enforcing regional interconnectivity and building new infrastructures between four member states.

Romania is also a partner country in the Romanian-Hungarian-Slovak gas transmission corridor, supporting the same bidirectional capacity of 4.4 bcm annually between Hungary and Romania from the BRUA project. The gas transmission corridor further links Hungary to the Slovak Republic with an annual gas transmission up to 5.2 bcm (Three Seas Initiative Summit, 2018, p. 22). Both projects are mandatory for establishing the European Union priority corridor, especially the Priority Corridor North-South Gas Interconnections in Central, Eastern, and South-Eastern Europe. Their success depends on how Romania will develop its national energy system (including exploiting existing natural gas resources and exploring new ones) while interconnecting itself with neighbors.

The natural gas transmission interconnection Ungheni-Chisinau is another strategic project where Romania is a key actor. The expected deadline for completing the second stage has been completed in July 2020, postponed from December 2019 (Necsutu, 2020). The new pipeline connects the Republic of Moldova to the Romanian infrastructure, offering Chisinau the possibility to receive gas from Europe, the Caspian Sea, the North Sea, or other locations (Greece or Norway), opposite to the Russian gas which was previously highly dependent. Though not completing the pipeline construction in time imposed many difficulties for the Republic of Moldova, which before the end of 2019 did not intend to prolong its importing contract with Gazprom, but in December 2019 was forced to do it. During the current international crisis, Romania needs to prioritize its public investments and secure its interconnection projects, which have a significant national and regional impact.

Actions for a better national strategic planning

Following the main business principles, Romanian national energy actors are already facing external threats similar to companies: foreign competition (discoveries of other natural gas fields in Europe and world-widely), high government regulation (centralized energy market), and unstable economic context (current economic crisis arising from COVID-19 pandemic). The decisional process requires too much time, a change of strategic planning perspective being crucial.

Nationally, Romania must assure unilateral support from all political institutions regarding the natural gas sector to prevent future legislative changes. Currently, it was decided that the new Offshore Law will be adopted only within the Parliament, but a concrete action fails to appear. Improving general corporate governance is necessary for state-owned companies, lowering implementation and balancing it with other prerogatives. As an example, the Government should already strategically plan how it will use the royalties coming from the Black Sea offshore. Complementary, an elaborate liberalization plan should integrate the measures for supporting vulnerable consumers and combating energetic poorness.

Implementing an efficient and coherent green plan for Romania following the European energy policy (National Plan for Energy and Climate Change 2021-2030) should be complemented by promoting Romanian projects for decarbonization. The new European Fund for Transition (around 40 billion euros) will raise regional competitiveness between Poland, Germany, Romania, and other countries with a high percentage of coal-based energy. Besides continuing the liberalization process for natural gas and electricity markets (according to the established timetable), increasing renewable energy should be a long-term goal. Romania should see the opportunity of balancing its energy mix towards a greener future while using available European funds. As an international inspiration, Romania could implement virtual power plants, combining more renewable energy sources (wind, solar, and hydro) to influence each other in different weather conditions positively.

Regionally, within the Three Seas Initiative, a lower political focus is towards the Black Sea region. Romania should continue to promote consistent European involvement, especially in challenging times. As an example, Ukraine recently signed the Energy Community Accession protocol, adjusting its energy market to the European requirements, while it is relying exclusively on Russian supplies and continuously witnessing increased energy prices from Gazprom by 50% (compared to Bulgaria). Moreover, Romania should focus on completing regional infrastructure development projects (such as BRUA) and combatting future delays from inefficient management by improving its legislative and procedural framework. Any delay can affect future productivity in front of competing pipelines. Turk Stream is already proposing a triple flow comparing to BRUA, aiming to fuel Bulgaria, Serbia, and Hungary by overpassing Romania.

Conclusions

Starting from a resource allocation perspective in 2018, Romanian institutions are currently into the transition towards a long-term planning strategy. The Romanian

national strategic planning should not spontaneously tackle arising difficulties, and implement hedging strategies, calibrating all public efforts.

Thus, finalizing free-market transition for natural gas and electricity is mandatory for assuring transparency while regaining investors' trust and offering suitable prices to domestic consumers. The Romanian Government should ensure that part of national resources will be traded nationally, not by imposing restrictions, but by efficient national development. Its planning should involve a strategy on how offshore revenues should be spent, respected by all future governments to provide coherence and low financial waste.

On the regional level, the implementation of regional projects (such as ones within the Three Seas Initiatives projects) should continue to improve energy security and solidarity between member states. For further research, there comes the question: How will European countries react? Will they still support regional cooperation or will take a more nationalist position? There is an additional argument for Romania to enforce its energy security, in a region where the U.S.A. can quickly become absent, the Russian Federation remains committed to its geopolitical goals, and the European Union - currently bewildered in the context of BREXIT and increasing nationalism - needs to remain united.

Moreover, developing commercial ties are vital nationally and regionally, promoting consistent partnership between policymakers and private companies (efficiently linking legislative framework with market prerogatives). Romanian policymakers should take into consideration critical opinions from the business environment, foreign companies, and industrial actors to provide win-win solutions (efficiently linking legislative framework with market prerogatives).

This paper does not ignore the fact that it is challenging to foresee all alternative possibilities. However, a sophisticated approach to strategic planning can determine efficient future national strategic planning, providing national and regional benefits. Moreover, the theoretical framework is deriving from a business perspective, which means that it might not be entirely applicable to the public sector. Still, it is emphasizing some central elements of how national strategic planning can be improved in Romania. These central concepts can represent a starting point for shaping efficient strategic planning, not restrictively to the energy sector.

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