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Long term energy strategies and policies: challenges

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Abstract

Energy is at the top of the global agenda today so the article proposes an overview and identification of the major challenges brought by the development of energy strategies and policies. Romania's energy strategy requires an update given that in the existing one was not well estimated the evolution in energy field and should have been correlated with different sector from the economy. The aim of this paper is to offer an overview and a better understanding about the challenges over energy sector and about general steps for organizing a project for developing a new strategy.

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1. Introduction

Long-term policy challenges are defined as “public policy issues that last at least one human generation, exhibit deep uncertainty exacerbated by the depth of time, and engender public goods aspects both at the stage of problem generation as well as at the response stage” [1].

The purpose of the paper is to have an overview and to identify the major challenges in the process of developing a long term energy strategy and to propose a general structure for organizing a project to develop a new strategy. An important step is to identify the influences and the correlation between energy sector and other areas of the economy.

In 1972, at the Stockholm Conference, the interest was focused on issues raised by nonrenewable resources in accordance with the emergence of geopolitical tensions about oil. The existing concerns regarding the relationship between resources, growth and environment was recognized at the Conference.

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Energy could be considered as a connection point between sustainability and globalization processes but is still an unresolved issue the interaction between energy and economic growth.

Europe's energy sector is in the midst of a major transformation. Its gas and electricity sectors are moving from public monopolies into competitive private companies in liberalized markets and electricity generation is being decarbonised, with strong growth of wind and solar power in particular. At the same time, alternative gas supplies are being developed and diversified and the transport sector is becoming more fuel efficient and starting to use cleaner, alternative fuels [2].

Europe is very much concerned about diversifying its gas supply sources after the Ukraine crisis. The countries of Central and Eastern Europe (CEE) have an opportunity to transform Europe's current energy order.

In 2007 the Romanian government approved a long term Energy Strategy build on the National Energy Strategy on Medium Term [3].

The government's strategy emphasizes:

- increasing energy efficiency;
- boosting renewable energy;
- diversifying import sources and transport routes;
- modernizing lines;
- protecting critical infrastructure.

Romanian Energy Strategy [4], for the period 2007-2020, sets the target to reduce energy dependence on imported fossil fuels through three ways: through renewable resources, promoting the use of domestic coal with CCS technologies, and through nuclear energy. Romania was planning to diversify energy supply routes (LNG, Nabucco for gas supply, PEO for oil), and to develop gas storage and interconnection capacities.

The Austrian Energy Agency [5] analyzed the Central and Eastern Europe in terms of energy policies, energy efficiency and renewable energy. In Romania targets were set through the Romania's National Energy Efficiency Action Plan and Romania's National Renewable Energy Action Plan (NREAP). For Energy Efficiency targets for energy savings were established: 41% of decrease should be in buildings, 29% in the energy sector, 16% in industry and 14% in transport. The reduction should be accomplished through programs (63% of the energy intensity decrease) and promotion of high energy efficiency standards for new installations (37%). For Renewable Energy the target set for 2020 had to be accomplished through a support scheme for production. The plan was approved by European Commission but did not anticipate the "boom" for this sector. So, in the year 2013, the Government decided to modify the scheme and the legislation because the target set for 2020 was reached.

But currently the energy strategy is outdated by evolution in energy market. The construction of wind and solar production capacity has exceeded the established plan leading to the necessity to stop support programs in this field. The renewable boom was not only in Romania but at European level also, exceeding the expectations.

According to Transelectrica (The Electricity National Transmission System Operator) [6], the total installed capacity of production and available in the system, in dispatchable units, at July 2014 was 21435 MW. From this, the renewable sector (solar, wind and biomass) represent 3159 MW, installed power. The renewable assumed targets for 2020 have been accomplished since 1 January 2014 according to National Regulatory Authority for Energy.

For an update on strategies and energy policies is required the correlation between energy efficiency policies, renewable policies, economic development plans and changes in the industry structures, environmental protection and sustainable development policies as well as the ones for energy security, and beyond.

2. Challenges for long term energy strategies and policies

Long-term energy strategy is a statement of intent and support of a state and gives confidence to energy partners that, with the main political changes in field, direction remain constant.

The methodology used for research is characterized by an empirical approach based on the comparative method and try to identify and analyze through literature reviews, similarities and concept that could be applied in Romania.

The first analysis after the Energy Strategy was adopted in 2007 showed that the strategy included controversial measures [7]. At that moment, Constantinescu [7] indicated that a revision of strategy is required due to the strategic

measures that do not encourage the investment especially in the electricity and thermal sector. He concluded that the document was not based on solid and transparent analysis and does not promote enough renewable energy, distributed generation and energy efficiency.

Before the development of big renewable projects in wind and solar technologies, Constantinescu [8] concluded in his research that the target set for 2020 through the Energy Strategy could be increased at 45% due to the fact that Romania already produced 30% of energy through hydro power. But, for this to be achieved, a stable political and legislative environment it is necessary. Due to the fact that at 1 January 2014 Romania reached the target set for 2020, the hypothesis formulated in 2008 could easily be reached.

The main body of literature on energy security focuses on the geopolitics and dependencies of fossil fuels (especially oil and gas), and the functionality of electricity systems. In this context, countries have increasingly focused on energy security, driven by a sustained rise in many commodity prices, an awareness of growing competition for resources and specific events or circumstances which have disrupted energy supplies unpredictably, such as the Ukrainian crisis and the Libyan revolution.

Romania, through President Traian Basescu, proposed in 2006 at NATO's Riga Summit that NATO should get involved in securing the energy infrastructure and routes adjacent to Black Sea area due to Russia regional policies and interests. NATO did not assume such a role considering that this is a political and economic issued not a military one [9].

Romania shows a great potential in European energy projects due to the geostrategic position at the Black Sea, which, is not exploited precisely from lack of realistic long-term strategy. The natural gas has a great potential of development in the Black Sea Basin. There are three strategic options: to increase the productivity of mature conventional wells through new extraction technologies; new finds in the continental Black Sea shelf; to explore and develop shale gas [10].

Developing a long-term energy strategy must be accompanied by specific policies and instruments. Methodologically, development implies both goals and means, where goals are often expressed as long-term aims while means are mainly formulated in short-term policies.

The new European Union energy strategy [11] set out five priorities:

- Promoting a low energy consumption in Europe, energy efficiency;
- Development of a integrated pan - European energy market;
- Empowering consumers and achieving a high level of safety and security;
- Europe: leader in energy technology and innovation;
- Strengthening the external dimension of European Union energy market.

The Commission considers that an interconnected and integrated internal energy market will increase energy security through competition and mechanisms for external supplies disruptions. European Commission in 2008 stated that: "interconnection and solidarity within the internal market is not only a natural feature of an integrated market-based system but is equally essential to spread and reduce individual risk" [12].

As a result, energy policy must have in center the demand, empowering consumers and decoupling economic growth from energy consumption, especially the transport and construction industry where is necessary savings and the transition to non-polluted sources and promoting energy efficiency.

The economists propose for Central and Eastern Europe a 'big bang' approach for economy in witch quick privatization and liberalization before the creation of a stable legal – institution framework was promoted after Communist regimes. After the economy evolved integration into European political and economic network was proposed [13].

Romania, as a European Union member country has the responsibility to integrate European directions, policies and strategies in the national ones, of course, adapted to the country.

Due to the long term challenges and problems, Sprinz [14] propose a few options for the policymakers: "sugar daddy" solution, commitment to rule-based decisions, intergenerational accounting and liability.

In Romania, but not only, the economic crisis has slowed for a short period the increasing of energy consumption in both the household sector and the industrial sector through restructuring of the industry.

Dynamics of changes in the energy field and the dependence of other sectors indicate the need for specialized forecasting methodologies to develop various scenarios in order to build a long-term strategy. The study conducted by firm Roland Berger Strategy Consultants, although it has a very solid knowledge base and diverse notes, however, concluded that future provision is difficult, that unforeseen events can play an important role, even the best minds can err, and technological inventions can change anything.

Developing a sustainable energy strategy implies a full analyze, knowledge and future development scenarios of the following areas: energy demand and carbon emissions, renewable energy, fossil fuels, infrastructure, oil and transport, nuclear energy, security and supply [15]. This should be analyzed at national but more on international level due to the fact that Romania is part of EU and the EU policies have to be transposed at national level and the common target is to have an integrated and liberalized energy market.

To achieve long-term projections in these scenarios must be taken into account achieving long-term economic stability, to actively pursue the measures to protect the environment, optimal functioning of the markets for electricity and natural gas, supporting research and production development of new technologies across the energy chain and environmental protection [16].

For Romania, a number of factors with an impact the energy field require clarification in order to shape the direction of energy development [16]:

- A long term vision of macroeconomic evolution, economy structures and social and demographic evolution;
- The future of nuclear energy sector;
- The liberalization of energy market; This should reduce regulations, major investments in generation capacity, changing supplier, shift to renewable but could lead to higher prices and employment may drop [17];
- The development of National Energetic System in the context of renewable energy boom;
- The methodology of applying energy efficiency policies;
- Development of legislative initiatives to attract private investors;
- Empowering and educating the energy consumers;
- Solving the problem of affordability of the electricity bill to household consumers and developing a national strategy for household heating;
- Reducing the energy losses through promoting efficient cogeneration and thermal rehabilitation;
- Promoting DSM measures [18] – saved energy is cheaper than that produced. There is a particular need for working with regulators, governments and investors to promote regulatory frameworks that accommodate the changing nature of managing demand.

Therefore, the energy sector is a nexus for the interaction between the private and public sectors. For elaboration and implementation of Energy Strategy it is necessary to be involved all parties from the energy chain: generation, transmission, distribution, supplier, consumers. In order to satisfy the energy demand it is necessary to point out the objectives for energy infrastructure (modernization, retrofitting, new generation, others) [19].

Following the steps proposed by U.S. Department of Energy, a possible approach for developing a future energy strategy in Romania that can help save money, create jobs and improve national security could follow the next steps [20]:

- Establish the developing team: could be the Romanian Government or an authorized group/supplier;
- Identify and engage stakeholders: because they have valuable insight to offer and provide ideas; Energy future rest in the hands of public and private sector (the energy chain from producers to consumers, from state companies to private companies and the communities).
- Develop an energy vision: this will set the energy future direction about goals, actions; The vision should be shared with the Community.
- Assess the current situation of energy and project future scenarios; To achieve the energy vision is important to know the current situation in demand and supply, inventory of policies, plans, projects and programs in related fields and future scenarios.
- Develop energy goals and strategies: long-term goals and short-term policies in order to establish the framework for the actions that will be proposed. This will help in tracking and measuring progress.

- Identify and prioritize actions: developing possible actions such as policy, programs or projects. A system for ranking and evaluation criteria should be established.
- Identify financial strategy: funding sources vary over time but it's the most important to identify potential financing sources. This step should involve the state officials, institutions and interested stakeholders.
- Develop the Blueprint for implementation: in order to set out the specific deliverables, deadlines, monitoring and evaluation in order to accomplish the strategy. This will be the reference guidelines for all parties to ensure that activities are moving in the right direction.
- Plan the monitoring and evaluation: this should offer the possibility of adjustment of strategies to correct and update for deviations or unpredictable events;
- Develop, Adopt and Publicize the Strategy by the Government: is critical for the Strategy to be formally adopted and to be an official commitment to its implementation.

The estimated time for accomplish this kind of project is 10 months but should be reanalyzed when condition in the market or country changes. In a market in constant change is necessary to develop several scenarios that capture the evolution on different directions. Developing economy is closely linked to the evolution of the energy field but to predict needs and direction must be examined in energy related fields.

A big challenge in implementing a long time strategy is Time Inconsistency. Even if the decisions were made by a single unitary actor this challenge would still be there. For this challenge were analyzed three options that could be used for Long – Term Climate Policies but this can be applied for energy also. The solutions for coping with Time Inconsistency are: the strategy of eliminating alternative options, the strategy of tying hands and the strategy of rational ignorance [21].

Long-term strategies should not take into account the electoral cycles of 4-5 years that are not necessarily the ideal solution to cope with problems.

3. Conclusions

The global context for the energy strategies is a very different economic outlook to that of ten years ago. Energy sector was affected by the collapse of financial market through the economic crises. Energy's basic utility nature means that it must remain affordable to avoid inequality, to preserve competitiveness and to ensure public support for the sector's structure.

In order to develop a better and realistic Energy Strategy, this paper contributes by identifying the best approach through the general steps proposed for organizing the process of developing a strategy. This should be continued with the research for best methods of developing scenarios in order to decide the best direction in energy for the country.

A better understanding of the relations between energy and security could enhance the opportunities for developing national and supranational policy strategies with a good balance between environmental, economic and security objectives.

Facing the consequences of climate change, ensuring the competitiveness of industry and granting secure and accessible energy to all citizens are key elements that will characterize strategies and policies in the long and very long term (until 2050), and which will require a radical transformation of the energy system and of society in general.

Finally, the importance of promoting highest standards and best practice in environment, health and safety, and social aspects should be reiterated in every developed strategy and policy in any field.

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