

Modern Trends in Energy Policy of Persian Gulf Countries

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ABSTRACT

Article analysis the modern processes of energy policy of Persian Gulf countries and main issues of providing energy policy of countries in Persian Gulf were examined. Besides, some recommendations and conclusions are given due to develop bilateral and multilateral cooperation with Gulf countries. As well as, the economic viability of the renewable energy sector is becoming increasingly apparent to Gulf governments, given the potential for high-intensity solar heat, geothermal and wind resources. However, such renewable resources are subject to supply fluctuations, and it is therefore recognized that they are best used in combination during periods of peak demand, while another alternative – nuclear power – can provide a continuous and mature source of electricity throughout the year.

KEYWORD: Energy policy, energy resources, Gulf countries, renewable resources, Arabian Monarchies

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The organizational and functional features of the group of monarchical dynasties of the Persian Gulf in the context of the restoration of traditional, and in the case of their depletion-renewable energy resources are called trends in regional hydrocarbon policy.

Any energy source has its own characteristics and requires both scientific and technical, as well as political and economic research. Note the main subgroups of energy carriers:

- oil and gas – convenient, easy to store, but geographically concentrated in limited places (let's call, say, the Strait of Hormuz);
- coal – rich in energy, but requires processing of large territorial areas, which leads to movements of the earth's crust and climate change;
- renewable energy sources such as wind turbines and solar panels do not emit greenhouse gases, but require large areas;
- nuclear power – the most unique is the mass energy production in each kilogram of uranium fuel – almost a million times the energy density of the fossil fuel. For this reason, nuclear energy has a large number of advantages (relatively small amounts of waste) and disadvantages (potential use in nuclear weapons)².

² strategy to reduce the consumption of hydrocarbons for energy production should obviously include all possible components. We believe that moving towards this goal requires efforts to improve energy efficiency, the use of renewable sources (at least suitable for use in the Gulf), and, in fact, the development of the nuclear energy segment.

Let's focus on the last point, so that it becomes clear what kind of subspecies of energy carriers which Gulf States are already betting on in the long term at the present stage.

Firstly, it is important to take into account the technical component. The minimum amount of fuel for the annual operation of a nuclear reactor is 1 thousand tons /W is 200 tons of uranium. Thus, the price of uranium fuel varies between 2-4% of the cost of energy produced. Low fuel costs and high energy density allow the country to have reserves of nuclear fuel for at least two years³.

Secondly, the geopolitical and economic composition of hydrocarbon production, as well as their location on fairly limited geographical areas of the earth, demonstrates the regularity of the process of their possession by legitimate or illegitimate means. From this point of view, nuclear energy does not play any significant role except for the very possibility of creating WMD.

Third, the raw materials needed to operate nuclear reactors are not a rare type of fossil resource, and almost all countries have deposits of uranium and plutonium. Nuclear power plants require 2-5% low-enriched uranium, while the creation of nuclear weapons requires at least 20% high-enriched, weapons-grade fuel. In this regard, the issue in the development of nuclear energy is to ensure security measures against nuclear weapons⁴.

³World Bank (2016b) How is Saudi Arabia Reacting to Low Oil Prices? <http://www.worldbank.org/en/country/gcc/publication/economic-brief-july-saudi-arabia-2016/> Accessed 25 August 2016.

⁴ Aggarwal, V.K. (2015) Petro Diplomacy: The Political Economy of the Volatile Oil Prices. Arab Gulf States Institute in Washington.

Opponents of nuclear power are concerned about the possible proliferation of nuclear weapons. Nuclear weapons technology is now more than 65 years old, and advances in everything from computers to carbon composites for aircraft are reducing the technological barriers to entering the arms race.

The potential link between peaceful nuclear power and weapons can be reduced through strategies such as fuel leasing. Under this approach, large countries will produce nuclear fuel, lease this fuel to individual countries, and return the spent fuel for disposal. Such a strategy requires international obligations to provide nuclear fuel to any state that meets the obligations of the NPT. To be successful, the leasing strategy also requires the use of domestic waste management systems that can accept small amounts of foreign spent nuclear fuel⁵.

Japan and France are examples of achievements in the field of peaceful nuclear energy. In this case, the Japanese nuclear project is a consequence of world war II. After that, Tokyo came to the conclusion that war is not an effective way to achieve energy security. The French nuclear power program is a consequence of the Algerian war. France and Japan chose sophisticated nuclear power technology, not because it was popular, but the alternatives were worse. Atomic energy in these countries is part of a broader policy that includes high-speed electric trains, efficient vehicles, and other measures to reduce oil and gas consumption.

The high energy density of uranium not only makes it an affordable option for countries seeking energy independence, but also produces relatively small amounts of waste relative to hydrocarbons. Regarding the price of electricity, radioactive waste from power plants can be disposed of in geological storage facilities at a low price. This technology is currently being used for the disposal of hazardous chemical waste in Europe and defense-related transuranic radioactive waste at the US Department of Energy's waste management pilot plant in New Mexico. With coal and gas, this was unattainable, due to the large amount of these energy carriers.

A comparison of different energy sources shows that the overall risks for nuclear power are lower than the alternatives, even taking into account the nuclear accidents that have occurred. The risk of accidents results from concentrated waste, which is the result of a concentrated energy source. Nuclear fuel is not controlled by unfriendly and unstable regimes. Only small amounts of nuclear material need to be processed to provide a large amount of energy. These are the main characteristics of nuclear power and remain the strongest argument.

Countries that are fairly dynamically developing national economies face high rates of demand for energy and desalinated water. It is estimated that the expected demand for electricity in the monarchies will exceed 120 GW in 2032⁶, and unless alternative energy conservation and efficiency measures are taken, the total demand for fossil

fuels for energy, industry, transport and desalination is estimated to grow from 3.4 million barrels of oil equivalent per day in 2010 to 8.3 million barrels of oil equivalent per day in 2028⁷.

In order to create an energy program that can meet a significant part of this growing demand, as well as to develop technical knowledge, skills and experience, monarchial States are seriously considering using a balanced combination of economically viable and technically feasible nuclear and renewable energy sources. The introduction of alternative energy sources will significantly reduce the use of oil for power generation and water desalination, which will ensure a longer-term availability of hydrocarbons for export and use as raw materials in the national industry.

The economic viability of the renewable energy sector is becoming increasingly apparent to Gulf governments, given the potential for high-intensity solar heat, geothermal and wind resources. However, such renewable resources are subject to supply fluctuations, and it is therefore recognized that they are best used in combination during periods of peak demand, while another alternative – nuclear power – can provide a continuous and mature source of electricity throughout the year.

Due to the close political, economic and energy cooperation of the Arabian monarchies with the United States, the former had no interests in promoting their own nuclear program for the peaceful exploitation of the atom. On the contrary, most of them (Qatar, Bahrain, and the United Arab Emirates) supported the creation of a nuclear-weapon-free zone in the region. The GCC anti-nuclear initiative was linked to the Gulf countries' ratification of the NPT and joining the work with the IAEA⁸.

The political position of monarchies on the issue of nuclear weapons remains unchanged: as opponents of the proliferation of this type of weapon, countries show a growing interest in peaceful nuclear energy. The GCC member States are conducting a joint study on the feasibility of developing peaceful nuclear programs, the purpose of which is to reformat national economic strategies by shifting domestic demand for electricity to an external export-oriented course.

In preparation for the research, the GCC countries are engaged in a lively dialogue with the IAEA in order to obtain conclusions on the feasibility of using nuclear energy in the region for electricity generation and water desalination. At this stage, the IAEA has focused on the following aspects:

- identify current and future needs of the countries of the region in the field of electricity generation and desalination of water;
- consider the possibility of at least partially meeting these needs through the economically sound and safe use of nuclear energy;
- define the main requirements for institutional structures, legislation and regulations, as well as for the

⁵Abi-Aad, N. and Panzer, C. (2015) Challenges Facing GCC Oil and Gas Exports. Gulf Research Centre. Cambridge.

⁶Bhargava, A. (2015) 'The Long Term Impact of Low Cheap oil on the GCC'. Gulf Newsletter 16 May 2016

⁷United Nations Office for Disarmament Affairs. NPT. - Status of the Treaty // Available: <http://unhq-appspub-01.un.org>

⁸Callen, T., Cherif, R., Hasanov, F., Hegazy, A. and Khandelwal, P. (2014) Economic Diversification in the GCC: Past, Present and Future. Washington: International Monetary Fund.

human resources that will be needed to implement such a joint project;

- joint formulation of future tasks with the GCC⁹.

The Agency concluded that the use of nuclear energy for electricity generation and water desalination in the GCC countries is one of the cheapest options that is available. The monarchies were offered General recommendations on procedures and step-by-step measures for the development of a joint nuclear energy program, as well as on legislative, legal and institutional aspects¹⁰.

The GCC General Secretariat cooperates with the Agency on the basis of a technical cooperation agreement, which is aimed at creating targeted national projects in the field of nuclear energy. This agreement allows the Gulf monarchies to carry out research on the formation of the legal framework, logistics structure and targeted programs for compliance with the international framework governing the global non-proliferation system. This is one of the key trends in regional energy policy. In recent years, its essence is increasingly associated with such a concept as energy supply to the state, the principal components of which are improving energy efficiency, energy intensity and energy conservation.

The development of the nuclear power industry in the Gulf As a full-fledged energy supply complex for the countries of this region is a regional political trend. It seems that it primarily relies on legal and so-called regulatory infrastructure. However, no less important are the relations between the countries of the region themselves, as well as producers and consumers of hydrocarbons in the conditions when nuclear energy will become an organic and integral part of the economy of the Persian Gulf countries.

The political and economic aspects of the “nuclear issue” in the region will lead to changes in the world economy, in particular, in relation to global prices for fossil energy resources. This circumstance will affect the economic policy of both exporters and importers in one way or another. The possible transition of the Arabian monarchies to cheap nuclear energy is, in fact, a foreign policy course independent of the raw material economy.

The current state of the regional energy policy of monarchies balances between the Western (Euro-Atlantic) and Eastern (Asia-Pacific) demand for energy resources, with each side trying to strengthen its position in the region as a reliable partner and ally. In this regard, nuclear energy seems to be a kind of catalyst for external influence on the internal energy processes of the Gulf States¹¹.

In this regard, the Emirate of Abu Dhabi, which has signed an energy agreement with a large Korean company KEPCO on the installation of 4 nuclear reactors on the territory of the state, deserves attention¹².

⁹Colombo, S. (2012) Unpacking the GCC's Response to the Arab Spring. Rome IAI.

¹⁰Chatham House (2014) Regional Tensions and Internal Community Relations in the GCC. London, Chatham House.

¹¹Colombo, S. and Ragab, E. (2015) Foreign Relations of the GCC Countries amid Shifting Global and Regional Dynamics. Gulf Research Centre. Cambridge.

¹² ENEC Corporation (Emirates Nuclear Energy Corporation) is implementing the nuclear energy program in the UAE. The official

It is believed that “basic competitor” of the UAE at this stage can only be Saudi Arabia, which created the state organization King Abdullah City for Atomic and Renewable Energy, whose goal is to develop and implement by 2020-2030 from 40 to 60 nuclear reactors with a capacity of 60 GW of energy with 50 GW of the country's non-nuclear potential at the current state¹³.

As for other GCC countries, their current economic situation does not allow them to expand the scope of research in this area, because they do not have the necessary technological, financial, legal, logistical or territorial capabilities¹⁴.

In comparison with other countries in the Gulf States, the conditions for the energetic construction of nuclear power plants are more favorable, which is explained by the following important points:

- mainly, authoritarian regimes rule in the Arabian monarchies, and this circumstance minimizes the potential risks of discontent on the part of the local population or interdepartmental contradictions that oppose the construction of nuclear power plants;
- the financial infrastructure of the countries of the region is such that it can afford to create alternative energy sources, including nuclear power¹⁵;
- the Gulf States have a wealth of experience in building industrial and infrastructure megaprojects in the region;
- nuclear energy in the region, due to a number of economic and geopolitical indicators, is more accessible in comparison with other regions;
- monarchies have vast territories for the production of both traditional and alternative types of energy¹⁶.

It is noteworthy that one of the important aspects of creating the nuclear industry, while maintaining the hydrocarbon segment of the economy in the monarchies, is the possibility of increasing the oil recovery coefficient of deposits and reducing harmful emissions during oil production. The increase in energy production is not due to complicated measures for technical modernization of the industry, but rather by redirecting domestic spending potential to exports. An example is the indicators of Saudi Arabia (the sixth position in the world according to 2017 data), amounting to 113 million rubles. tons of oil per year, which, under the conditions of their reasonable use, can increase the qualitative and quantitative indicators in the energy

source of information on this issue is the company's website www.enec.gov.ae/index/

¹³Nuclear Energy: Can It Be the Choice for Sustainable Future. - Istanbul, 2015. - 15p.

¹⁴In particular, Qatar finds it difficult to conclude agreements with individual States (China, the Republic of Korea, Japan, etc.) on the implementation of the nuclear program in the country; Oman, due to economic and financial restrictions, cannot afford a one - time contribution for the purchase of nuclear equipment; Kuwait does not have a legislative framework for legitimizing nuclear energy. But the most difficult problem is Bahrain, whose territory does not allow the construction of an independent even small nuclear power plant.

¹⁵Devarajan, S. and Mottaghi, L. (2016) Whither Oil Prices? <http://www.worldbank.org/en/news/press-release/2016/07/27/whither-oil-prices/>

¹⁶In this case, the exception may be Bahrain, located on 30 fragmented Islands of the Gulf with a total territorial mass of 765.3 km². This fact encourages the state to participate cooperatively in the creation of alternative energy.

industry, at least by at least 50%. When using standard technologies, an average of about 35% of oil can be extracted from an oil field, while the remaining 65% remains unfolded¹⁷.

The policy, as well as the method of production/processing of hydrocarbon raw materials, together with specialized petrochemical processes, is based on a technology that provides for the combustion of a sufficient level of the same hydrocarbons in a thermal power plant. These are so-called energy-intensive processes that, when redirected towards sales, will lead to the release of an additional volume of hydrocarbons. In addition, oil refining requires a constant source of hydrogen, which is currently mainly produced from methane during the reforming process¹⁸.

Nuclear power will produce hydrogen by electrolysis of water, which will also release an additional volume of hydrocarbons.

Hydrocarbons are the most compact and easy-to-use energy carrier. There will always be demand for hydrocarbons. Moreover, their value will increase as the available reserves decrease. Consequently, reducing the irrational use of hydrocarbons by introducing alternative and nuclear energy industries in monarchies is perceived as one of the important tasks of the energy strategy.

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- [9] In this case, perhaps the exception may be Bahrain, located on 30 fragmented islands of the Gulf with a total territorial mass of 765.3 km². This circumstance

¹⁷Mari L. The Economic and Prestige Aspects of Abu Dhabi's Nuclear Program // The Nuclear Question in the Middle East. - Columbia/Hurst, 2014.

¹⁸ Reforming refers to the processing of gasoline and high-octane fractions of oil to produce high-quality gasoline and other types of hydrocarbons.

pushes the state towards cooperative participation in the creation of alternative energy.

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