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ADVANTAGES OF RENEWABLE ENERGY SOURCES IN ENERGY SECURITY OF THE SOUTH CAUCASUS REGION

Abstract

By covering economic, social, environmental dimensions sustainable development creates opportunities to raise humanity conditions. Energy is one of the core elements for achievement of sustainable development. Sustainable energy ensures every country's economic development, furthermore, contributes close cooperation among the countries and thus promotes regional collaboration. The article focuses on sustainable development in the context of energy security. Energy security contains not only access to reliable energy resources, security of energy corridors, but also protection of the environment. Per rapid economic growth, high demand on energy consumption, as well as degradation of environment and demographic rising stipulates use of alternative energy resources.

The geographic location, its rich natural resources, strategic energy and transport corridors, as well as unresolved conflicts make the South Caucasus very important, complicated, simultaneously sensitive region. In comparison with EU countries, there is not a unique security and cooperation mechanism among Caucasus countries. The article studies necessity for the use and improvement of renewable energy sources in the region.

Key words: sustainable development, energy security, renewable energy sources, South Caucasus region.

Sustainable development is a development that meets the needs of the present, without compromising the ability of future generations to meet their own needs (Sustainable Development Commission of the UK). Sustainable development integrates social, political, cultural, economical development and environmental protection; and ensures better conditions for a life with quality, as well as, improves human conditions. And, energy plays an important role in all mentioned dimensions of sustainable development. Energy is heating, lighting, cooking, producing and manufacturing, transportation, construction, means of social and economical development.

Sustainable energy is one of the factors contributing to achieve sustainable development. Sustainable energy ensures every country's economic development, furthermore, contributes close cooperation among the countries and thus promotes regional collaboration.

Socio-economic development of the country is closely linked with energy security. For countries energy security means either markets for their natural resources, or a growing economy for a better life. The World Bank Group classifies energy security as a mean to facilitate economic growth, through this, poverty reduction; and directly improve the quality of people's lives by broadening access to modern energy services (The World Bank Group Briefing paper, p.3). According to the EU's long-term strategy energy supply security is a tool

ensuring for the well-being of its citizens and the proper functioning of the economy, the uninterrupted physical availability of energy products on the market, at a price which is affordable for all consumers.

Though there is not a unique definition of energy security, however, accessibility to reasonable cost, availability of reliable resources, as well as sustainability are the key elements in various approaches. Energy security is not only a matter of available resources, demand, cost, and protecting the transport systems. It is strongly related with economic growth, trade and financial concerns, environmental issues, as well.

Future scenarios about energy security are focused on use of renewable energy sources. Several factors, including close linkage between economic growth and energy demand, availability of traditional reserves, depletion of fossil fuels as finite resources, environmental problems stipulate use of renewable energy sources.

We usually think and talk about energy security in terms of national security. Increase in energy demand is highly observed in developing countries, while few countries have resources to supply global energy market. High dependence on energy import makes the domestic economy vulnerable; simultaneously raises the risk for the clash of national interests. Energy supply is a core factor in the energy security of the rising economic powers, such as BRIC countries - Brazil, Russia, India, and China. According to the report (2005) of Chinese government shortage in energy supply is one of the five factors which could hamper economic development of the country. It is not a coincidence that, regions with rich hydrocarbon reserves are of interest to such big energy consumers as US, Russia, China, and the EU. Some observers even analyze the situation as a potential input for a new “cold war”.

Moreover, traditional energy resources are situated in unstable regions with stubborn conflicts, weak state structures, and unresolved countries. As international phenomenon terrorism also jeopardizes security of transport pipelines. In this regard, secure and reliable energy supply is a key dimension in energy security. On the other hand, use of energy resources as a political tool, potential oil and gas supply disruptions, vulnerability through the fossil imports raises the question of diversification of energy resources, as well.

Estimated depletion of fossil fuels, as well as many environmental problems, including global warming, pollution, ozone depletion, and acid rains intensifies energy security concerns. The “role” of fuel-based industry as a contributor to environmental degradation is undeniable. Fossil fuels produce 80% of the global energy; simultaneously it causes 60% of greenhouse gas emissions.

In connection with these factors, renewable energy sources are evaluated as one of the key initiatives to address energy security problems.

Contrary to fuel-based energy generation broad availability, very low risk of gas emissions is advantage of renewable resources. Renewable resources account for only 17% of the total energy production in the world (Azərbaycanın gələcək enerji mənbələri – günəş, külək və su). Renewable energy currently accounts for just fewer than 7% of Europe's total energy consumption and 15% of its electricity generation (Paul Belkin (2008), p.23).

Solar, wind, hydro, geothermal resources, biomass are the main sources to create renewable energy. Countries have different renewable energy portfolios. Central American countries, Philippines, Iceland have installed geothermal power stations; France, Canada, India, China, Great Britain have developed hydro power stations, the Czech Republic and Portugal have financially supported solar energy facilities; Germany, USA, the Netherlands, and the UK have constructed wind farms.

Advantages of renewable energy in the South Caucasus region

The South Caucasus region is located at the crossroads of Europe and Asia, and it includes Republics of Azerbaijan, Georgia and Armenia. The region has abundant natural resources, and Azerbaijan is the only regional country with vast hydrocarbon reserves.

Table 1 - Oil and gas resources of the Caspian region

	Proven oil resources (low/high range) (bbl)	Oil potential resources (bbl)	Proven gas resources (Tcf)	Gas potential resources (Tcf)
Azerbaijan	7 / 12.5	32	30	35
Iran	0.1	15	0	11
Kazakhstan	9 / 17.6	92	65	88
Russia ▲	0.3	7	n/a	n/a
Turkmenistan	0.5 / 1.7	38	71	159
Uzbekistan	0.3 / 0.6	2	66	35
Total Caspian Sea Region	17.2 / 32.8	186	232	328

Source: US Energy Information Agency

▲ Only regions near the Caspian included

Bbl – billion barrels, Tcf – trillion cubic feet

It is not a coincidence that, after the dissolution of the Soviet Union the country became the interest of regional and great powers trying to be a leading one in exploitation and transportation of oil and gas resources. Though to its rich hydrocarbon reserves, recently the government of Azerbaijan is focused on the development of renewable energy systems. Several factors can be considered as determinants of necessity for the development of renewable energy system in the region.

The first factor is abundant renewable resources of the South Caucasus countries providing to install hydro, solar, and wind power stations. Their development will be economically beneficial for the countries. According to estimations, wind potential of Azerbaijan allows saving 1 billion tones of fuel and producing 25% of total electricity. It is estimated that hydropower stations annually generate 10% of total electricity in the country and capacity of the rivers provide opportunities for the further development of this sector.

The second factor is geopolitical situation in and around the region which could impede realization of the energy potential. Stability is one of the major aspects for the developing energy resources and involving foreign investment. Though the geographic location, rich natural resources, strategic energy and transport corridors the South Caucasus is very sensitive region. First of all, South Caucasus is particularly acute region where separatist regimes as Nagorny Karabakh, Abkhazia, South Ossetia create fertile ground for terrorist activities and organized crime. At the same time, persistence of unresolved conflicts impedes establishment of unique regional security system and mechanisms. Secondly, South Caucasus is situated at the juncture of unstable regions with stubborn conflicts and tension, weak state structures. Central Asia is a region with weak states and a transit zone for trafficking. Weakness in the region paves the way for sub-state actors to affect the regional security, and flourishes environment for routes trafficking drug, arms, and humans. Black Sea basin is an unstable region with conflicts, as Moldova continues to suffer from dispute in the Trans-Dniester region; the conflict in Chechnya has effects on Russia's Black Sea territories; basin countries have suffered from terrorist attacks for decades on a local level. The Middle East is a militarized region characterized with stubborn conflicts and tension. Notwithstanding military operations in Afghanistan and Iraq, the situation has not yet been normalized in these countries.

On the other hand, such terrorist groups as PKK, KADEK, Al-Qaeda network, the Islamic Movement of Uzbekistan (IMU), Harakat ul-Mujahidin, Armenian terrorist groups, Chechen separatists, Ansar al-Islam operate in and around the region. Just to mention that, since 1970s energy infrastructure is one of the major targets of terrorist attacks. Though such

different efforts, as construction of pipelines through the ground or US supported “Caspian Guard Initiative” for training of the local experts, security of energy infrastructure is still on the agenda. Of course, all these factors intensify energy security concerns, including guarantee of transportation corridors, as well as oil and gas platforms, security of employees.

The third factor is environmental issues. Collapse of the Soviet Union has resulted with political, economic and social changes, which have set many problems, including environmental issues in the former union countries. Rising energy demand, exploitation and consumption of traditional resources causes damage on environment.

Finally, development and use of renewable resources would prevent dependence on import of oil and gas resources. Though the different forecast on period, fossil fuels are expected to drain and it means dependence of the domestic economy on import.

In this respect, renewable resources will reduce energy security risks at a national level.

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