

**ENERGY BALANCE AND CURRENT STATE OF ENERGY SECTOR OF THE
KYRGYZ REPUBLIC**

Abstract: Though transition from central regulation to free economy has caused many economic and social difficulties for the Kyrgyz Republic, it has inherited from the Soviet times a decent energy system that used to be able to secure stable growth and development. However, lack of investment into energy generating and distribution systems during the transition period has brought the country to a severe energy crisis that, coupled with the global financial crisis, has significantly damaged the achievements of the transition period. The article is an attempt to characterize the energy legacy that the Kyrgyz Republic inherited from the Soviet times and to summarize the current energy balance in an effort to explore the solutions to the crisis in the energy sector.

The power resources and energy supply of the Kyrgyz Republic are estimated as satisfactory to meet both the present and future demand for energy¹. However, potential opportunities of the energy generation and distribution complex have been utilized to an insignificant degree, and during last 20 years of transition from central regulation to free economy the efficiency of the energy industry has decreased due to underinvestment. Therefore, the Kyrgyz economy faces substantial difficulties and fails to supply enough energy to meet both industrial consumers' and households' demand for energy. Heavy dependence of the republic on imported fuel resources results in high vulnerability of the national economy to external shocks.

In the Soviet period the Kyrgyz power system was part of the Central Asian energy grid system. After the collapse of the Soviet Union, Kyrgyzstan has received a legacy of the power plants and power lines located on its territory. During the early independence years "Kyrgyzenergo" was established, the state-owned vertically integrated enterprise engaged in the production, transmission and distribution of electricity throughout Kyrgyzstan. This organization has recently been converted into separate companies. Reforming the energy sector, the Kyrgyz government refused from subsidies, modified the payment system to improve the financial condition of utilities companies and privatized companies involved in distribution and transmission of electricity.

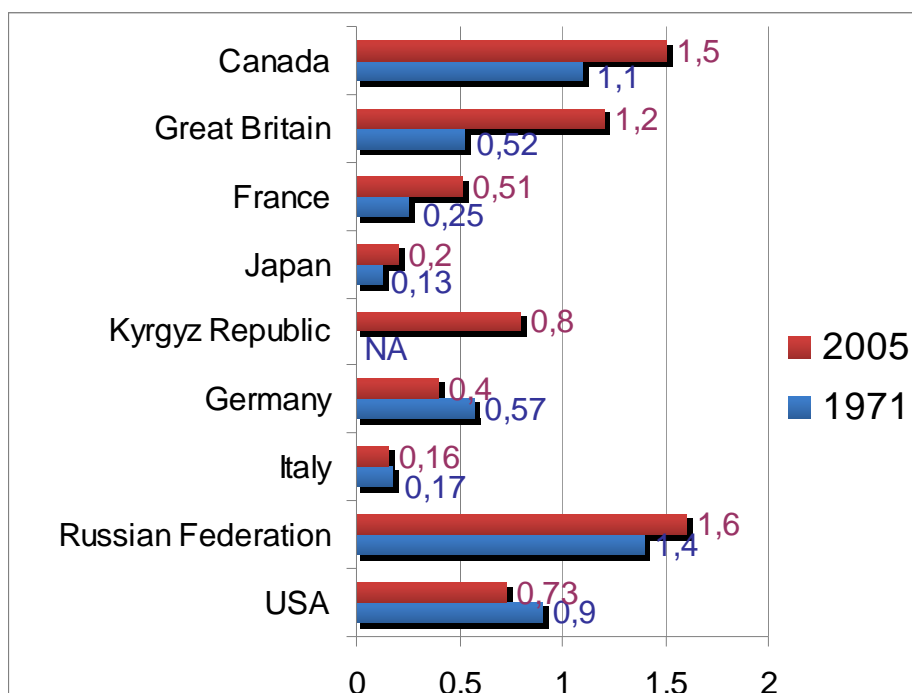
The Kyrgyz government took steps in 1998 and 1999 to set the legal foundation for the development of Kyrgyzstan's energy market, with the intention of leading to the commercialization and privatization of Kyrgyzstan's energy sector. Laws were adopted related to electric power, oil & gas, energy conservation, and licensing, and private ownership of land. There was also a law enacted concerning foreign investment. The Kyrgyz State Energy Agency worked out guidelines for rate policies, and set up rules for users of electricity and district heat.

As of today, the energy sector suffers from two major problems: insufficient investment in the energy infrastructure and continuing technical losses due to theft, faulty meters, non-accurate reporting and non-payment. The volume of technical losses of produced energy in 2008 reached 31.6% of total power generation, which actually means that during 4 months in a year the Kyrgyz energy generating facilities generated electricity in futile.

In terms of the energy sufficiency rate that shows the ratio between the amounts of energy produced and consumed, the Kyrgyz Republic's position may seem quite satisfactory, especially in comparison with other countries and Europe (see Graph 1). Yet, when analyzed closely the whole picture is not as bright.

Graph 1. Energy Sufficiency Rate of the Kyrgyz Republic

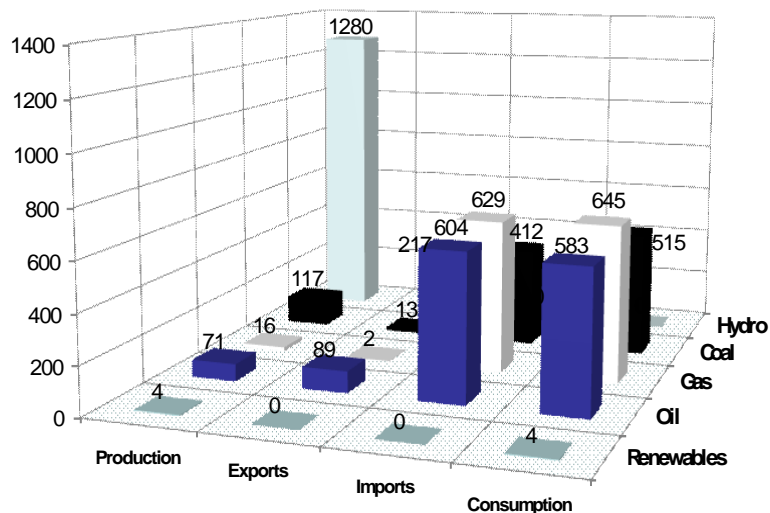
¹ Assessment of regional cooperation opportunities in renewable energy sources use in the Central Asian countries, Asian Development Bank report performed by Obozov A. D., 2008



Source: International Energy Agency (IEA).

The International Energy Agency's latest statistics (2006)² provide a good picture of the current energy situation for the Kyrgyz Republic. It produces significant amounts of hydropower, but relies on other countries for petroleum products, gas, and coal (see Graph 2). The country produces almost no energy from alternative sources, such as solar and wind, though it has considerable potential to exploit these. Even in the area of hydroelectric energy, where Kyrgyzstan inherited significant capacity from the Soviet Union, it has so far failed to achieve its full potential.

Graph 2. Energy Balance of the Kyrgyz Republic in 2006, in thd. tonnes of oil equivalent (ktOE).



Source: International Energy Agency (IEA).

With respect to natural gas, though the Republic possesses considerable reserves of natural gas, it extracts only 30 mln m³ due to undeveloped infrastructure, while the annual consumption amounts to 750 mln m³. Thus the Republic almost completely depends on gas supplies from neighbor Uzbekistan. In 2005 natural gas imports equalled to 735,8 mln m³, of which 166,3 mln

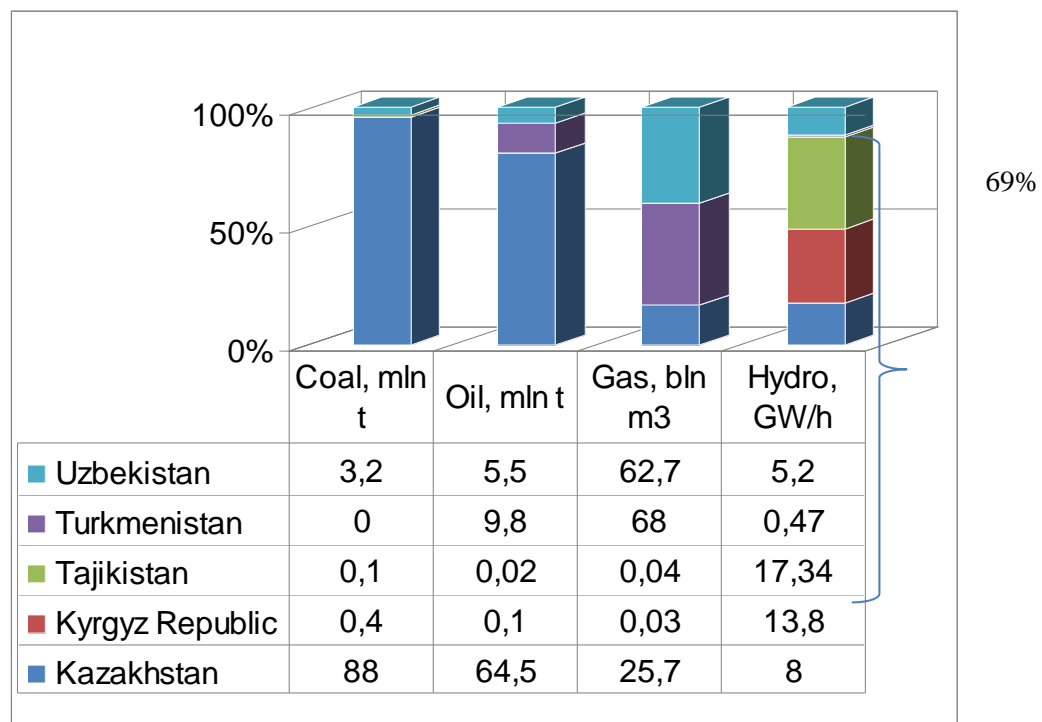
² Energy Balance for Kyrgyzstan 2006, International Energy Agency (IEA), http://iea.org/Textbase/stats/balancetable.asp?COUNTRY_CODE=KG

m³ was consumed by thermal power plants.³

By projected estimates, undiscovered oil and gas reserves in the Kyrgyz Republic make about 289 million tons of fuel oil equivalent. The oil and natural gas recovery is of insignificant volumes which has decreased during the period 1991-2005 by 2,2 times in oil and by 3,8 times in gas.⁴

If to examine the entire Central Asia region from the regional aspect it may be found that the region as a whole possesses a significant power resource base, although traditional hydrocarbon stocks are not distributed evenly. 5,5% of cost-beneficial world hydropower potential is concentrated in the region. Over 20% of the proven world uranium reserves is the share of Kazakhstan and Uzbekistan. Kazakhstan ranks among the top ten by volume of the explored coal reserves.

Graph 3. Production of fuel and energy resources of the CAR countries in 2006



Source: Asian Development Bank (ADB).

The structure of production and consumption of original power resources across the Central Asian republics (CAR) is shown in Graph 3. Uzbekistan is in the top ten gas producing countries in the world. The most part of the actual coal and oil reserves of the region is concentrated in Kazakhstan, while the bulk hydropower is accumulated in Kyrgyzstan and Tajikistan, gas reserves in a more smoothed proportion shared between Turkmenistan, Uzbekistan and Kazakhstan.

Lack of organic fuels supply, especially in winter season, drives the Kyrgyz energy regulators to rely on electricity generated by the hydropower stations, which leads to excessive release of water from the water-storage reservoirs as it is used for the electric power generation.

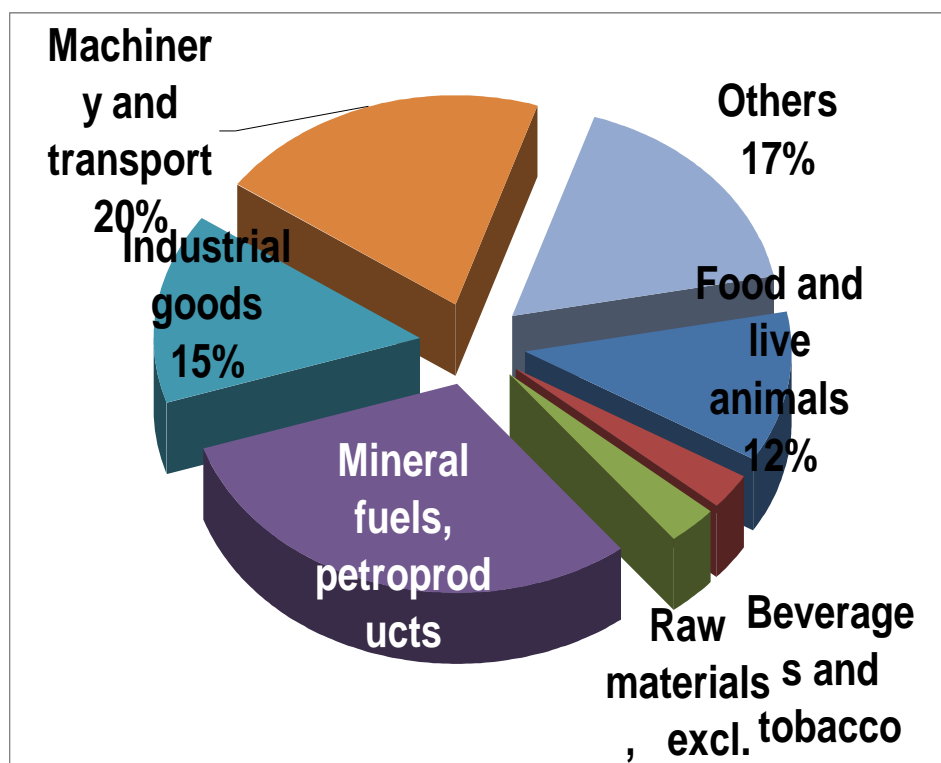
³ National Agency Status Report, Kyrgyz Republic; USAID. <http://www.erranet.org/index.php?name=OE-eLibrary&file=download&id=4314&keret=N&showheader=N>

⁴ Kyrgyz State Development Strategy for 2009-2011, http://rus.gov.kg/index.php?option=com_content&task=view&id=1107

This causes flooding downstream the Syrdarya, Naryn and other rivers, both in Kazakhstan and Uzbekistan.

Dependence on fossil fuels imports is also a huge economic burden for the Kyrgyz economy. See Graph 4 for the Kyrgyz import structure with the shares of different import items.

Graph 4. Imports Structure in 2007, %



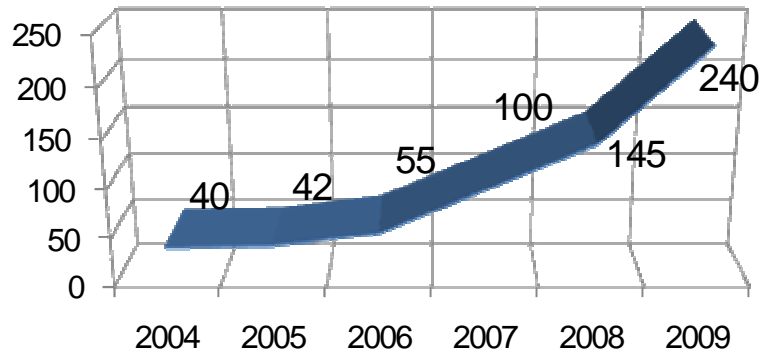
Source: National Statistics Committee of the Kyrgyz Republic.

Kyrgyzstan must develop its energy and other resources within a difficult geopolitical environment, balancing its dependence on Uzbekistan with the possibility of selling energy to countries such as China, Pakistan and Afghanistan. Uzbekistan is perhaps as important a natural gas supplier to Central Asia as Russia is for most of Europe: the only major gas pipeline connecting the Kyrgyz Republic to the larger network is the Tashkent-Bishkek-Almaty pipeline. Furthermore, although the Kyrgyz Republic can produce enough electricity for its own needs and actively sells electricity to neighbouring countries, it must import electricity from Uzbekistan to supply its remote northern regions. This reliance on outer sources is another consequence of the now obsolete Soviet-built electrical grid, which prevents Kyrgyzstan from supplying all domestic consumers from domestic sources.

In 2009 Uzbekistan pressed Kyrgyzstan to pay \$240 per thousand cubic meters of gas in, up from the 2008 price of \$145 and only \$55 in 2007⁵. Even though Kyrgyzgaz pays for about half of the gas delivered from Uzbekistan in cash and about half with Kyrgyz goods, including water supplies, this forms an immense burden on the Kyrgyz budget (see Graphs 5 and 6).

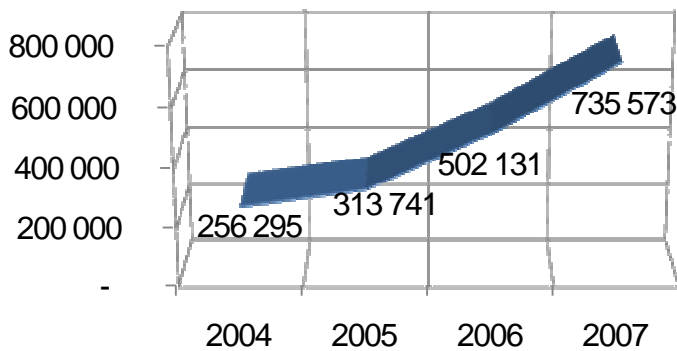
⁵ Ferghana.ru Information Agency: "Talks over gas supplies to Kyrgyzstan started in Tashkent", <http://www.ferghana.ru/news.php?id=12667&mode=snews>

Graph 5. Gas cost per thd m³, USD



Source: National Statistics Committee of the Kyrgyz Republic

Graph 6. Mineral fuels imports, thd. USD



Source: National Statistics Committee of the Kyrgyz Republic

On the other hand, the Kyrgyz Republic could try to strengthen its regional position by enabling electricity exports to reach neighbours in South Asia and provide for its own domestic energy consumption. Water and hydroelectricity could be Bishkek's best tools. Especially the control of river flows that reportedly account for some 70 percent of Uzbekistan's water supply would be an obvious bargaining chip in the event of a crisis. The major Russian-Kyrgyz hydroelectric project currently underway seems to be a clear move in this direction. On December 2006 the Kyrgyz Republic and Russia announced an agreement to launch a billion-dollar project, which could see Kambarata- 1 and Kambarata-2 hydroelectric power stations built to supply electricity for domestic consumption and for export to Afghanistan, China and Pakistan.

However, the project will affect flows to larger nearby countries – particularly Uzbekistan and Turkmenistan. Building the new station could lower the water levels of the Syrdarya or Amudarya rivers, ultimately harming irrigation flows for cotton crops in neighbouring countries that depend on significant amounts of water from these sources. Furthermore, international law backed by agreements signed with the United Nations, prohibits the Kyrgyz republic from depriving Uzbekistan of water resources. So, although Kyrgyzstan could decide to increase its

energy production by exploiting its untapped hydroelectrical potential, there are many regional political issues that could adversely affect any long term planning in this direction.

Taking into consideration all the above-mentioned facts, we believe that pursuing the path of sustainable development would benefit all parties. Recent history of humanity and its economic development, in particular, characterized by unchecked exploitation of natural resources and incautious treatment of environment, has shown us the importance and relevance of the concept of sustainability. In the light of all environmental challenges that face the Kyrgyz Republic⁶, the renewable energy sources as one of the important patterns of sustainable development that can alleviate the energy efficiency and energy shortage problems should be given full-fledged government support.

Recognizing the dire state of the country's energy sector and supported by the urgent environmental issues and authoritative scientific evidence, Kyrgyz environmental NGOs have long steered the government into adopting legislation on alternative sources of energy. Energy production from renewable energy sources is developing very fast in most of European countries, which have targeted to produce 20% of total energy from renewables by 2020⁷. Contrary to this, development of the sector in Kyrgyzstan is very low in spite of the fact that using renewable energy sources is economically feasible in many regions. They could be particularly important in remote regions that have no centralized energy supplies.

In May 2006 Unison Foundation, a Kyrgyz environmental NGO, organized Central Asian-European International Forum on Climate Change that "was designed as a forum and platform for high-level policy makers, business actors and key stakeholders for discussing and drafting opportunities for cooperation on climate change"⁸. Later in December pursuing the same goals Unison organized a conference named "Promotion of renewable sources of energy in the Kyrgyz Republic". In September 2008 the State Department for regulation of energy of the Kyrgyz Republic and Asian Development Bank co-hosted the Fourth Annual Meeting of the Central Asia Regional Economic Cooperation (CAREC) Electricity Regulators Forum that was named "Independent regulation in the promotion of private sector participation, Energy Efficiency, and Renewable Energy". In November 2008 the Kyrgyz delegation attended international seminar on renewable energy in Central Asia, organized by the Carnegie Endowment for International Peace in Tashkent, Uzbekistan.

All types of alternative energy have been promoted by Kyrgyz NGOs that disseminated information on benefits of using renewable sources of energy. Important work on promoting biogas-generating units was done by Unison. For its project on energy saving in public sector and introduction of new scheme of collaboration with energy distribution companies the organization was selected as the National winner for Kyrgyzstan of the Energy Globe Award, an important environmental prize, in the year 2007.

Ecological Movement BIOM has been realizing School Project for Application of Energy and Resources since 2003 with special focus on solar energy and had trained local communities in 20 villages all over Kyrgyzstan how to construct solar water heating units. The movement's activity has been presented as one of positive practices on the 6th Ministerial Conference "Environment for Europe" in 2007 in Belgrade, Serbia.

United Nations Development Program in the Kyrgyz Republic has been the focal point of these efforts to advance renewable energy sources in the country. It has facilitated publishing of many reference books and manuals on adoption and use of alternative energy sources and held many seminars and trainings to inform the Kyrgyz people about opportunities that renewable energy technologies provide. UNDP also took the lead in preparation of a draft of the law on

⁶ Kyrgyzstan: Melting glaciers threaten livelihoods, IRINNEWS, <http://www.irinnews.org/report.aspx?ReportId=80420>

⁷ Agreement reached at Spring European Council, 8- 9 March 2007, Brussels, Belgium.

⁸ Annual report for 2006-2007, Unison Foundation (www.unison.kg).

renewable sources of energy. Because of lack of clear rules of the game foreign business, though aware of its great potential, has been wary of investing in this industry.

This capacity building in the field of renewable energy sources, powered by active and well-coordinated participation of non-governmental sector, combined with adverse circumstances in the energy sector of the Kyrgyz Republic, compelled the Kyrgyz government to recognize urgency of the issue and to pass legislation on renewable energy sources. On the last day of 2008 the President of the Kyrgyz Republic Mr. Bakiev signed the law “On renewable sources of energy”.

We are positive that the adoption of this law is only the first step in the right direction and we hope that in the future the state authorities will not steer from it and will help fatherly cultivate a fertile soil for the green sprouts in the nascent renewable energy industry in the Kyrgyz Republic.

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