Introduction

Kyrgyzstan was hit by an acute electricity shortage in the winter of 2007-08. The imminent energy crisis became evident to the public as the level of water in Toktogul reservoir, the country’s main water source, dropped critically by early spring 2008. This threatened the operation of the major hydro power plants of the country, which are located below the reservoir. The Kyrgyz government introduced severe restrictions on energy consumption both for industry and the population, and announced an increase in electricity tariffs. Despite these measures, by November 2008 and the beginning of winter, the water level in Toktogul reservoir remained at about 70% of the previous year’s, auguring an even worse electricity supply situation for the winter of 2008-09.

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Summary

The situation in the energy sectors of Kyrgyzstan and Tajikistan has deteriorated recently, leaving little doubt about the serious repercussions of the energy shortage on the local population. These small mountainous countries are heavily dependent on hydro resources for their energy needs. In recent years, the outdated and barely functional energy infrastructure has had to face a number of environmental challenges, such as a cycle of dry years and harsh winters, which have only served to highlight the near-catastrophic state of the energy production and supply sectors.

The implications of the energy deficit are serious and without doubt extend to the wider region. The economies both of Kyrgyzstan and Tajikistan remain in a depressed state and both, though to differing extents, have undergone important social and political upheaval. Among other problems, the unfolding energy crisis threatens food security in the region, which, in its turn, would only contribute to the exacerbation of social discontent in already unstable societies. Water resources, which are the main source of energy in Kyrgyzstan and Tajikistan, also are of vital importance for downstream countries – Uzbekistan, Kazakhstan and Turkmenistan – and the conflict of interests between upstream and downstream countries has so far proved beyond resolution.


2 See comment of Bakyt Beshimov, leader of
The heated political, and often populist, debates have generally ignored discussion of the deeper and longer-term problems in the electricity sector. Many public speeches have focussed on the particular steps/actions to address immediate problems, while ignoring the general context and policies within which actions should be taken.

Given the high importance ascribed by the European Union to the problems of water and hydro energy in Central Asia, the EU is certainly a player that can and should contribute to addressing the deteriorating situation in the energy sectors of these two Central Asian countries. An effective response to the situation requires, above all, a careful analysis of the nature of the problem and of the past and present efforts of national governments to address the issue.

This paper aims to contribute to this goal by analysing the situation in the electricity sector in Kyrgyzstan. It will provide general background information on the country’s energy sector, outline the main policy issues and examine the efforts taken by the government address them.

**Kyrgyzstan’s electric energy sector**

Over 80% of electricity in Kyrgyzstan is produced by hydro-power plants, and the remaining part comes from thermoelectric plants fuelled by coal, gas and fuel oil. The hydro-electric potential of Kyrgyzstan is estimated to be over 160 billion kWh per year, 10% of which is currently utilised.

The power generation infrastructure is made up of 17 electric stations with a combined capacity of 3,680 MW, including 15 hydro-electric stations (2,950 MW) and two thermo-electric stations (730 MW). The five major hydro-electric power generator plants are located on the Naryn River below the Toktogul reservoir, which together account for 97% of the hydro capacity. The two thermo-electric plants located in Bishkek and Osh generate electricity and heating for these towns and the surrounding areas.

Two hydro-power plants are currently being viewed as potential additions to the country’s electricity production capacity: The Kambarata 1 and 2 power plants are under construction on the Naryn River, above the Toktogul water reservoir. The construction of these plants started in the 1980s, but was not completed due to the fall of the Soviet Union.

Kambarata-1 HPP is a major project, with an expected capacity of 1900 MW and an annual production of 5.1 billion kWh electricity. This plant, however, remains at the initial stage of construction, and requires no less than $2 billion investment and about 8-10 years for construction (others estimate no less than 10-12 years). Kambarata-2 is smaller, with a projected capacity of 240 to 360 MW (depending on the number of power generating units) and an expected annual production of over one billion kWh. In October 2007, the Kyrgyz government decided to resume the construction of this plant.

Currently the electricity industry consists of three chains of enterprises: power generation, controlled by Electric Stations Open Joint Stock Company (OJSC); power transmission exercised by state-controlled National Electric Network OJSC; and power delivery, provided by several distribution companies (Severelektro, Vostoikelektro, Oshelektro and Jalalabadelektro). The Kyrgyz government owns over 93% of the shares of all these entities.

Electric Stations OJSC controls all the major hydro-power plants and thermoelectric plants, and has a monopoly in electricity generation. The National Electric Network owns all transmission lines of 110 kV or above. Both of these companies are prohibited from being sold or expropriated in any other form by the law on “Special Status of the Cascade of Toktogul Hydro Power Plants and the National Electric Network.”

In May 2008, the Kyrgyz parliament adopted amendments to the law, taking the Kambarata power plants and the Bishkek thermo-electric plant out of the list of “cascade of Toktogul hydro power plants”, thus making their privatization possible.

**Water resources**

Given the high share of hydro energy in Kyrgyz electricity production, the country’s water resources have traditionally been seen as part of the energy sector rather than belonging to the agricultural sector.

Kyrgyzstan is the second largest source of water resources in Central Asia after Tajikistan. The average annual surface run-off from the rivers and other water sources in Kyrgyzstan accounts for about 45-50 cubic kilometres per year. This includes about 75% of the water of the Syrdarya River (27-28 km³) and 2% of the Amudarya (1.9 km³) – the two major water arteries of the region. Due to highly mountainous terrain, the major portion of water flows into the territory of neighbouring downstream countries, mainly Uzbekistan and Kazakhstan and to a lesser extent – China and Tajikistan. (Table 1 illustrates the formation zones for the water resources of Central Asia, including the share of Kyrgyzstan.)

The Naryn River of Kyrgyzstan, with about 14.5 cubic kilometres of annual water run-off, is the major contributor to the Syrdarya River. The main Kyrgyz hydro-energy and water facilities are built on this river, making it a national strategic asset.

The Toktogul water reservoir, located in the Jalalabad oblast of Kyrgyzstan, is one of the largest in Central Asia. The total capacity of the reservoir is 19.5 bcm; the usable share of this total is 14 bcm. Average water inflow is estimated to be about 12 bcm while 11.46 bcm is annually released.
Policy issues

The essence of the current energy emergency is the deficit of electricity, which became evident as the level of water in the Toktogul water reservoir fell to 6.5 billion m³ on April 2008. This was about four billion m³ less than the previous year, and came dangerously close to the critical level of 5.4 billion m³. As an immediate measure to address the energy and water deficit, the Kyrgyz authorities introduced 8-10 hour power cuts starting from spring 2008 and continuing to the present day. This, however, has not resulted in a significant impact on the replenishment of the water level in the Toktogul reservoir; by mid-September 2008 the water level remained about four billion cubic metres less than a year earlier.

As additional measures, the Kyrgyz government reached an agreement with Kazakhstan to import 250 million kWh of electricity during the winter period. However, this volume is too small to address all the needs and would only alleviate the pressure on the Kyrgyz energy system for a number of days.

The reform of the electricity sector has long been discussed in analytical and policy circles in Kyrgyzstan, but it was not until spring 2008 that the country’s authorities acknowledged the urgency of the sector’s problems. An overview of official and public discussions on the electricity sector suggests that in addition to the electricity shortage, the main policy issues related to this sector are economic sustainability and regional cooperation in water-sharing between Central Asian countries.

Poor regional cooperation

Water, used for power generation by Kyrgyzstan, is also vital for Uzbekistan and southern Kazakhstan for irrigation purposes. The total irrigated land area of these two countries within the Aral Sea basin constitutes 4,248,000 and 786,000 hectares, respectively, and combined, Uzbekistan and Kazakhstan consume about 70% of the Syrdarya River's water flow, in contrast to Kyrgyzstan's 0.67%. Uzbekistan generates $1 billion per year though exporting cotton, which makes it the world’s second-largest cotton exporter.

In the early 1990s, the Central Asian states tried to reach multi-party agreements on water-sharing. However, most of the agreements proved ineffective, and instead the countries have opted for annual bilateral agreements. A basic tenet of these arrangements was that Kyrgyzstan would promise a minimum volume of water to be released in the summer in exchange for the downstream countries agreeing to purchase a certain volume of the Kyrgyz electricity in the summer. Most agreements proved unworkable due to the parties’ inability or unwillingness to deliver on their commitments.

A promising step forward was made on 9 October 2008 in Bishkek, where the leaders of the five Central Asian states agreed in principle on certain cooperative measures to alleviate the impact of the water and energy deficit in 2009. This agreement was formalised on 18 October by a five-party inter-governmental protocol, which established certain parameters for joint water and energy supply during the 2008-09 winter (heating season) and the 2009 summer (vegetation season). The Kyrgyz government had agreed that by the beginning of the planting period of 2009, the volume of water in the Toktogul reservoir would be no less than that of 2008. The parties also agreed that the volume of water to be released from Toktogul during the summer of 2009 would be 5.25 bcm. Uzbekistan and Kazakhstan, the recipients of water from this reservoir, in their turn agreed to supply some additional energy in the winter of 2008-09 (gas, electricity, coal) and purchase up to 1.20 billion kWh of electricity from Kyrgyzstan during the summer of 2009. Tajikistan, Uzbekistan and Turkmenistan also reached agreements regarding the use of water from the Nurek water reservoir, and on supplying Tajikistan with gas.

To what extent this and other such multi-party agreements will work and become a long-term and effective mechanism remains uncertain. Experts acknowledge that a huge number of agreements were signed between Central Asian states on water-sharing but very few have been effectively implemented.

While everyone understands that there is no alternative to regional cooperation on these issues, the progress so far remains poor. This has been further exacerbated by the obsolete energy infrastructure in Kyrgyzstan.

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10 The volume of 5.4 billion m³ is officially stated as the ‘critical line’; when the volume drops below this level, the hydro-power plants below the reservoir stop operating.

11 “Diagnosticheskii doklad po vodnym resursam Tsentralnoi Azii” (op. cit.), p. 20.
Economic problems of the energy sector

The Country Development Strategy of Kyrgyzstan for 2007-2010 points to the poor economic performance, especially the weak financial situation, as the main problem in the electricity sector.\(^{13}\) The share of the energy sector in the country’s GDP dropped from 4.9% in 2002 to 3.9% in 2006.\(^{14}\) Even more telling is that the contribution of this sector to the growth of real GDP amounted to only 0.2% between 2001 and 2006.\(^{15}\)

The authorities acknowledge that the loss of electricity amounted to well over 40%. A substantial part is a technical loss, related to the poor quality of transmission and distribution lines, a large part of which requires complete replacement.\(^{16}\) The remaining share is a commercial loss. There has been no detailed analysis of what this consists of, but experts suggest that the commercial loss is mainly made up of stolen electricity (i.e. electricity that is consumed but not paid for, and could serve as an indicator of the corruption level in the sector.

The only visible efforts to address the sector’s problems have been the demands on the part of the country’s authorities to decrease the level of commercial loss. In August 2007, the energy ministry’s board meeting dismissed the heads of all four electricity distribution companies, directly as a result of their failure to meet President Bakiev’s order to decrease the sector’s commercial loss.\(^{17}\) As of September 2008, according to Prime Minister Chudinov, the power losses reached 33% of total generated electricity.\(^{18}\)

At a more general level, the economic problems of the sector were related to the issues of management and organisation. In 1997 the Kyrgyz government adopted the Programme of Denationalisation and Privatisation of Kyrgyzgosenergo holding, with the main goal of “increasing the effectiveness of enterprises of the national electricity energy complex.”\(^{19}\) Kyrgyzenergo was a state-owned energy giant, controlling the whole chain of energy transmission networks, starting from power generation to delivery to consumers.

The programme consisted of four stages that envisaged the unbundling of the energy sector and the privatisation of its parts. The first three stages were completed by 2001, and resulted in a division of Kyrgyzenergo into seven open joint stock companies.

A brief review of the achievements of the sector after unbundling suggests that the original aims of the project have not been achieved. Between 2001 and 2006, the combined debts of the distribution companies (created in 2001) to power generation and transmission companies increased seven times.\(^{20}\) Because of the increasing debts of distribution companies, the transmission and generation parts of the Kyrgyz energy sector also ended up with huge debts to tax agencies and the state’s crediting arms.\(^{21}\)

The primary goal of the 1997 Programme on Denationalisation and Privatisation of Kyrgyzenergo was to improve the effectiveness of the energy industry via its “de-monopolisation and the creation of real conditions for the development of a competitive environment.”\(^{22}\) Upon completion of three (of four) stages of this programme, it is evident that the state monopoly has not disappeared, and genuine competition is not present in any section of the energy industry.\(^{23}\)

The state has retained full control over all these open joint stock companies, owning more than 90% of the shares via the State Committee for State Property Management and the Social Fund of Kyrgyzstan; minor parts of shares were distributed among the employees of relevant organisations.

Competition has not emerged in Kyrgyzstan’s energy sector. The unbundled parts of the energy holding companies created over a decade ago functionally depend on each other, since the whole generating capacity is located on the Naryn River, and all plants can only operate as parts of a single technological process. As several experts have noted, only if there were alternative sources of power generation able to compete with the hydro-power plants on the Naryn River could one expect some form of competition among the power suppliers.\(^{24}\) The distribution companies, responsible for the delivery and sale of electricity to consumers, have not been able to compete against each other, since they were created to cover separate parts of the country, and competition between different distribution companies for the business of an individual energy consumer does not seem feasible.\(^{25}\)

In the past three years, the Kyrgyz authorities have actively started preparations for another round of privatisation in the energy sector. The government has announced that Bishkek TEP, Severelektro and Bishkekteploset would be privatised in one package, allegedly because Bishkek TEP would only be attractive to investors when taken together with Severelektro and Bishkekteploset.\(^{26}\)

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15 Ibid.
19 “Programma razgosudarstveniya I privatizatsii aktsionernogo obshhestva ‘Kyrgyzenergo’” [Denationalisation and privatisation programme of the joint-stock company ‘Kyrgyzenergo’], adopted by the Government of the Kyrgyz Republic on 23 April 1997. The latest changes and amendments were made on 20 June 2008 by the Jogorku Kenesh of the Kyrgyz Republic, Section 2.
20 Izmailov et al., op. cit., p. 17-18.
21 Ibid., p. 18.
22 “Programma razgosudarstveniya I privatizatsii aktsionernogo obshhestva ‘Kyrgyzenergo’”, op. cit., Section 2.
23 Izmailov et al., op. cit., p. 21.
24 Ibid., p. 22.
25 Ibid., p. 21.
Consequences

The further deterioration of the situation in the energy sector will clearly have severe negative economic consequences. Private enterprises, both large-scale as well as small- and medium-sized businesses, have been reporting significant losses due to poorly-scheduled power cuts resulting from the current energy crisis. The worldwide financial crisis now also hitting Central Asia has made things worse. The state budget has also suffered due to the decreasing number of activities using electric energy.

The emergency situation in the energy sector has become one of the main issues in the political struggle between the authorities and opposition groups. The provision of stable and cheap electricity no longer appears to be a realistic policy, and the authorities will certainly face popular discontent as a result of any change in current arrangements, which in the worse case may erupt into spontaneous public actions. From the early 1990s on, the population gradually shifted to the use of electric heating due to increasing coal and gas prices, and this part of the population has been hit hardest by the current electricity shortage.

Several opposition groups have already made the energy problem one of the key issues for public debate in recent gatherings. They have vigorously accused the authorities of mismanagement and corruption in the electricity sector, and protested against the planned privatisation of several energy-sector companies. Coupled with rising inflation and the increasing impact of the financial crisis, the further deterioration of the energy situation may contribute to a significant destabilisation of the social and political situation in the country.

Crucially, the shortage of water in the Toktogul reservoir has negatively affected the economic and food situation in the wider region. Due to the limited release of water from the Toktogul water reservoir, the extensive cotton, rice and other forms of agricultural production in Uzbekistan and Kazakhstan have lacked sufficient levels of irrigation. Furthermore, efforts by Kyrgyzstan to construct additional hydro-power plants have caused additional concern and protest in Uzbekistan.

Recommendations for the EU

The water and energy sectors are of importance to the EU's strategic interests in the region, as outlined in the EU Strategy. Given the general volatility of social processes and the weakness of political institutions in this region, it is important for the EU to follow the situation closely and deliver carefully-planned assistance. To address these issues effectively, the policy actions should both be short-term in easing the current threats of shortage as well as long-term in their efforts to build a sustainable energy system.

- Firstly, the European Union could initiate a discussion on what actions it would be able to take in the case of a drastic deterioration of the energy situation in Kyrgyzstan. Given the multi-layered structure of the EU's governing system, this will require a certain amount of time, and so early action is important. Such deliberations should take place within the different decision-making centres within the EU as well as between the EU and the Kyrgyz authorities to investigate in what way the EU could help in an energy/water crisis.

- The EU is regarded in Central Asia as a reasonably neutral player. It should exploit this reputation to foster regional cooperation on water and energy issues. To date, the national governments have demonstrated little ability to talk and agree, especially between upstream and downstream countries. However, the option of promoting a wider energy trade in the region appears attractive in the longer term, and vital in the short term. While Tajikistan and Kyrgyzstan share a similar dependence on hydro-energy, Kazakhstan, Uzbekistan and Turkmenistan possess alternative energy-generation sources, and might be able to supply a guaranteed volume of electric power to upstream countries. The EU, as an influential extra-regional player, could mediate between Central Asian countries to help bring leaders and experts around the table. The need for such help appears evident in light of the recent problems encountered by Tajikistan in importing Turkmen electricity via Uzbekistan.

- In the longer run, the EU should focus on close cooperation with the Kyrgyz government on governance reform in the energy sector. As President Kurmanbek Bakiev repeatedly acknowledged, poor governance in the energy sector remains one of the major problems. The European Union should develop a more focused programme to assist the Kyrgyz government in creating accountable and transparent governance in this sector. This would help make Kyrgyz governance more efficient and more democratic at the same time. Public attention is now focussed on the energy sector. The EU and other international actors could help to link the fight against corruption to technical solutions in the energy sector. This could for instance include assistance in installing up-to-date electricity-counters at every relevant stage (generation, transmission, consumption) and create a more effective and transparent fee collection system.

- The EU could also provide support for the effective privatisation of the energy sector. President Bakiev has repeatedly mentioned the idea of privatising district electric stations. The privatisation of these final providers of electricity to consumers would help dissolve monopolies and create competition in electricity sales. In offering such assistance the EU would of course need to closely liaise with other institutions such as the World Bank, which can help bring investment.

Conclusion

The energy crisis in Kyrgyzstan is more than just a shortage of water and electricity. The energy sector does not attract significant investment and is plagued by poor governance. The improvement of accountability and transparency are required to overcome the major problems facing this sector. A collapse of the energy sector would have far-reaching consequences in Kyrgyzstan and could become the catalyst for widespread social unrest, which would, in all likelihood, have a negative impact on the wider region, reflecting the complex upstream-downstream dependencies of Central Asia.

27 In November 2008, the movements called “People’s Revolutionary Movement” and “For Justice!” held meetings with supporters. The energy situation emerged as one of the main points on which the authorities were criticised.
**About EUCAM**

The Fundación para las Relaciones Internacionales y el Diálogo Exterior (FRIDE), Spain, in co-operation with the Centre for European Policy Studies (CEPS), Belgium, has launched a joint project entitled “EU Central Asia Monitoring (EUCAM)”. The (EUCAM) initiative is an 18-month research and awareness-raising exercise supported by several EU member states and civil society organisations which aims:

- to raise the profile of the EU-Central Asia Strategy;
- to strengthen debate about the EU-Central Asia relationship and the role of the Strategy in that relationship;
- to enhance accountability through the provision of high quality information and analysis;
- to promote mutual understanding by deepening the knowledge within European and Central Asian societies about EU policy in the region; and
- to develop ‘critical’ capacity within the EU and Central Asia through the establishment of a network that links communities concerned with the role of the EU in Central Asia.

EUCAM focuses on four priority areas in order to find a mix between the broad political ambitions of the Strategy and the narrower practical priorities of EU institutions and member state assistance programmes:

- Democracy and Human Rights
- Security and Stability
- Energy and Natural Resources
- Education and Social Relations

EUCAM will produce the following series of publications:

- A bi-monthly newsletter on EU-Central Asia relations will be produced and distributed broadly by means of an email list server using the CEPS and FRIDE networks. The newsletter contains the latest documents on EU-Central Asia relations, up-to-date information on the EU’s progress in implementing the Strategy and developments in Central Asian countries.

- Policy briefs will be written by permanent and ad hoc Working Group members. The majority of the papers examine issues related to the four core themes identified above, with other papers commissioned in response to emerging areas beyond the main themes.

- Commentaries on the evolving partnership between the EU and the states of Central Asia will be commissioned reflecting specific developments in the EU-Central Asia relationship.

- A final monitoring report of the EUCAM Expert Working Group will be produced by the project rapporteurs.

This monitoring exercise is implemented by an Expert Working Group, established by FRIDE and CEPS. The group consists of experts from the Central Asian states and the members countries of the EU. In addition to expert meetings, several public seminars will be organised for a broad audience including EU representatives, national officials and legislators, the local civil society community, media and other stakeholders.

EUCAM is sponsored by the Open Society Institute (OSI) and the Netherlands Ministry of Foreign Affairs. The project is also supported by the Czech Republic Ministry of Foreign Affairs, the Spanish Ministry of Foreign Affairs and Cooperation and the United Kingdom Foreign and Commonwealth Office.

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**About FRIDE**

FRIDE is a think tank based in Madrid that aims to provide original and innovative thinking on Europe’s role in the international arena. It strives to break new ground in its core research interests – peace and security, human rights, democracy promotion and development and humanitarian aid – and mould debate in governmental and nongovernmental bodies through rigorous analysis, rooted in the values of justice, equality and democracy.

As a prominent European think tank, FRIDE benefits from political independence, diversity of views and the intellectual background of its international staff. Since its establishment in 1999, FRIDE has organised or participated in the creation and development of various projects that reinforce not only FRIDE’s commitment to debate and analysis, but also to progressive action and thinking.

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**About CEPS**

Founded in Brussels in 1983, the Centre for European Policy Studies (CEPS) is among the most experienced and authoritative think tanks operating in the European Union today. CEPS serves as a leading forum for debate on EU affairs, and its most distinguishing feature lies in its strong in-house research capacity, complemented by an extensive network of partner institutes throughout the world.

CEPS aims to carry out state-of-the-art policy research leading to solutions to the challenges facing Europe today and to achieve high standards of academic excellence and maintain unqualified independence. CEPS also provides a forum for discussion among all stakeholders in the European policy process and builds collaborative networks of researchers, policymakers and business representatives across the whole of Europe.