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## **Challenges of hydropower development in Kyrgyzstan**

Kyrgyzstan is a country with enormous hydropower resources by the amount of which it is ranked 3<sup>rd</sup> among CIS countries after Russia and Tajikistan. The total electricity generation capacity in Kyrgyzstan consists of 3,787 MW, including 18 hydroelectric power plants («HPPs») with the total capacity of 3,071 MW and 2 thermoelectric power plants («TPPs») with the total capacity of 716 MW. The total electricity generation in the Kyrgyz Republic in 2011 reached 14,957.2 million kWh, with domestic consumption constituting 87% of generated electricity.<sup>1</sup> Hydropower sector produces 90% of the country's total electricity. However, whereas Kyrgyzstan's hydropower industry has capacity to produce about 140 billion kWh per year, it is now producing not more than 10 percent of this amount.<sup>2</sup>

Electric power sector of Kyrgyzstan has material impact on the condition and perspectives of its economic development as it produces about 3.9% of the GDP, 16% of the industrial production volume, and 10% of the national budget revenues.<sup>3</sup>

Kyrgyzstan exports electricity to the Republic of Kazakhstan, the People's Republic of China, the Republic of Tajikistan and the Republic of Uzbekistan. In the future, it is planned to export electricity to Pakistan and Afghanistan. Export of electricity in 2011 reached 2,634.4 million kWh. Over 80% of the country's electricity is produced by the Toktogul HPPs Cascade on the Naryn River, with the remaining amount being generated by thermoelectric power plants (Central Heating and Power Plants of Bishkek and Osh cities). The share of small and medium energy sector in the total volume of production does not exceed 0.5%.<sup>4</sup>

However, despite significant hydropower resources capable of giving strong impulse to economic development of Kyrgyzstan, our country has yet to benefit from its natural wealth. Furthermore, today the energy sector in the Kyrgyz Republic is in critical condition considering the wearing out of equipment, mainly, transmission and distribution networks, power lines, transformers, etc.<sup>5</sup>

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<sup>1</sup> Draft Kyrgyz energy development strategy for 2012 -2017 approved by Government Resolution of September 8, 2011 №540.

<sup>2</sup> Kyrgyz small and medium energy development program until 2012 approved by Presidential Edict of October 14, 2008 N 365.

<sup>3</sup> Kyrgyz national energy program for 2008-2010 and fuel and energy sector development strategy until 2025 approved by Parliament Resolution of April 24, 2008 N 346-IV.

<sup>4</sup> Kyrgyz small and medium energy development program until 2012 approved by Presidential Edict of October 14, 2008 N 365.

<sup>5</sup> According to draft Kyrgyz energy development strategy for 2012-2017, emergencies and equipment failures became more frequent in recent years. There were 125 incidents of emergency reported in 2011. Most of disorders are caused by excessive overloads in operating energy equipment and its being too worn out, with the largest number of equipment failures occurring in the distributing companies (16,287 incidents).

Among the issues of concern in the Kyrgyz hydropower sector are public regulation, tariff policy efficiency, licensing, obtaining authorization for construction of an HPP, gaps in legislation, to name a few. This article is an attempt to address and provide insight on legal aspects of factors underlying the current situation in the hydropower sector, to uncover challenges of hydropower development in Kyrgyzstan and to suggest legal measures which we consider capable of giving impulse to the development of Kyrgyz hydropower sector.

### **Challenges**

In order to understand the challenges of hydropower development in Kyrgyzstan, it is necessary to scrutinize the problems encountered by private investors. Below is a brief outline of the major problems facing investors today, in our opinion:

- ***Lack of competition in the generation, distribution and sale of electricity***, which is a result of the monopoly of public energy companies and weak development of small and medium energy sector;
- ***Lack of market mechanisms to set prices for retail electricity***. Currently, tariffs for sale of electricity are approved by the Government acting through the State Department for regulation of fuel and energy sector under the Ministry of Energy and Industry of the Kyrgyz Republic with the consent of the Jogorku Kenesh (the Parliament). Low electricity tariffs not reflecting the true market costs of generating, transmitting and distributing electrical power, maintaining equipment in good working order and other associated costs do not suit investors, since the investment into hydropower plant construction will take unreasonably too long to get the returns, thus making it unprofitable;
- ***Gaps in legislation, complicated process of obtaining building permits for HPP projects, requirement to obtain various licenses for providing electric power services: whether it is generation, transmission, distribution, sale, import or export***. Government over-regulation of this industry is obvious, there is a need to reduce the number of licenses, simplify procedures for obtaining permits and remove existing gaps in legislation;
- ***Corruption in state bodies, including courts***, encountered by investors when dealing with public authorities or courts in the Kyrgyz Republic. As practice shows, this factor sometimes plays a crucial role in decision-making by private investors, especially foreign ones;
- ***Permanent political instability in the country***. Over a 5 year period, the country's political regime has changed twice, in 2005 and 2010. Nationalization undertaken by the Interim Government in 2010 in violation of Kyrgyz legislation is a separate story. All these factors, taken together, had a strong negative impact on the investment climate and international image of the country in general.

The above problems/factors are discussed in more detail below along with recommendations for promoting hydropower sector in Kyrgyzstan.

### **Recommendations**

- ❖ ***The problem of lack of competition in the generation, distribution and sale of electricity can be solved by promoting small and medium energy sector***

*Along with the construction of large energy facilities such as the Kambarata HPPs 1 and 2, Upstream Naryn HPPs Cascade, it might be sensible, for the purposes of improving*

*energy security and export capacity of the country, to encourage the construction of small and medium HPPs on small mountain rivers with sufficient hydropower resources.<sup>6</sup>*

*First and foremost, investors should be incentivized to invest in the completion of those small and medium HPPs which already have hydro-technical structures (dams), in particular, Kirov HPP (23 MW) in Talas region, Ortotokoi HPP (20 MW) in Issykul region, Papan HPP (20 MW) in Osh region, Tortkul HPP (8 MW) in Batken region.<sup>7</sup> From the business perspective, such HPPs are more attractive since there is no need for investors to incur the major costs of erecting hydro-technical structures, they will only have to complete the construction of the HPP which will require much less investment.*

*Besides, priority should be given to investing into the restoration of the earlier existing HPPs (for example, Sokuluk-1 and Sokuluk-2 HPPs in Chui region, At-Bashy HPP in Naryn region, Arasan HPP in Issykul region, and others).<sup>8</sup>*

#### Benefits:

*(a) Even distribution of energy generation facilities throughout the entire territory of the Kyrgyz Republic. If these projects are accomplished, electricity will be supplied to larger number of people, and there will be no need to invest significant and hard-to-recover financial and material resources in the construction of power lines from large HPPs located at a distance from a small village, settlement or factory.*

*(b) Reducing the burden from the exploitation of the Naryn river and cascade of large HPPs, whether existing or planned;*

*(c) Solving the problem of electricity shortage suffered by consumers in remote towns, villages and settlements, existing and future industrial facilities, by using the energy produced by small and medium HPPs. Often, building large HPPs in remote, hard-to-reach regions proves inefficient; in such situation, small HPPs turn out more profitable to build and operate.<sup>9</sup>*

*(d) Promotion of small and medium HPPs will improve competition in the energy market of the country by providing consumers with alternative to major producers, which currently hold monopoly in the Kyrgyz market. Existence of alternative service providers and competition will weaken the monopolistic position of major public energy companies, and will incentivize all market participants to improve the quality of provided services,*

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<sup>6</sup> According to Kyrgyz national energy program for 2008-2010 and fuel and energy sector development strategy until 2025, there are possibilities to construct on the rivers 92 new small HPPs with the total capacity of 178 MW and average production of up to 1 billion kWh of electricity.

<sup>7</sup> Kyrgyz small and medium energy development program until 2012 approved by the Presidential Edict of October 14, 2008 N 365.

<sup>8</sup> The full list of small and medium energy facilities which are given first priority for construction or re-construction, including existing HPPs capable of being restored (in total 41 HPPs with the total capacity of 277.25 MW) is contained in the Kyrgyz small and medium energy program until 2012.

<sup>9</sup> According to Kyrgyz national energy program until 2008-2010 and fuel and energy sector development strategy until 2025, permanent growth of electricity consumption, with low tariffs being maintained, causes overloads and extensive damages to the equipment in distribution networks; meanwhile, the electricity shortage is about 10 million kWh, with 200-300 MW in the North of the republic.

and will help major public energy companies reduce commercial and technical losses which are now estimated to exceed 40%;<sup>10</sup>

(e) *Creation of new jobs* (first of all, in provinces) related to the maintenance of small and medium HPPs, which partially solves the problem of unemployment;

(f) *Increasing electricity production* and export potential by constructing small and medium HPPs not requiring big financial input, offering fast payback, simple to operate and relatively fast erectable.<sup>11</sup>

- ❖ ***The problem of lack of market mechanisms to set prices for retail electricity can be solved by introducing differentiated electricity tariffs for all categories of consumers according to the «Consume More, Pay More» principle:***

Benefits:

In the conditions of the quite wide stratification of electricity consumers, including different indicators of electricity consumption by separate groups of population, it might be expedient to replace fixed tariffs by differentiated ones and make them contingent on the amount of consumed electricity according to the «Consume More, Pay More» principle.<sup>12</sup>

Socially vulnerable groups consuming relatively small amounts of electricity for household purposes can be protected by establishing fixed reduced tariffs payable for the certain minimum amount of electricity used per month, in kWh, estimated based on the average electricity consumption. For any amounts exceeding the established limit consumers will pay at the differentiated rate according to a progressive rate scale, increasing with every extra kWh of energy consumed.

Differentiated tariff seems socially fair and justified and will help attain the following benefits:

(a) *increased proceeds from sale of electricity;*

(b) *increased profitability of energy sector;*

(c) *extra earnings of energy companies which can be used to replace obsolete or worn-out equipment, to construct new stations and power lines;*<sup>13</sup>

<sup>10</sup> According to Kyrgyz national energy program for 2008-2010 and fuel and energy sector development strategy until 2025, electric system losses in the distribution networks in the recent years persistently exceed 40% of total electricity generation, with most losses occurring in the public distribution companies: Severelectro OJSC, Voctokelectro OJSC, Vostokelectro OJSC, Oshelectro OJSC and Jalalabatelectro OJSC.

<sup>11</sup> Experts estimate that it can take 1 year to construct an ordinary small HPP, while it does not require too many workers to operate it. The costs of constructing a small HPP, according to experts, can be between 100,000 – 150,000 US dollars, which means that they can be paid back relatively fast.

<sup>12</sup> At present, there is one electricity tariff for all categories of consumers (except for the population) which is set at about 1.5 KGS per 1 kWh. Tariff for the public is about 0.8 KGS per 1 kWh.

<sup>13</sup> According to Kyrgyz national energy program for 2008-2010 and fuel and energy sector development strategy until 2025, basic facilities of electric power stations and networks are 50% worn-out. Such situation can lead very soon to the collapse of the whole energy system of the Kyrgyz Republic.

*(d) additional incentive for private investors promoting small and medium HPPs to use differentiated tariff which guarantees shorter period of time required for the return of financial and material resources invested in the construction of HPPs.*

- ❖ ***Good effect on the promotion of small and medium energy sector can be achieved through the use of the public-private partnership arrangement for the HPP construction, reconstruction and operation projects.***

Hydropower sector is considered to be one of the strategic sectors of the Kyrgyz economy, with the high priority being given to the retention of public ownership of energy facilities, especially as far as large HPPs are concerned. But nevertheless, it is impossible to achieve the qualitative development in this sector, to modernize or replace the worn-out equipment, or to build new energy facilities without attracting investors. In this regard, it is necessary to introduce such energy sector management mechanisms which can help achieve a balance between private and public interests.

Among the tools that could be used to achieve this goal is the public-private partnership (“PPP”) arrangement for the construction, reconstruction and further operation of new energy facilities.

The Government is more interested to deal with investors within the framework of PPP projects preferring that the constructed or reconstructed HPP be retained in public ownership, rather than letting the strategic energy facilities be privatized and transferred into private hands.

However, for the PPP projects to be effective the proper legal framework should be in place to regulate the PPP projects in the field of construction, reconstruction and operation of HPPs. One important step in this direction has already been made with the enactment on February 22, 2012 of the Kyrgyz Public-Private Partnership Law, which applies, among others, to infrastructure facilities and/or services in the field of generation, transmission and distribution of electric and thermal energy. But the work on the development and enactment of regulations governing the procedure for conducting tenders in respect of the PPP projects has yet to be done. Also, the need may arise to introduce amendments to the Kyrgyz Energy Law, the Electric Energy Law, and the Renewable Energy Law to make them consistent with the Kyrgyz Public-Private Partnership Law.

- ❖ ***The problem of gaps in legislation, complicated process of obtaining building permits for HPP projects, licensing requirements, and other issues of concern in the hydropower sector can be solved by reviewing and revising the effective legislation to refine it, remove gaps and reduce permitting processes being in place for investors***
  - *It would be recommendable to give legislative definitions of terms «small HPP» and «medium HPP» and to reduce procedures being in place for obtaining authorization for construction of small and medium HPPs*

#### Benefits:

Currently, there is no definition in Kyrgyz law of the terms ‘small HPP’ or ‘medium HPP’. This may cause problems in practice, as the absence of legal definitions creates uncertainty as to which HPP should be considered as small or medium. Realizing the

potential of hydropower resources of the country by promoting small and medium energy sector under such circumstances seems a challenging task.

Article 2 of the Kyrgyz Electric Energy Law of January 28, 1997 N 8 defines large electric energy facilities as the HPPs and TPPs with capacity exceeding 30 MW. It would be sensible and reasonable if this law could include the definitions of small and medium HPPs and TPPs to have clear criteria in place to classify HPPs and TPPs into small and medium ones.

- *It would be recommendable to reduce permitting processes being in place for construction of small and medium HPPs, and to improve the licensing system*

Under Article 19 of the Kyrgyz Electric Energy Law, contracts for construction of energy facilities, except large electric energy facilities and sections of the main power grid, are made by tender conducted by the competent public authority. Thus, the law requires tenders to be conducted for construction of energy facilities, including small and medium HPPs (except large HPPs with capacity exceeding 30 MW). Tender is conducted by the State Department for regulation of fuel and energy sector under the Ministry of Energy and Industry of the Kyrgyz Republic.

Under Article 20 of the Kyrgyz Electric Energy law, criteria for evaluating bids and selecting winner should be established by the Government resolution and published in the official gazette. However, unfortunately, this process is not regulated in any way, since the Government has not yet adopted such resolution, although the Electric Energy Law has been in place since 1997 with the energy industry being positioned as one of the high-priority and strategic sectors of the national economy.

In the absence of the Government resolution governing the procedure for conducting tenders for construction of energy facilities, Articles 19 and 20 of the Electric Energy law do not work in practice. Undoubtedly, this fact is a material obstacle to the development of the hydropower sector in Kyrgyzstan.

Considering the above, to promote the Kyrgyz hydropower sector, changes should be made to Articles 19 and 20 of the Electric Energy Law allowing investors to accomplish energy construction projects without tender or, if tender requirement is left in place, the Government regulation should be adopted governing the tender procedures and establishing the bid evaluation and winner selection criteria.

Besides, it would be recommendable to reduce all permitting procedures and remove various bureaucratic obstacles, which proved inefficient in practice. In particular, it is necessary to critically evaluate the current licensing policy in respect of the electricity generation, transmission, distribution and sale (import, export) and perhaps, to abolish some licenses. At least, it would be expedient to abolish licenses to sell and export electricity, since generating companies, which received the generation license, should be eligible to sell and export it. Limiting this right by the requirement to obtain certain licenses to sell and export electricity is at least unreasonable and curtails the right of generating companies to freely dispose of their generated electricity.

- *It would be recommendable to adopt legislative measures to encourage investment in the Kyrgyz hydropower sector*

Investors should be encouraged to invest into the Kyrgyz hydropower sector by granting to them certain government incentives and preferences. In this regard, recent government actions seem justified with changes being made in 2011 to the Renewable Energy Law to exempt legal entities and individuals engaged in renewable energy from customs duties on import of equipment for HPPs and other renewable energy sources to Kyrgyzstan. Besides, in the same 2011, other amendments were made to the said law to impose liability on energy companies which fail to acquire electricity from private renewable energy companies. Such liability takes the form of compensation for lost profit of renewable energy companies.

Also, as a measure of incentive, it would be advisable for the Government to consider introducing legislative changes establishing more simple procedures for providing land plots for construction of HPPs. In particular, it would be recommendable to synchronize the processes of granting authorization for construction of an HPP and providing the land plot necessary for the future construction of this HPP, so that an investor could receive the building permit for the HPP and the land plot for it at the same time.

This publication does not purport to give recommendations for solving the problems related to corruption and political instability in the country. In our opinion, considering that this is an industry-specific article, such recommendations might be unnecessary, since such problems as corruption and political instability are of a systemic character and affect not only the hydropower sector, but the Kyrgyz economy as a whole. But that's a different story.

### ***Conclusion***

It is a common knowledge that the best way to solve any problem is to eliminate its causes. In this publication, we made an attempt to explore the reasons behind the current challenges in the hydropower sector of Kyrgyzstan and to offer possible solutions thereto.