Sayı : E-34221550-720-14001 **Tarih**: 28.12.2023
Konu : Kırgız Cumhuriyeti'nde küçük hidroelektrik santrallerin inşası hakkında

TÜM ODALAR
(Genel Sekreterlik)
(Genel Sekreterlik)

İlgi : Kırgız Cumhuriyeti Ankara Büyükelçiliği'nin 12.12.2023 tarih ve 157 sayılı yazısı.

İlgide kayıtlı yazı ile iletilen, Kırgız Cumhuriyeti Jalal-Abad böglesinde Nur Kyzmat LLC şirketi tarafından hayata geçirilmesi planlanan küçük hidroelektrik santrallerinin inşasına ilişkin proje bilgileri ekte sunulmaktadır.

Söz konusu projeye ilişkin detaylı bilgiler için Kırgız Cumhuriyeti Ankara Büyükelçiliği ile (Mr. Akylbek Rakhmanberdi, Cep: 0538 064 5994) temas edilmesi mümkündür.

Bilgilerinizi ve konunun ilgili üyelerinize duyurulmasını rica ederim.

Saygılarımla,

e-imza
Sarp KALKAN
Genel Sekreter Yardımcısı

EK: Proje hakkında bilgi (7 sayfa)

Project Concept

I. Project Information	
Name of the project	Construction of small HPPs Kara-Unkur 1 and 2
Industry	Hydropower
Project type	Project financing for the commissioning of a hydroelectric power plant with an installed capacity of 8.2 MW
State in which the project will be implemented	Kyrgyz Republic, Jalalabad region, Bazar-Korgon district
Location and registration of the investment object	Kyrgyz Republic, Jalalabad region, Bazar-Korgon district, upper reaches of the Kara-Unkur river, Kyzyl-Unkur village, distance from the city of Bazar-Korgon 55 km of the road.
Project relevance	In the context of a permanent shortage of both volumes and capacity of electricity in the energy market of the Kyrgyz Republic, the importance of small projects with the possibility of commissioning within 1.5-2.0 years is increasing in order to accelerate the reduction of the electricity deficit in the country.
Brief description of the project	Small HPPs Kara-Unkur 1 and 2 were built using the cascade method. **The composition of hydraulic structures of Small HPPs**: 1. The main water intake structure of the channel type on the river. Kara-Unkur with the maximum water intake rate - 68.8 m3/s, 28.4 m3/s, 97.1 m3/s; 2. Sediment tank with hydraulic washing of sediments, flow rate - 6 m3/s, 2.5 m3/s, 8.5 m3/s; 3. Pressure conduit made of metal pipes with a diameter of 1.2 m, 1.4 m, 1.8 m with an allowable internal pressure of 4.5 MPa, with sprinkling with local soil. 4. The HPP-1 building is located on the terrace of the left bank of the Kara-Unkur River, the mouth of the left tributary of the Kumush-Suu, upstream of the settlement. In order to extract the maximum power, the HPP-1 building was buried on the terrace to the level of the downstream in the discharge channel. 5. The HPP-2 building is located on the terrace of the left bank of the Kara-Unkur River, a little upstream of the settlement. In order to extract the maximum power, the HPP-2 building was buried on the terrace to the level of the downstream in the discharge channel. 6. Head structures, derivation, station units of the designed HPPs are located at elevations of 1300-1600 m above sea level, in a sparsely populated area, which creates favorable conditions for their operation. The connection to the power system is planned through power lines with a voltage of 35 kV to the branch of JSC "NESK" - Jalalabad enterprise of electric networks.

Table. Intra-annual distribution of runoff in the design sections for the construction of small HPPs on the river. Kara-Unkur (P=50%), source PART-3

Units measurements	Months												Year
	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	
Settlement point No. 1													
%	2,5	2,7	5,2	13,8	25,6	20,3	10,1	5,4	3,8	3,6	3,7	3,3	100
m^3/s	1,82	1,97	3,79	10,0	18,6	14,8	7,36	3,93	2,77	2,62	2,69	2,40	6.07
Settlement point No. 2													
%	2,5	2,7	5,2	13,8	25,6	20,3	10,1	5,4	3,8	3,6	3,7	3,3	100
m^3/s	0,78	0,84	1,62	4,30	7,99	6,33	3,15	1,68	1,18	1,12	1,15	1,03	2,60
Settlement point No. 3													
%	2,5	2,7	5,2	13,8	25,6	20,3	10,1	5,4	3,8	3,6	3,7	3,3	100
m^3/s	2,60	2,81	5,41	14,4	26,6	21,1	10,5	5,62	3,95	3,74	3,85	3,43	8,67

Technical indicators of small HPP Kara-Unkur 1

Characteristic	Indicators, target No. 1	Indicators, target No. 2
Installed capacity of small HPP	2,061 MW (1x 2,06 MW)	1,023 MW (1x 1,02 MW)
Planned average annual electricity generation	9 889 thousand kW/h	4 881 thousand kW/h
Static head	50 m	52 m
Head loss	10,62 m	5,1 m
Working head, net	39,4 m	46,9 m
Estimated consumption	6,0 m^3/s	2,5 m^3/s
Penstock length	1 370 m	1 750 m
Pressure water pipe material	Steel Pipe	Steel Pipe

Diameter of the pressure conduit	1,4 m	1,2 m
Hydraulic power equipment	Francis type turbine	Francis type turbine
Water regulation	no	no
Construction period	2 years	2 years

Technical indicators of the small hydroelectric power station Kara Unkur 2

Characteristic	Indicators, target No. 3
Installed capacity of small HPP	5,202 MW (2x 2,6 MW)
Planned average annual electricity generation	24 983 thousand kWh
Static head	87 m
Head loss	14,9 m
Working head, net	72,1 m
Estimated consumption	8,5 m^3/s
Penstock length	3 800 m
Pressure water pipe material	Steel Pipe
Diameter of the pressure conduit	1,8 m
Hydraulic power equipment	Francis type turbine
Water regulation	no
Construction period	2 years

The attracted funds are supposed to be used for the construction of hydraulic structures (new construction of a water intake unit, new construction of a pressure water conduit, a outlet and discharge channel), construction and installation work for issuing power to the energy system (electric power equipment: transformers, switchgear, power lines).

Project Goals

- The generation of electricity from the Kara-Unkur 1 and 2 small HPPs in the Kyrgyz Republic after the commissioning of HPPs will increase generation in the south of the Republic, reduce losses in the networks, which will increase the reliability and stability of energy supply to consumers and reduce the country's dependence on fuel imports;
- Creation of environmentally friendly production bases on the energy capacity of small hydroelectric power stations, in remote areas such as with. Kyzyl-Unkur.

Final results of the project implementation

• The volume of energy generated by the cascade method, four units for an average long-term period will be 47.7 million kWh, including:
- in the spring-summer period - 33.5 million kWh,

<table>
<tr><td></td><td>- in the autumn-winter period - 14.2 million kWh.</td></tr>
<tr><td>Degree of project readiness</td><td>To date, there is a developed feasibility study for the project for the construction of small HPPs Kara-Unkur 1 and 2, there is a certificate for temporary use on a long-term basis of a land plot for the construction of a HPP. The feasibility study was prepared by the specialized company NK GROUP LLC, Bishkek. The Working Draft is currently being developed.</td></tr>
<tr><td>Project financing structure</td><td>Requested funding limit: USD 12,390 million
Total repayment period, including grace period: 12 years;
Interest rate: 5 (five)% per annum;
Funding currency: US dollar;
Grace period: 2 years;
The repayment of the principal amount will be carried out in accordance with the schedule developed in case of approval of the Project.
The amount of co-financing by the Project Company is 3.10 million US dollars, 20% of the total cost of the project in the amount of 15.486 million US dollars.

General investments for the construction of small HPPs Kara-Unkur 1, Kara-Unkur 2

<table>
<tr><th>№</th><th>Name of work and costs,
thousand US dollars</th><th>Kara-Unkur
HPP-1</th><th>Kara-Unkur
HPP-2</th><th>Summary</th></tr>
<tr><td>1</td><td>Preparatory work (land allotment, temporary production base, power supply, access roads, stone protection measures)</td><td>-</td><td></td><td>72,1</td></tr>
<tr><td>2</td><td>Main production facilities</td><td>5 296,3</td><td>8 510,3</td><td>13 806,6</td></tr>
<tr><td></td><td>including:</td><td></td><td></td><td></td></tr>
<tr><td></td><td>2.1. Water intake unit</td><td>706,3</td><td>318,1</td><td>1 024,4</td></tr>
<tr><td></td><td>2.2. Penstock</td><td>2 734,9</td><td>5 245,7</td><td>7 980,6</td></tr>
<tr><td></td><td>2.3. SHPP building</td><td>355,2</td><td>446,5</td><td>801,6</td></tr>
<tr><td></td><td>2.4. Hydropower equipment: installation and transportation</td><td>1 500,0</td><td>2 500,0</td><td>4 000,0</td></tr>
<tr><td>3</td><td>Energy facilities</td><td>343,6</td><td>572,7</td><td>916,3</td></tr>
<tr><td>4</td><td>Design and survey work</td><td>300,0</td><td>300,0</td><td>600,0</td></tr>
<tr><td>5</td><td>Unforeseen work and costs, 5%</td><td>-</td><td></td><td>91,3</td></tr>
<tr><td></td><td>Total</td><td>5 940,0</td><td>9 383,0</td><td>15 486,4</td></tr>
</table>
</td></tr>
<tr><td>State support for the project</td><td>Law of the Kyrgyz Republic "On Renewable Energy Sources"
Technical condition for connection to the general electrical network</td></tr>
</table>

Forecast financial and economic indicators of the project (additional information in Appendix No. 1)	Annual sales revenue US$2.409 million EBITDA - USD 2.2 million DSCR - 1.77 Debt/ EBITDA - 4.0 PP - payback period - 6.84 years DPP - discounted payback period 8.3 years *The budget and calculation of investment indicators of the project is presented in Appendix No. 1*
Impact of the project on the environment	Given the fact that the construction of the Kara-Unkur 1 and 2 Small HPPs is a new construction, environmental issues have been taken into account. As part of the feasibility study, an environmental impact report was prepared. The working draft will undergo a state construction environmental review. In doing so, the following should be noted: - alienation of valuable lands is not done; - there are no emissions into the ground, atmosphere and river of pollutants; - upon completion of construction, the fertile layer will be restored to its original form with further planting; - when developing the working draft, the current environmental protection standards will be taken into account.
Sources of debt repayment	From the main activity of the hydroelectric power plant, income from the sale of electricity.
Estimated warranty coverage	Guarantee of the founders - FAMARKET LLC, a Russian company with a turnover of 291 million rubles (2022) https://famarket.ru/ The possibility of entering the capital of a financial institution for the period of repayment of borrowed funds is being considered.
Project Operator	Limited Liability Company "Nur Kyzmat"
Equipment supplier selection plans	During the implementation of the project, the supplier will be selected on a competitive basis.
Plans for the sale of ready-to-sell products	Production and sale of electricity in the domestic market at incentive tariffs, currently by Order of the Department for Regulation of the Fuel and Energy Complex under the Ministry of Energy of the Kyrgyz Republic No. 08 of 01/23/2023. a tariff of 4.42 KGS/kWh (5.05 US cents, see note) was set for 15 years from the commissioning of the HPP. Note US dollar exchange rate according to the NBKR as of April 15, 2023 is 87.52 som
Investment indicators	A full financial analysis of the project was also carried out, with the definition of an approach to its implementation. The total investments for the project were determined in the maximum possible at this stage by decoding. An analysis was given on the issue of tariff regulation for the sale of electricity. The results of the sensitivity analysis and risk factors for the following factors were also presented: - change in the cost of construction; - financial analysis for conditions of 50%, 75% and 90% security; - change in the value of profitability on the investor's own capital; - the risk of inflation and devaluation.

Financial indicators of a small hydropower plant

Index	
NPV, thousand.$	19 037,29
IRR, %	16,0%
PP, years	6,84
DPP, years	8,30
DSCR, min	1,77
Debt/EBITDA	4,00
Own contribution, %	30,0%

Implementation of the project within the framework of the current legislation significantly increases the attractiveness of the project and reduces the potential risks of the investor. The sensitivity analysis carried out for this scheme of project implementation showed significant resistance of the project to an increase in its cost and to changes in the generation of electricity from HPPs.

II. Information about the project company

Project Operator

Project Operator
- The Nur Kyzmat Limited Liability Company (hereinafter referred to as the Project Company), established and operating in accordance with the legislation of the Kyrgyz Republic.
- The main activity is construction
- TIN - 02605201610079
- Re-registration in the Ministry of Justice - 10/24/2019
- Legal address - Kyrgyz Republic, Bishkek, Pervomaisky district, st. Toktogul 170

Contact persons for the project: General Director - Mamatov Zarylbek Topchubaevich

Project organization

Project organization
Contractor - local company for project adaptation:
LLC "NK GROUP"; TIN: 01504200910283; Address: Kyrgyz Republic. Bishkek, 10 microdistrict house 12/1, office 1; Tel: +(996) 312 882410; E-mail: nkgroup09@inbox.ru; website: http://nkgroup.kg

Contact persons for the project: General Director - Umarbaev Askerbek Turdubayevich

Appendix No. 1 - Budget and calculation of investment indicators of the project

Project budget

		2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2043	2053
Gains and losses report													
Annual production	MWh		47,676	47,676	47,676	47,676	47,676	47,676	47,676	47,676	47,676	47,676	47,676
Price	USD/MWh	4	54,2	55,1	55,9	56,7	57,6	58,4	59,3	60,2	61,1	54,5	63,3
Income	thousand USD		2 586,0	2 624,8	2 664,1	2 704,1	2 744,7	2 785,8	2 827,6	2 870,0	2 913,1	2 600,6	3 018,1
Revenue tax	thousand USD		0	0	0	0	0	0	0	0	0	0	0
Operating expenses	thousand USD	1,5%	105,0	106,6	108,2	109,8	111,4	113,1	114,8	116,5	118,3	137,3	159,3
Operating profit	thousand USD		**2 481,0**	**2 518,2**	**2 556,0**	**2 594,3**	**2 633,2**	**2 672,7**	**2 712,8**	**2 753,5**	**2 794,8**	**2 463,3**	**2 858,8**
EBITDA margin		*4%*	*96%*	*96%*	*96%*	*96%*	*96%*	*96%*	*96%*	*96%*	*96%*	*95%*	*95%*
Depreciation	thousand USD		339,5	679,0	679,0	679,0	604,0	529,0	529,0	529,0	529,0	529,0	332,3
Asset value	thousand USD		15 486,4	15 146,9	14 467,9	13 788,9	13 109,9	12 505,9	11 976,9	11 448,0	10 919,0	5 629,1	830,8
Earnings before interest and taxes	thousand USD		**2 141,5**	**1 839,2**	**1 877,0**	**1 915,3**	**2 029,2**	**2 143,7**	**2 183,8**	**2 224,5**	**2 265,8**	**1 934,3**	**2 526,4**
EBIT margin			*83%*	*70%*	*70%*	*71%*	*74%*	*77%*	*77%*	*78%*	*78%*	*74%*	*84%*
Interest	thousand USD		498,9	453,7	406,2	356,3	303,9	248,9	191,2	130,5	66,9	0,0	0,0
Profit before tax	thousand USD		**1642,6**	**1385,5**	**1470,8**	**1559,0**	**1725,3**	**1894,8**	**1992,7**	**2094,0**	**2199,0**	**1934,3**	**2526,4**
EBIT margin			*64%*	*53%*	*55%*	*58%*	*63%*	*68%*	*70%*	*73%*	*75%*	*74%*	*84%*
Income tax	thousand USD							189,5	199,3	209,4	219,9	193,4	252,6
Net profit	thousand USD		**1 642,6**	**1 385,5**	**1 470,8**	**1 559,0**	**1 725,3**	**1 705,3**	**1 793,4**	**1 884,6**	**1 979,1**	**1 740,9**	**2 273,8**
Margin net profit			*64%*	*53%*	*55%*	*58%*	*63%*	*61%*	*63%*	*66%*	*68%*	*67%*	*75%*
PROJECT CF													
Net CF	thousand USD	-15 486	2 481	2 518	2 556	2 594	2 633	2 483	2 514	2 544	2 575	2 270	2 606
Accumulated CF (NPV)	thousand USD	**-15 486**	**-13 005**	**-10 487**	**-7 931**	**-5 337**	**-2 704**	**-220**	**2 293**	**4 837**	**7 412**	**32 519**	**57 063**
Discounted CF	thousand USD	-14 891	2 250	2 175	2 103	2 033	1 965	1 765	1 701	1 640	1 581	855	603
Accumulated DCF (NPV)	thousand USD	-14 891	-12 640	-10 465	-8 362	-6 330	-4 365	-2 600	-899	741	2 322	14 334	21 439
Net IRR			-84,0%	-50,9%	-28,7%	-14,9%	-6,0%	-0,4%	3,6%	6,5%	8,6%	15,4%	16,2%
Discounted IRR			-84,9%	-53,5%	-32,4%	-19,2%	-10,8%	-5,4%	-1,6%	1,2%	3,2%	9,7%	10,5%
DSCR			**1,77**	**1,79**	**1,82**	**1,85**	**1,88**	**1,77**	**1,79**	**1,81**	**1,83**	**-**	**-**
Debt/EBITDA			**4,00**	**3,57**	**3,13**	**2,68**	**2,22**	**1,75**	**1,28**	**0,80**	**0,31**	**0,35**	**0,30**