

Kheledula Energy LLC

Georgia – Kheledula-3 hydropower scheme

Non-Technical Summary



September 2018

Project rationale

The development of the Kheledula HPP is part of Georgia larger plan to increase the country power generation capacity while reducing the dependency from (i) fossil fuel-fired power plants and from (ii) imported power form neighbouring countries (mostly from Russia, Turkey and Azerbaijan).

The existing Georgian power system is characterized by a low demand and high generation in summer, and high demand and low generation in winter. During winter, when less water is available for the hydropower plants, thermal power's share in total generation increases to 28% from less than 1% in summer. Georgia imports power from neighbouring countries to meet this higher winter demand.

The Project envisages to construct a run-of-river hydropower scheme operating on the natural runoff of Kheledula and Devashi Rivers. A weir will be built on Kheledula River, from where water will be diverted into the neighbouring Devashi River valley through a free-flow tunnel. Another weir will be built there and water from Devashi river will also be collected. Water will then flow through a pressure pipe to the powerhouse on the right bank of Tskhenistskali River.

The average annual electricity generation of the scheme will be 237 GWh. For the first 20 (twenty) years of operation, 20% of the actual annual power generation of the Facility shall be sold to ESCO during the winter months of each year, being the months of January, February, March, October, November and December.

Project alternatives

Alternative source of power: The continuous production of energy in winter that the Project will achieve can in Georgia only be achieved with other hydropower plants, or with thermal power plants. The "no-Project" alternative would therefore mean building another hydropower scheme, or increasing thermal power production in order to satisfy the country's growing demand. Other hydropower schemes (many potential sites exist in Georgia) could in the best case achieve a similar level of environmental and social performance as Kheledula-3, with no adverse impacts on critical habitats and no resettlement. Thermal power alternatives are not considered as sustainable options in the present context of rapid climate change. For these reason, Kheledula-3 is considered a sound alternative.

Alternative design: The design of the Project has been optimized to minimize environmental and social impacts. In particular, the scheme has no large reservoir that could retain sediments and would have a significant footprint. The length of tunnels has also been minimized in order to reduce the volume of spoils, while temporary sites and spoil disposal areas have been defined taking into account environmental and social sensitivities.

Project description

Kheledula-3 Hydropower Scheme ("Kheledula-3" or the "Project") is a 51 MW hydropower project implemented by Kheledula Energy LLC ("KE") – a company established in Georgia for the purpose of developing, constructing and operating Kheledula-3. The Project is located within Lentekhi Municipality, Racha-Lechkhumi and Kvemo Svaneti Region, Georgia.

Figure 1 - Location of the Kheledula-3 HPP Project



Kheledula-3 is a run-of-river scheme on two tributaries of the Tskhenistskali River: the Kheledula and Devashi Rivers. On the Kheledula River, a first weir ("weir-1") will be built close to Kheledi village, about 6 km upstream of the confluence with the Tskhenistskali River, where the town of Lentekhi is located.

From weir-1, part of the Kheledula river flow will be diverted and conveyed via a free flow tunnel to the Devashi River valley (see Figure 2), where it will combine with water collected from the Devashi River at a second weir ("weir-2") located 2.5 km upstream of the Devashi and Tskhenistskali Rivers confluence. The combined flow will then be directed via an underground penstock to the powerhouse which will be located on the right bank of the Tskhenistskali River, about 1.5 km downstream of Lentekhi Town. The powerhouse will be located next the road from Lentekhi to Tsageri.

The Project's permanent facilities also include access roads to weir-1 and weir-2 and the owner's building (used for operation). The Project will be connected to the national grid of Georgia, more precisely to a new transmission line that will be designed, built and operated by the national grid operator (GSE) in the frame of a wide program aimed at strengthening Georgia's transmission network. The transmission line will transport the energy produced by the Project to Tsageri and then to Lajanuri sub-station.

The Project's temporary facilities include spoil disposal sites, storage areas and camps (see Figure 2). The Project will rely on existing quarries for construction materials (no new quarry will be built).

The expected annual average output from Kheledula-3 will be 237 GWh. The Project will allow avoiding the emission of around 79 000 tCO₂eq / year, in comparison with the present energy mix of Georgia.

The Project is considered for financing by the European Bank for Reconstruction and Development (EBRD): it was categorized A under EBRD's 2014 environmental and social policy.

The Project was subject to an Environmental and Social Impact Assessment (ESIA) that was approved by the permitting authority in 2017. On this basis, a Supplementary E&S Impact Assessment was prepared in 2018 in order to ensure that all the Project components are assessed in compliance with EBRD's E&S Performance Requirements, in addition to the national legislation requirements. In 2018, a design change (replacement of the pressure tunnel by an underground penstock in Devashi valley, in order to optimize the Project) was notified by the developer, and a complementary ESIA was prepared for this change at the request of the permitting authority.

The permitted ESIA, together with the present Supplementary E&S Impact Assessment, as well as a Stakeholder Engagement Plan (SEP), the present Non-Technical Summary (NTS) and an Environmental and Social Action Plan (ESAP) form the disclosure package to be disclosed during 60 days as a minimum prior to the Project's consideration for financing by the Bank's Board of Directors as per EBRD's public information policy.

Figure 2 - Project components



Physical impacts

Physical environment: The Project is located in a mountainous area (altitude 750-4000m), with generally steep slopes. Forests cover 64% of the territory of the Lentekhi municipality where the Project is located. Rivers are essentially fed by snow melting (in springtime-Autumn) and rain (autumn).

Project footprint: in total, the Project footprint will represent around 10 ha, including all permanent facilities and access roads. In addition, the footprint of temporary sites needed for the Project will be around 8 ha (temporary sites will be rehabilitated after construction).

Noise, vibrations: Noise and vibrations will be mainly generated by the movement of heavy machineries. Construction equipment and vehicles will be checked daily prior to works. Vehicles and equipment with high level on noise (due to technical failure) will not be allowed within working sites. Noisy activities (such as earthworks) will be implemented only during daytime.

Dust and air quality: Dust might be generated air quality affected during the construction period only. Increased traffic movements on earth roads and earth wok will be the main source of impact. The mitigation measures that will be adopted include the use of tarpaulin on trucks transporting materials, the limitation of vehicles speed and water spraying on earth roads.

Top soil: Where relevant, topsoil will be removed and stored during the construction period. Topsoil will be reused on temporary sites and recultivated at the end of the construction.

Flow regime: Kheledula-3 is a run-of-river scheme, with diversion but without reservoir and without regulation capacity. The scheme will impact the river regimes between the upstream intakes (weir-1 on Kheledula River and weir-2 on Devashi River) and the downstream powerhouse only: changes to the annual flow regime of the impacted reaches will result from (i) the diversion of water (up to 26 m³/s) through the scheme's waterways and (ii) the application of an environmental flow that should not be lower than 1.474 m³/s in Kheledula River and 0.318 m³/s in Devashi River.

Sedimentary regime: The Project has no large reservoir and will therefore not be able to retain sediments. For the same reason, the scheme will not be able to retain large floods, and materials carried by such floods will therefore transit through the rivers without major change. Impacts on the sediments regime are overall negligible.

Water quality: An assessment of water quality was undertaken and shows that the physical and chemical quality of water in the Project area is good. Water quality will not be measurably affected by the Project.

Impacts on biodiversity

The Project does not encroach with any legally protected area, proposed protected area or internationally recognized area. The closest conservation area is "Svaneti" Key Biodiversity Area / Important Bird Area, located 6.5 km from the Prpject. The closest candidate Emerald

Site is "Svaneti 2" located 7.5 km from the Project, on the other side of the mountain range that forms Kheledula basin northern limit

Baseline: Winter, springtime and summer field surveys, literature review and conservation databases review were undertaken in order to identify the biodiversity species of conservation interest present in the Project area. There are in the Project area several species of conservation interest meeting the criteria for "priority biodiversity features" or requiring "critical habitat assessment" as per EBRD's environmental and social policy.

These include notably species that have a vulnerable, endangered or critically endangered status according to Georgia Red List- of species: brown bear (*Ursus arctos*, EN), chamois (*Rupicapra rupicapra*, EN), brown trout (*Salmo trutta*, VU), the Caucasian salamander (*Mertensiella caucasica*, VU), the Dinnik's viper (*Vipera dinniki*, VU), the Caucasian squirrel (*Sciurus anomalus*, VU), chestnut tree (*Castanea sativa*, VU) and common walnut (*Juglans regia*, VU).

Some of the present species have a "vulnerable" status according to the IUCN: the Colchic barbell (*Barbus tauricus*), the Caucasian salamander, the Dinnik's viper and a plant: *Paracynoglossum imeretinum*. The Sand lizard (*Acerta Agilis*) is also present and is listed in Bern Convention Annex II. Finally, around ten species of bats, protected by the Eurobats convention ratified by Georgia, are also present in the Project area.

Impacts assessment: The Project has assessed the risks for each of these species with the objective to achieve no net loss through avoidance, minimization or compensation of the negative impacts. Impacts on terrestrial biodiversity are mostly related to the construction phase, while impacts on aquatic biodiversity are related to the scheme operation.

Mitigation measures: The adopted mitigation measures include for example calendar constraints (for nesting birds and bats maternities), riverbed management and maintenance (for fish), catch and relocation (reptiles and amphibians) or anti-poaching and awareness raising actions (bears and chamois). The cut of trees from Georgia Red List will be minimized, and the specimens that will nevertheless be cut will be replanted at 1:10, following Georgia's good practice.

Monitoring involving the stakeholders from the Project area will be put in place to monitor the efficiency of the adopted mitigation measures.

Social impacts

Temporary infrastructures: the project will require the temporary use of land, notably for construction camps and facilities, as well as storage sites. Three camp areas have been identified (see Figure 2).

Land acquisition and resettlement: the Project does not require any physical resettlement or any involuntary resettlement. The land required for the project is leased from the state or purchased/rented from private owner, through amicable contracts (Kheledula Energy LLC has provided assistance for land registration to the private owners whose land was legalizable, but not yet officially registered). No land-based livelihoods will be impacted by the Project. Economic and physical resettlements are avoided.

Disturbances: Noise, dust and traffic are the main disturbances expected during the construction period. Their potential negative impacts will be managed by limiting noisy activities to specific times, and by clearly separating work areas from public areas. Construction traffic will be regulated through a traffic management plan.

Leisure and tourism: River dependent activities exist on Kheledula River, and will be affected along the diverted reach. This is the case for fishing, which is practised as leisure, and kayaking which is occasionally practiced by tourists in Kheledula River. Both activities will still be possible upstream the Project, and there is no established business that depends on these activities.

Public health and Safety: the Project construction and operation will not generate any significant health risks. Safety risks will be increased during construction mostly as a result of traffic increase, and during operation in relation with the rapid flow variations that can be triggered by the hydropower scheme operation. A set of structural, operational and awareness raising measures will be implemented to mitigate this risk.

Workers health and safety: Before starting any construction activities, each construction company will submit to Kheledula Energy LLC for review and approval a Health, Safety and Environment Management Plan (HSEMP). The HSEMP will be aligned on (i) IFC's Environmental, Health, and Safety General Guidelines and (ii) EBRD/IFC's Guidance Note on Workers accommodation.

Cultural heritage: No sites of local, national or international value (such as UNESCO World Heritage Sites) are located within the area of influence of the Project. There is a potential for chance finds and Kheledula Energy LLC will therefore prepare, adopt and implement a Chance Find Procedure. The Project construction activities may also disturb users of the identified cultural sites, such as the Mothers' Monastery or the cemetery in Kheledi. In consultation with the Kheledi community, works will be organized and scheduled in order to avoid any disturbance to the local use of these resources.

Project benefits

Employment: About 250-300 construction personnel will be employed during the peak period of the construction works, up to 70% of which are expected to be from the community and, if not sufficient, from Lentekhi Municipality and then from the villages neighbouring the municipality. After the construction is completed, the number of operation jobs will be 20-25, out of which 90% will be local. The Project will be the main private employer of the Lentekhi municipality.

Community support: As part of the Kheledula Energy LLC corporate social responsibility, the Project will prepare and implement a community support plan in co-operation with local stakeholders and authorities and with the involvement of the internal stakeholders (employees/workers), with a focus on positive impacts on the local economy.

Public documentation

The public documentation available for this Project includes:

- the permitted ESIA documentation,
- the documents prepared to meet EBRD's environmental and social policy:
 - a supplementary ESIA
 - a stakeholder engagement plan, including past and planned consultations, and a grievance mechanism
 - an environmental and social action plan,
 - the present NTS

These documents can be downloaded on Kheledula Energy LLC or EBRD websites:

- <http://www.kheledulahpp.ge/>
- <https://www.ebrd.com/esia.html>

They can also be consulted in Kheledula Energy LLC premises in Tbilisi or in Lentekhi:

Kheledula Enerji LLC Chavchavadze Ave. 37-D, 0162, Tbilisi-Georgia	Physical address of Lentekhi Municipality is #24 King Tamar str., Lentekhi, Georgia.	Administration Building of Village Kheledi, Lentekhi Region, Georgia.
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Contact

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