



**Serbia – Vlasinske HPPs rehabilitation**

## **Non-Technical Summary**



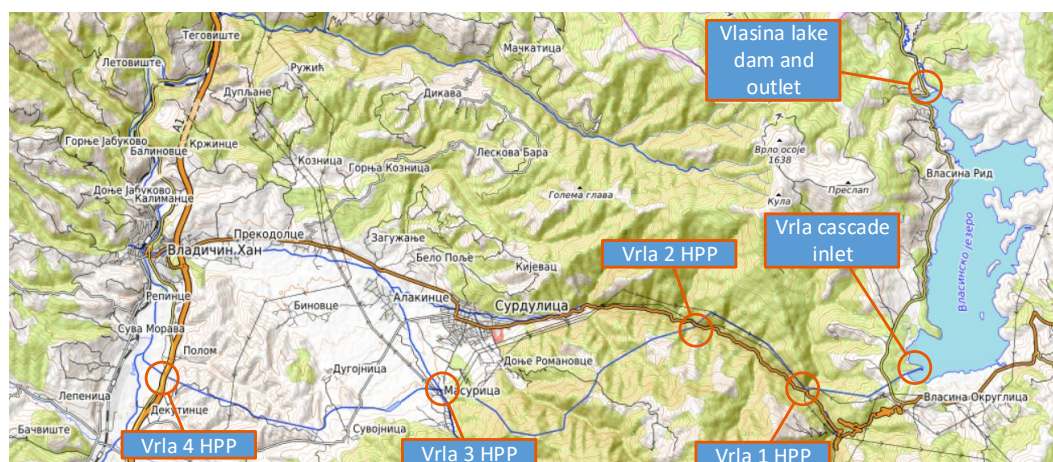
## Description of the project

Vlasinske hydropower scheme is an existing cascade of four hydropower plants located in the southern part of Serbia (see the figure below), 280 km South-East from Belgrade.



Vlasinske hydropower scheme was initially constructed in two stages. The first stage of construction was carried out in the period 1946 – 1958, while the second stage took place in the period 1972 –1977. Vlasinske hydropower scheme is fed from Vlasina Lake, the highest (1211 m) and largest artificial lake in Serbia.

Vlasina Lake has a total volume of around 1.65 km<sup>3</sup> out of which 1.05 km<sup>3</sup> can be used for hydropower generation. The cascade consists of 4 hydropower plants called Vrla 1 to 4, with a total capacity of 128 MW.



## The proposed rehabilitation project

The Vlasinske hydropower cascade needs rehabilitation. In particular, electromechanical equipment are in poor condition and inefficient. A major disadvantage of these obsolete equipment is their impact on the electric system reliability, since a fault or malfunction on a single generator requires the entire cascade to be partially shut down. As a result, the 128 MW Vlasinske cascade frequently only operates at an effective capacity of 60-80 MW due to malfunctions with the existing equipment.

The Project essentially includes the replacement of units (turbines + generators) at Vrla 1-4 HPPs, as well as the replacement of small equipment.

No works are planned on Vlasina dam or at Lisina Pumping Station in the project. The only work that will be undertaken within the Vlasina Lake protected area is the replacement of control equipment within the intake structure on Vlasina lake shore.

In terms of expected outcomes from the Project, the reconstruction will allow the reliable and safe operation of Vlasinske HPPs for the next 30 years of operation, as well as increasing the installed capacity of the site from 128 MW to 136 MW via increased efficiency.

More significantly, an expected indirect impact of the rehabilitation is to provide major benefits for the development of renewable energy in the country. This is because the rehabilitation of the Vlasinske HPPs will increase the stability of the electricity system, and improve EPS's ability to balance the grid, and allow for the increased penetration of intermittent renewables in the country's generation mix.

The works schedule is such that in each period of rehabilitation half of the production units will be available, while the other half will be under rehabilitation. Considering that, the regimes of exploitation of the Vlasina reservoir as well as the regimes of the rivers that flow into the intermediate reservoirs will remain within the designed and approved limits during the rehabilitation period.

## **Implementation arrangements and applicable E&S requirements**

The infrastructures to be rehabilitated are owned and operated by EPS who will manage the rehabilitation works and operate the rehabilitated hydropower scheme.

Energoprojekt Hidroinzenjering JSC, an engineering firm with its headquarter in Belgrade, was selected and contracted by EPS to prepare the technical and the regulatory E&S studies required for the Project.

The Project will then be implemented by a Project Implementation Unit (PIU) formed of EPS staff and based within EPS premises. Works will be implemented through a single "design and build" contract. The Project is expected to start in 2024, with first a 15 months preparation period (engineering, tendering and manufacturing) followed by a 3-year rehabilitation works period.

## **Physical impacts and mitigation measures**

The main physical risks and potential impacts are related to the construction phase and include:

- Increase of vehicles traffic with associated accident risks on the access roads to the hydropower plants;
- Local increase of noise, exhaust emissions and occasional obstruction of passage during construction.

The operation phase is expected to be associated with the same potential physical impacts as before the rehabilitation:

- Fluctuations of the water level in Vlasina Lake.
- Variations of the flow in downstream rivers and canals, depending on operation.

## Biodiversity impacts and mitigation measures

**Baseline:** Site visits, literature review and conservation databases review were undertaken in order to identify the biodiversity species possibly present in the Project area. The proximity of the project with protected or internationally recognized areas was also assessed:

- Vlasina Lake is both a legally protected area ("Landscape of Outstanding Features", "Ramsar site" and "Emerald Site") and an internationally recognized conservation area ("Key Biodiversity Area"). Only the water intake of Vlasinske hydropower scheme in Vlasina Lake is located inside this protected area.
- Vardenik protected area is a new protected area that was just recently established (in April 2023). It is adjacent to the South-Western part of Vlasina Lake Protected area, and covers Vrla 1 and 2 HPPs.

These two protected areas are the most sensitive receptors in the project area. They are both managed by the Touristic Organization of Surdulica Municipality, who was consulted during the Project preparation.

**Impacts assessment:** All the Project works will happen inside the hydropower scheme facilities. During construction, the main potential impact on biodiversity in the context of the Project is the risk of negative effect on the conservation objectives of the two protected areas, as a result of accidental pollution or workers mis-behaviour. During operation, the main risk would be a poor application of minimum flow requirements.

**Mitigation measures:** The adopted mitigation measures include (i) raising the awareness of workers on the presence of protected areas, and the interdiction of any poaching or flora collection in the Project area, and (ii) eliminating pollution risks by designing the new generating units so that they cannot result into leak of non-degradable oil in the environment. For the operation period, EPS has committed to consolidating the application and monitoring of minimum flows released in rivers.

## Social impacts and mitigation measures

**Employment:** Up to 100 workers will be employed during the peak period of the rehabilitation. After the rehabilitation is completed, the operation phase will require the same number of staff as presently.

**Land acquisition and resettlement:** the Project does not require any land acquisition. Water will remain available in Masuricka Lake for irrigation during the entire rehabilitation period, and after that during operation.

**Disturbances:** Noise and traffic are the main disturbances expected during the construction period. The contractor will be required to prepare a traffic management plan in order to manage safely traffic interactions at the connection between the construction sites and the public road, with the objective to avoid accidents.

**Leisure and tourism:** the Project site and its vicinity do not offer any particular interest for leisure or tourism activities. Tourism linked to Vlasina Lake will not be affected at all by the project.

**Public health and Safety:** the Project construction and operation will not generate any additional health risks. EPS will improve the general public awareness and signage regarding the safety risks around open channels with rapidly fluctuating flows.

**Workers health and safety:** Before starting any construction activities, the contractor will prepare specific Health, Safety and Environment Management Plans.

**Cultural heritage:** The Project site is not located next or close to a cultural or historic site that might be visually impacted.

## Contact

The project has a stakeholder engagement plan and a grievance mechanism in place.

If you are interested by the project and wish to receive further information, or if you have any grievance, please liaise with the Developer's contact persons:

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