

## Abstract for Africa Conference 2022

The complete paper based on the following abstract is suggested to be presented in the session "Future plans for water resources and hydro development – Potential and planned developments". If the paper is accepted, at least one of the authors will attend the conference to make the presentation.

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## Sendje Hydropower Project, Equatorial Guinea – Future Plans and Benefits

The hydropower project "Sendje HPP" is an ongoing project in the Republic of Equatorial Guinea, Central Africa. It will be part of the cascade on the river Wélé, being located downstream of the Djibloho powerplant on the southern part of the mainland about 40 km south of the city of Bata. The project was initiated by the Ministry of Industry and Energy, which hired Douglas Alliance as the main contractor and detailed designer in January 2011, after the prefeasibility and more detailed studies had been carried out. The construction works first started later in 2011, and a first stop of the construction works took place in February 2016. In 2018, the works were restarted after a break of two years. In October 2020, GE Proyectos took over the project on behalf of the Ministry and started a transition period for the project. AFRY Switzerland was hired by GE Proyectos in 2021 to perform an independent audit of the project, which was carried out in the spring of 2022 in order to support the project's continuation. With the main excavation works already finished and the main structures under construction, the project completion is envisaged in the near future.

The scheme consists of two main parts. Along the initial river, an intake channel will be formed with two dikes, leading the water to the forebay. Four penstock intakes will convey the water to the powerhouse, which will be equipped with four Francis turbines of 50 MW each. Downstream of the intake channel, a 63 m high and 425 m long concrete gravity dam will retain the river and create the reservoir giving a nominal head of 67.5 m. The reservoir is further supported by 2.6 km of dikes up to 20 m high on the left bank. Floods overtopping the dam will be conveyed over the ski-jump spillway to the initial river reach, which further downstream is joined by the outlet discharge from the power plant. The initial river reach which will be isolated between the dam structure and the outlet from the powerhouse is currently used for the diversion scheme during construction, and will after completion be ensured an environmental flow.

With an installed capacity of 200 MW and an estimated average annual production of 1.4 GWh, the project will not only be the country's largest hydropower scheme, but also

increase the current electricity production by about 50%. The project plays therefore an important part in the energy development strategy of Equatorial Guinea. In addition to increasing the country's production of renewable energy and reducing its carbon footprint, the project is also meant to contribute to the regional electrical interconnection program CEEAC/CEMAC, and may thus also benefit the neighboring countries.