

FEATURE OF TECHNICAL SERVICE

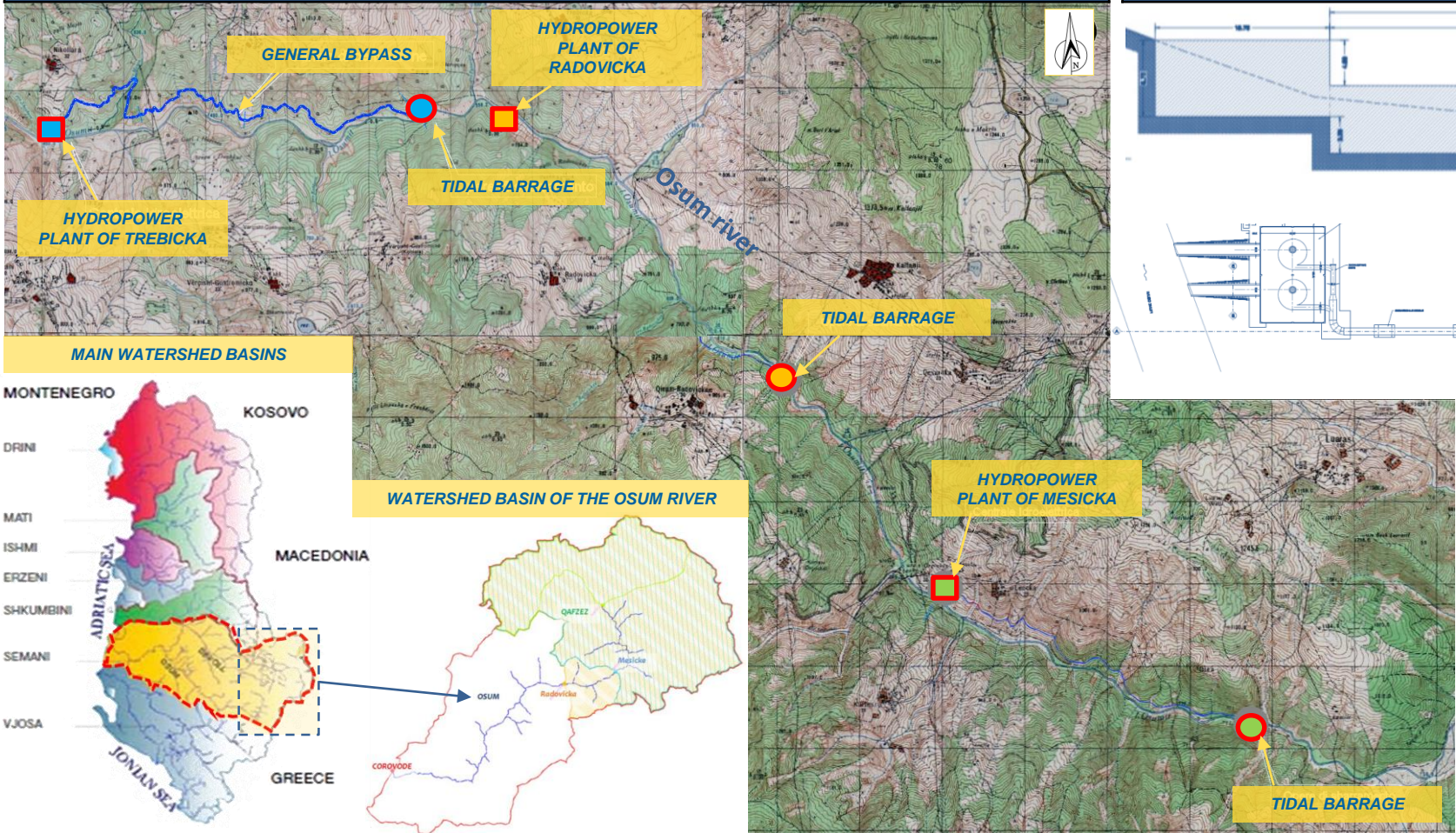
Subject	Feasibility study, final and executive design of the tidal barrage and hydroelectric plants along the Osum river: Trebicka, Radovicka, and Mesicke			
Carried out by	SGAI Srl di E. Forlani & C.			
Client	Sogliano Ambiente S.p.A.			
Service length	2012 - 2013			
Value of works	€ 29'878'612,24			
Categories value	IA.01	€ 11'275'000,00	IB.09	€ 512'500,00
	IB.08	€ 1'294'750,00	D.03	€ 16'196'362,24

HYDROGEOLOGICAL, HYDRAULIC AND HYDROELECTRIC ANALYSIS - Design issues and their resolution

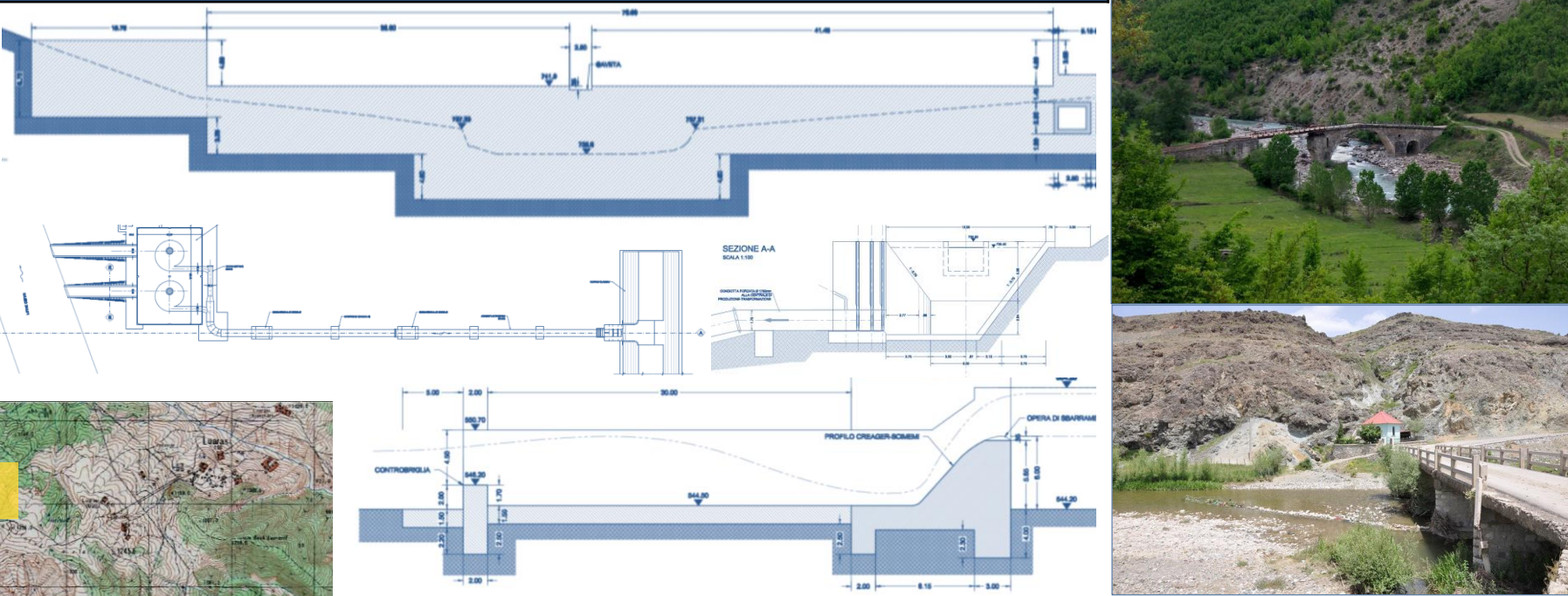
The service consists of the **feasibility study and the design of three dams and three hydroelectric power plants** in the upstream stretch of the Osum river, between the provinces of Korce and Corovode in southern Albania. This project made it necessary to draw up an **economic framework** and to carry out **specialized analyzes** that range from **geology-geotechnics, hydrogeology, hydrology, hydraulics-hydro-energy** to the **Business Plan**.

The Osum River, together with the Devoll, is the main tributary of the Seman River, which flows nearest the city of Fier. The three hydroelectric plants are located along the riverbed between the towns of Qafzez upstream and Corovode downstream. To assess the water supplies of the area affected by the dams, the hydrogeological and hydraulic framework of the various sites was reconstructed, carrying out **probabilistic analyzes of all the flow rate data** provided by the existing hydrometric stations along the Osum river and its tributaries. In detail, the analysis performed on the flow rates were of two types. The first concerned the study of the (average) daily flow rates associated with a certain degree of confidence, estimated considering a dispersion of the log-normal values (25%, 50% and 75%). A second analysis refers to the **maximum value of the monthly averages in the various years**. From the flood frequency analysis it has been observed that the distribution that best describes the quantity studied is of Gumbel type. From this analysis it was possible to obtain the design flood flow rates with different return times (200 years) for the **hydraulic dimensioning of the dams**, as well as the water supply, derivation works and production of electricity. The cost-benefit evaluation of the hydroelectric plant was performed, calculating the cash flows during the useful life of the plants (35 years) with reference to the initial investment, the operating costs and the revenues due to the production of energy (depending on available water supply).

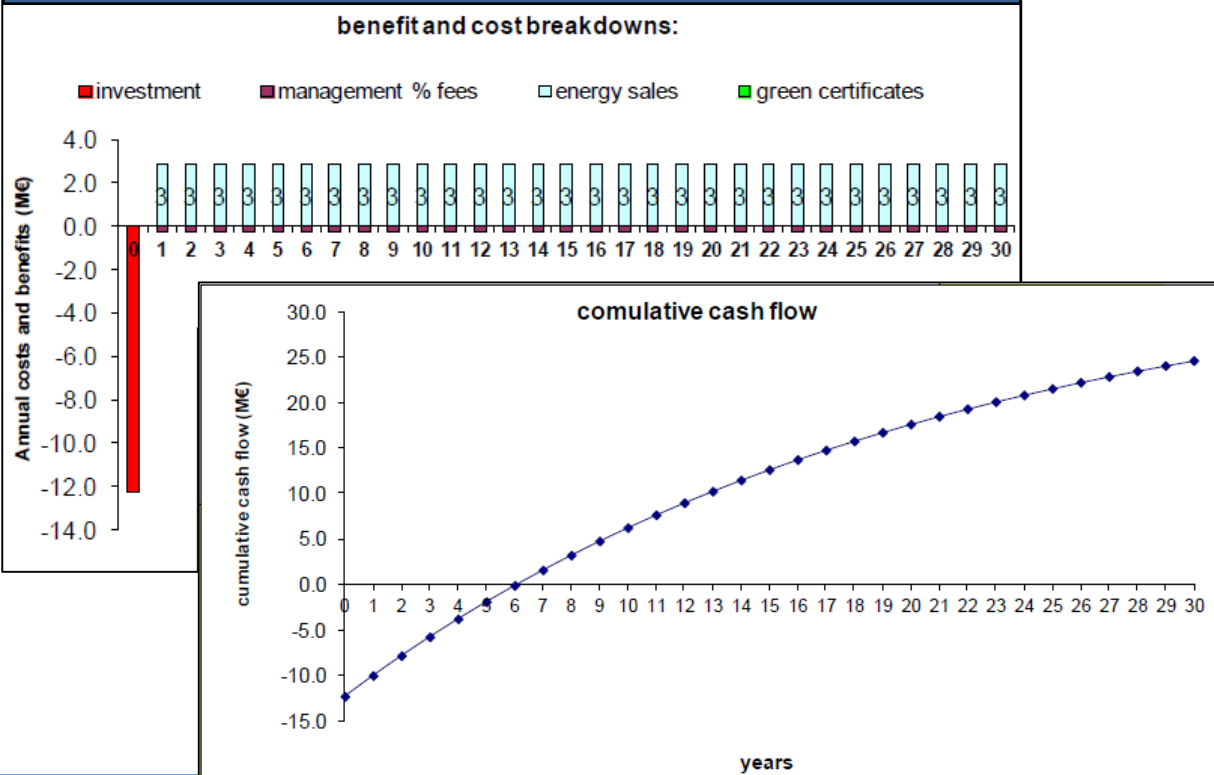
General plan of the tidal barrage and hydroelectric plants on Osum river



Constructive details of tidal barrages, water supply works and electric energy production



Evaluation of the technical and economic viability of the plants



Collection of hydrological data, probabilistic analysis of the minimum, avarage and maximum flow rates

