

FACTSHEET

on the Energy and Water models used for the analysis on hydropower and floods for the Drin Nexus Assessment

	Panta Rhei	OSeMOSYS
Type of model (integrated water-energy model)	Hydrological model	Long-term energy model
Institutions developing the model	Leichtweiss Institute at the Technical University of Braunschweig, Germany	KTH (The Royal Institute of Technology, Sweden)
Licences, availability, openness	Licence	Open Source, available for users without licence requirement
Links to models & resources		On the OSeMOSYS model: https://github.com/KTH-dESA/OSeMOSYS On the Drin Nexus Assessment model: https://github.com/KTH-dESA/Drin
Model characteristics (optimisation + hydrology/simulation)	Hydrological distributed conceptual model that performs simulations with high and temporal resolutions	Least cost optimisation model that determines the electricity generation mix and infrastructure investments, minimising the total system cost
Geographical scope and resolution	Drin-Buna/Bojana catchment, 30 metres DEM*	Albania, North Macedonia, Montenegro and Kosovo**, with special focus on the Drin Basin
Temporal scope and resolution	Flood Forecasting System, hourly resolution	Weekly time steps from 2020-2050
Key assumptions and inputs	41 hydrological stations and 70 meteorological stations: calibration 1979-1989 and validation 2001-2010	Capacity of all power plants (thermal and renewables), techno-economic data of power plants (e.g., costs, efficiencies, capacity factor, etc.), annual electricity demand, electricity trade interconnectors. Simplified hydrological representation of the cascade
Key outputs	Water discharge (m/sec) Water volume	Installed capacity (GW) Electricity generation (GWh) Costs (million USD)

*DEM: The spatial resolution of a DEM refers to the area of land being represented by a single grid cell, in this case (30m x 30m).

**This designation is without prejudice to positions on status, and is in line with UNSCR 1244 and the ICJ Opinion on the Kosovo Declaration of Independence.

KEY DATA ON THE HYDROPOWER PLANTS IN THE DRIN BASIN

Plant	Reservoir Storage Volume (million m ³)	Power Capacity (MW)	Started Operation	Net Head (m)	Water Inflow to Turbines (m ³ /sec)	AVG Output Past 15 Years (GWh)	Spillway Capacity (m ³ /sec)
Globocica	55.3	42	1965	95.29	2 x 25	186	1,100
Spilje	506	84	1969	91.3	3 x 36	288	2,200
Skavica***	2300	196	2025	~140	2 x 87	N/A	2,800
Fierza	2350	500	1976	118	4 x 123,5	1,363	2,670
Komani	188	600	1985	96	4 x 180	1,804	3,400
Vau i Dejës	310	250	1970	52	5 x 113	929	6,700
Total Drin River Basin	5,709	1,672				4,570	18,870

***New Skavica hydropower plant considered from 2025 onward using the specifications stated in the table.