ReHydro

Demonstration of Sustainable Hydropower Refurbishment

M9, Multimarket model demonstrated by ALPIQ

Work Package	WP3, Environmental improvements of refurbishment
Responsible	Yann Le Cahain, ALPIQ
Milestone reached	30.01.26

Task: T3.2 – Multimarket optimization tools

Milestone: MS9 – Multimarket model demonstrated by ALPIQ

Description: The stochastic optimisation tool ProdRisk has been extended to enable multi-market valuation of hydropower assets and successfully applied to the FMG demonstrator operated by ALPIQ. The enhanced tool supports the assessment of alternative refurbishment scenarios, including the Vissoie powerplant refurbishment, Moiry dam heightening, and increased maximum flow rate of the Niouc-Vissoie gallery. Results have been benchmarked against the existing single-market operational optimisation model and a deterministic approach demonstrated in XFLEX HYDRO. The multi-market optimisation tool has been made available to ReHydro partners through a virtual laboratory for project-related analyses.

A paper is under review at Springer Nature: Energy Systems which details the results and their analysis:

- Title: Multi-market revenue streams in hydropower investments
- Authors: Stefan Rex (SINTEF), Jonathan Droxler (ALPIQ), Ove Wolfgang (SINTEF), Siri Mathisen (SINTEF), Amund Skretting Bergset (SINTEF), Michael Martin Belsnes (SINTEF)

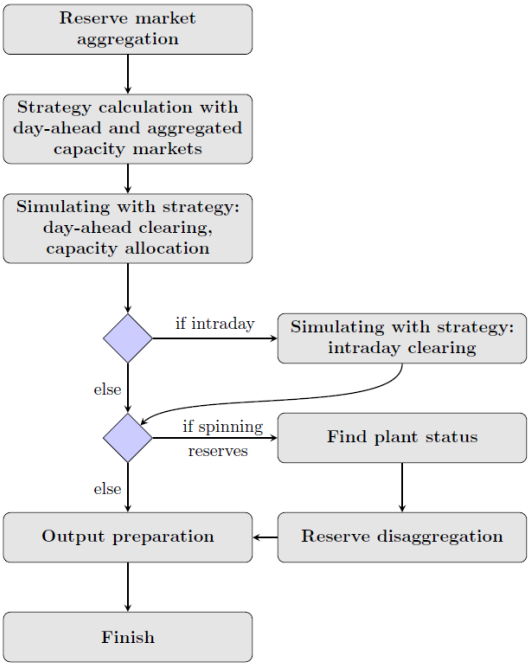

Fig. 2 Schematic workflow of the multi-market algorithm for day-ahead, intraday, and capacity markets.

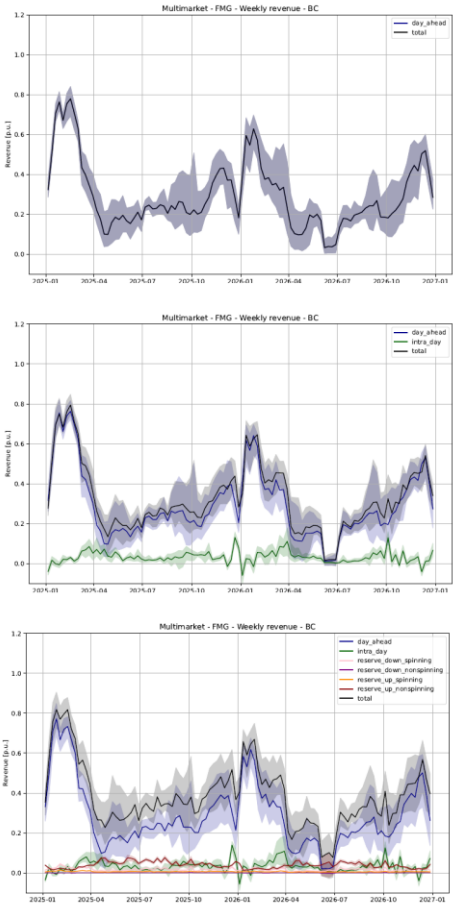

Fig. 5 Total revenue streams (arbitrary units) for simulations with market combinations 1, 2 and 3 (top to bottom).

DISCLAIMER / ACKNOWLEDGMENT

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