CIVIL AND ENVIRONMENTAL ENGINEERING

DIATI - Green hydropower - Instream smart-monitoring lab

Funded By	Dipartimento DIATI
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Context of the research activity	The research activities will be aimed at filling knowledge gaps on the ecological characteristics and swimming abilities of native and invasive fish species of the upper Po river watershed, in order to support the design and monitoring of more efficient technical fish passage solutions for the restoration of river connectivity at dams and weirs, improving the environmental sustainability of hydropower companies (green hydropower).
Objectives	The research activities will be aimed at supporting the development of technical solutions to reduce the impacts of hydropower plants on aquatic ecosystems, and in particular on the rivers longitudinal connectivity, in alignment with the objectives of the EU Biodiversity Strategy 2030 and the Nature Restoration Law. The research will contribute to fill the current relevant knowledge gaps on the ecological characteristics and swimming abilities of native and invasive fish species of the upper Po river watershed, in order to support the design and monitoring of more efficient technical fish passage solutions for the restoration of river connectivity at dams and weirs, improving the environmental sustainability of hydropower companies (green hydropower). In particular, it is envisaged to adopt an innovative approach of integrating different continuous monitoring systems (underwater video recording systems, environmental sensors (water levels, temperature, light intensity, etc.), RFiD antennas, etc.) to monitor the behavior of different native and invasive fish species within fish passages and/or instream flumes, and compare the effects of different environmental conditions and treatments. The research activities will be developed within the DIATI Department of Excellence project climate_transition@polito (ct_@polito) and will foresee a synergy with the ongoing LIFE Nature and Biodiversity project - LIFE21 NAT/IT/101074559 LIFE MINNOW Small fish, small streams, big challenges: conservation of endangered species in tributaries of the upper Po river.
Skills and competencies for the development of the activity	Knowledge about freshwater fish ecology and migration patterns, with a specific focus on native and invasive species of the upper Po river watershed Previous experience on fish telemetry (RFId tags and radiotracking) Previous field work experience on freshwater fish sampling and monitoring