

Soissons et al. (2025). Genesis of a long-term scientific monitoring to document the ecological and territorial transitions accompanying the removal of large dams in France. *Sciences Eaux & Territoires*, (47), article 8330. <https://doi.org/10.20870/Revue-SET.2025.47.8330>

Summary:

The paper "Genèse d'un suivi scientifique à long terme pour documenter les transitions écologiques et territoriales accompagnant l'effacement de grands barrages en France" presents the comprehensive, interdisciplinary scientific monitoring initiated to assess the ecological and territorial transitions following the removal of large dams on the Sélune River in Normandy, France.

International policies increasingly advocate for the restoration of aquatic ecosystems, with dam removal emerging as the suggested method to enhance biodiversity and re-establish ecological continuity in rivers. However, comprehensive scientific studies that along with the multifaceted impacts of dam removals also document the initial state of the systems prior to those interventions are lacking. Addressing this gap, the Sélune scientific program was launched in 2012 to monitor the effects — ecological, hydrological, and territorial — of dismantling the Vezins and La-Roche-Qui-Boit dams used for hydroelectric production. This initiative represents a pioneering effort in France and Europe due to the exceptional height of the dams and the extent of the territory directly affected by their removal (760 km²), and aims to provide a detailed understanding of the processes involved in large-scale river restoration. The dams were dismantled due to both economical (limited profit) and ecological reasons (poor water quality, sediment entrapment, blocked fish passage). The project initially faced strong opposition from the local community, due to the lack of communication from the State on the rationale behind the removals and the aimed objectives and benefits.

The program adopts an interdisciplinary approach, involving multiple stakeholders (Universities, research institutes, State agencies) that investigate various facets of the river's restoration. Key areas of focus include the evolution of water quality, river dynamics, aquatic and terrestrial biodiversity, and the socio-economic transformations within the local communities. By comparing the state of the Sélune River before and after the dam removals, the program seeks to elucidate the mechanisms underpinning ecosystem resilience and inform future ecological restoration policies.

As of 2022, the removal of these dams has reconnected approximately 1,000 kilometers of waterways to the ocean, offering a unique opportunity to observe the natural re-establishment of river dynamics and habitats. Preliminary findings indicate a return to natural river behaviors; sedimentation and nutrient flow have been restored, abnormalities in water temperature have been eliminated, invertebrate biodiversity has been enhanced, and migratory fish have been taking advantage of the re-opened river section. The ongoing monitoring, scheduled to continue until 2027, is expected to yield critical insights that will support the development of effective strategies for future ecological restoration projects.

Highlights:

- Comprehensive scientific studies that document the situation before and after a dam removal are generally lacking.
- The Sélune scientific program was launched in 2012 and represents a pioneering effort in France and Europe to monitor the comprehensive impacts of large-scale dam removal, specifically targeting the Vezins and La-Roche-Qui-Boit dams on the Sélune River.
- The Sélune scientific program adopted an interdisciplinary research approach by focusing on (1) fluvial dynamics and water quality, (2) aquatic and terrestrial biodiversity, and (3) territorial dynamics.
- Since 2012, comprehensive monitoring efforts have occurred, with sixteen research projects been initiated, encompassing pre-removal and post-removal studies, while more are emerging to further explore the long-term impacts.
- In 2019, the Sélune Observatory was established to facilitate collaborative environmental monitoring.
- Operational since 2020, the SISélune information system centralizes data from the scientific program, ensuring long-term conservation and open access.
- Initial results from the program suggest that the Sélune River is regaining its natural dynamics post-dam removal.
- The project initially faced strong local opposition, highlighting the importance of inclusive decision-making processes to improve public acceptance of dam removal projects.