Functional restoration of the valley of Saint Ruph-Glière-Eau Morte

Year of issue

2025

Summary

Due to major developments over the past two centuries, the Eau Morte Valley (a tributary of Annecy Lake) has a hydrosedimentary dysfunction with incised areas and areas with sediment excesses and an alluvial marsh disconnected from flooding. To reduce the impacts of the river's floods on uses, and to prevent the risk of urban areas flooding, a functional restoration programme for the valley has been developed by the federation of municipalities of Annecy lake sources. It was based on the renaturation of the Eau Morte bed, the functional restoration of the Giez marsh and the construction of crossing structures. This work has given the marsh a role as a flood expansion area. This project was also carried out by involving local residents in a process of territorial dialogue so that they themselves would be actors in the area and would participate in its management.

Photo Gallery



Location

45.761, 6.2615

Project

NWRM

National ID

France_10

Sector

Hydromorphology

Installation Date

2012-2023

Implementation status

Ongoing

Overview

Location of the project

The Eau Morte is the main tributary of the Annecy lake. Like its tributaries, the St Ruph and the Glière, it has its sources in the Bauges and Bornes mountains. The Giez marsh is located downstream of the valley, and the Eau Morte flows through it before flowing into Annecy Lake.
The headwaters of the Eau Morte Basin are very productive in terms of sedimentary materials, due in particular to the presence of suspended moraines. Its valley is an alluvial plain resulting from the progressive filling of an ancient lake by the progressive addition of sediments.

Country

France

NUTS2 Code

Rhône-Alpes

Sponge measures implemented in the case study

Wetland restoration and management

Floodplain restoration and management

Stream bed re-naturalisation

Removal of dams and other longitudinal barriers

Objectives

Reduce the risk of flooding in the village of Faverges, directly upstream of the Giez marsh (golf and agricultural uses) and at the Sollier-Verthier level;
Reconnect the Giez marsh with the Eau Morte floods;
Restore sediment transit in the valley;
Restore ecological continuity between a spawning area favourable for trout and Annecy Lake;
Restore a mobility space for the watercourse downstream of the marsh upstream of the hamlet of Sollier.

Involved partners

Authority type	Authority name	Authority role	Authority responsibility
Other	Communauté de communes des sources du lac d’Annecy (CCSLA) (federation of municipalities of Annecy lake sources)	Initiation of the measure	Responsible
Architects / Engineers	HYDRETUDES	Implementation	Supporting
Other	Conservatoire des espaces naturels (CEN) de Haute Savoie	Monitoring	Supporting
Regional / sub-national water authority	Water Agency Rhône Méditerranée Corse	Financing	Supporting
Regional / sub-national water authority	Haute Savoie Departement	Financing	Supporting

Documents

20240909_fiche_eau_morte_actualisation_mfo.pdf (1.05 MB)

Site Information

Climate Zone

Cool temperate moist

Temperature (°C)

11.20 °C

Elevation range

450 - 800

Slope range

High (20 %) upstream of Faverges

Low (0-5 %) downstream of Faverges

Vegetation class

Classic riparian vegetation, with some invasive species.

WFD Ecological status

Good

WFD Chemical status

Good

Design and Implementation

Project scale

Large

Project scale specifications

Watershed-scale project.

Project area

166 ha

Project area specifications

Divided into 5 sites

Favourable preconditions

The choice of these NWRMs followed the diagnosis of hydrosedimentary dysfunctions in the Eau Morte Valley, which had highlighted the need to restore the hydraulic functioning of the Giez marsh, and to restore sediment transit in the valley. Their interest lay in the global approach applied throughout the valley.

Financing

Total cost

2851853.20 €

Total cost information

Phase 1 (Functional restoration of the Mercier plain through renaturation) : € 723,061.60
Phase 2 (Reconnection of the Giez marsh) : € 147,931.00
Phase 3 (Restoration of ecological continuity in the town of Faverges) : € 1,881,313.40
Phase 4 (Restoration of a mobility space downstream of the marsh) : € 99,547.20

Costs land acquisition information

The public services bought the land of willing private owners. The ones who kept ownership of their land had to finance their fair part of the project.

Financing authorities

Authority name	Type of funding	Comments	Financing share
Agence de l'Eau Rhône Méditerranée Corse	Sub-national funds	Total : € 1,194,748.00 Phase 1 : € 140,426.00 (20 %) Phase 2 : € 72,500.00 (50 %) Phase 3 : € 932,500.00 (50 %) Phase 4 : € 49,322.00 (50 %)	41.8 % Total
Conseil départemental Haute-Savoie	Sub-national funds	Total : € 672,681.95 Phase 1 : € 71,438.49 (10 %) Phase 2 : € 44,379.30 (30 %) Phase 3 : € 581,074.00 (30 %) Phase 4 : € 29,864.16 (30 %)	23.5 % Total
CC des Sources du Lac d’Annecy	Sub-national funds	Total : € 418,799.97 Phase 1 : € 153,884.84 (20 %) Phase 2 : € 31,051.70 (20 %) Phase 3 : € 228,092.80 (12 %) Phase 4 : € 5,770.63 (6 %)	14,6 % Total
European Union	EU-funds: Rural development funds	Phase 1 : € 357,312.27 (50 %)	12.5 % Total
Municipality of Faverges Seythenex	—	Phase 3 : € 139,646.60 (7.4 %)	4.9 % Total
Municipality of Doussard	—	Phase 4 : € 11,781.66 (11,8 %)	0.4 % Total
Landowners	Private funds	Phase 4 : € 2,808.71 (2.8 %)	0,1 % Total

Policy and Governance

Policy description

The project covers the Giez marsh, as well as two other areas: the Mercier plain, which is 2 km upstream of the marsh, and the village of Faverges, which is located directly upstream of the plain.
The Giez marsh is part of a complex of wetlands annexed to Annecy Lake, called the Cluse du lac d'Annecy. It is crossed by the Eau Morte, with which it is in piezometric equilibrium. It is made up of a mosaic of environments: molinia grasslands, terrestrial reed beds, alkaline low bogs, alluvial white alder forests and rivers. It has a rich biodiversity (400 plant species and 354 listed animal species), including protected species. The marsh belongs to the Natura 2000 site of the Cluse du lac d'Annecy, benefits from a biotope protection decree since 1990.
The marsh development work has led to its gradual disconnection from the watercourse that crosses it. An accumulation of ice jams at the entrance to the marsh caused an accelerated deposition of materials in the Eau Morte bed. It reached the level of the upper bank, causing overflows upstream of the marsh, and limiting sedimentary transit through it.
The Mercier plain occupies the alluvial valley of the Glière, and is covered by an alluvial forest. The watercourse is strongly incised, and is therefore disconnected from its major bed.
The village of Faverges is crossed by the Glière river. The bed of the river includes several crossing structures that cause breaks in ecological continuity and a risk of flooding during 100-year floods.

Land ownership

Parts are public land, including land bought specifically for this project. Some are private land, in which the land owners take the responsaiblity of the maintenance.

Pressure remarks

Accelerated deposition of solid material in the river
Flooding events

Part of a wider plan

Yes

Wider plan

Wider plan type	Wider plan focus	Name	Comments
Catchment-based	Water	Contrat de bassin	Wateshed basin contract, which includes development work to be carried out and rules to be respected in the territory

Public consultation

Yes

Consultation activities

Activity stage	Activity type	Key issues	Comments
Screening phase	Dialogue weaving	Initial misunderstanding and conflicts between owners & municipality services.	Contact to all owners on the shore, discussions on river-related preoccupations. After the 2015 flood event.
Screening phase	Common strategy development	Integrating the preoccupations of all the stakeholders.	After 2015 and 2018 flood events, consultation with impacted inhabitants. Integration of their experience for the hydraulic model calibration. Public services and governance explaination. Action strategy construction and actions proposal.

Has contractual arrangements

Yes

Impacts and Monitoring

Monitoring System

Monitoring parameters

Floral monitoring
The conservatory of natural spaces of Haute-Savoie carried out a monitoring of plant communities in the alkaline lowland sector of the Giez marsh.
In addition, monitoring according to the Rhomeo flore protocol was carried out in June 2014 and June 2019 in the Giez marsh, in order to calculate the floristic engorgement index, the floristic soil fertility index and the floristic quality index.
Piezometric monitoring
A piezometric monitoring was carried out by the conservatory of natural spaces of Haute-Savoie thanks to 4 piezometers.
A second monitoring will be set up by the federation of municipalities of Annecy lake sources, based on the 9 piezometers used in 2006 for the diagnosis of the valley, and still present on the site.
Hydraulic modelling
A hydraulic model of the marsh was developed by the project leader. It is used to assess the hydrological behaviour of the valley for a given flood.

Maintenance

Maintenance requirements

Carried out by land owners. Removal of invasive species, log jams removal.

Impact Assessment Methodology

Biophysical impact assessment method

Floral monitoring

Piezometric monitoring

Hydraulic modeling

Socio-economic Impacts

Direct benefits

Flood safety.

Biophysical impacts: Hydrology

Hydrological effects

Clear reduction of floodwater and solid material transportation. Smaller water level.

Information on reducing flood risks quantity

Two successive floods of similar intensity occurred in 2015 and 2018. In 2015, the golf course and agricultural land upstream of the marsh were flooded, while in 2018 they were not affected, and it was the marsh that filled with water. The diversion channel operated in the desired format: instead of having a direct supply from the Eau Morte, the diversion channel was supplied by overflows from the watercourse on the left bank.
The 2023 massive flood events did no damages to houses in the watershed, thanks to the restoration work. It highlights how much the work is successful.

Biophysical impacts: Others

Information on other biophysical impacts

Landscape improvement.

Lessons Learned

Key lessons

As concerns floodrisk, the restored marsh perfectly played its water retention role in 2018 and 2023. The flood expansion took place in the marsh, avoiding upstream as well as downstrem impacts.
The overall watershed management strategy has been a success, showing that a common construction with stakeholders can be effective.

Barriers

Barrier type	Barrier role	Comments
Attitude of relevant stakeholders	Main barrier	The main obstacles were the time needed for elected officials to get involved in the issue, and to get shoreline property owners involved. The federation of municipalities of Annecy lake sources has taken on the role of mediator. The 2015 flood and its impacts initially acted as a brake, as several residents wanted to carry out emergency work.
Legal obligations / restrictions	Secondary barrier	Environmental authorisations and studies took a long time before the work could begin.
Other	Main barrier	High uncertainty about the future, if the watershed management will continue this way or shift towards a grey approach. Need to ensure continuity.

Drivers

Driver type	Driver role	Comments
Organisation committed to it	Main driver	A strong willingeness to explore restoration methods by the political decision makers.

Success factors

Success factor type	Success factor role	Comments
Attitude of the public	Main factor	The 2015 flood then proved to be a lever for the conduct of the territorial dialogue and the involvement of local residents in the project. Today, the transversal approach between elected officials facilitates the implementation of flood prevention within a framework of upstream-downstream solidarity.

Transferability

Reproductible in other watersheds with degraded rivers, but needs a solid governance and public participation. It is already being mimicked in a neighboor watershed.

Sources

Sources

Restauration hydromorphologique des bassins de l’Eau Morte et du ruisseau de Montmin à l’amont des secteurs vulnérables de Sollier-La Reisse-Verthier : la recherche de solutions de gestion des risques d’inondations co-construites avec les habitants.

Programme de restauration fonctionnelle St-Ruph-Glière-Eau-morte.

Stratégie locale de gestion des risques inondations, territoire à risque important d’inondation d’Annecy

Bulletin CCSLA 01 2025

GEMAPI - Restoration fonctionnelle de la vallée Saint Ruph - Glière - Eau Morte

Collection of Action Sheets – Fier River and Annecy Lake Basin Contract