

RESTORATION OF UPSTREAM TRIBUTARIES OF THE CLAUGE RIVER

2015 - 2018



IDENTITY CARD

GEOGRAPHICAL LOCATION

Franche-Comté - Jura -
Forêt de Chaux

NATURAL RISKS TARGETED

- Drought
- Erosion

HABITAT(S) CONCERNED

Rivers

TYPES OF NBAS

Restoration of ecosystems

PROJECT LEADER AND PARTNERS

Jura ONF

Clauge river restoration
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FUNDERS AND BUDGET

- Rhône Mediterranean Corsica
Water Agency (80 %)
- ONF (The French National
Forest Office) (20 %)

750 000 € exc. VAT





PROJECT OBJECTIVES

- **For adaptation to climate changes :**
Increasing the resistance of forest stands to the risk of drought.
- **For the local area :**
Improving water quality and groundwater levels, reinforcing water availability.
- **For managing natural risks :**
Limiting erosion of the riverbed and banks, by slowing down the flow and replenishing the plateaux ("platières") with sediments.
- **For biodiversity :**
Restoring the river connectivity and its biodiversity.

Before
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CONTEXT AND ISSUES

REGULATORY CONTEXT

- Natura 2000 site ZSC FR4301317 : Forest valleys, rivers, streams, wetlands and temporary habitats in the Chaux forest
- Natura 2000 site ZPS FR4312005 : Chaux forest
- GEMAPI (Management of aquatic habitats and flood prevention), Doubs Valley river contract

The Chaux forest, the 2nd largest broadleaf forest massif in France, covers 22,000 ha of state and municipal forests. It flows across an alternation of silty plateaux (known locally as « platières ») and dales that drain into the Clauge and then the Doubs. It is classified as Natura 2000 under the European Birds and Habitats Directives.

Of the 413 km of waterways running through the forest plots, only 88 km are permanent. Major drainage and correction work on these small watercourses was carried out in the 1950s and 1960s to dry out the areas to be reforested and improve farming conditions. 50 years later, the growing awareness of natural habitats and water management in forestry practices, as well as the environmental policy of the National Forests Office (ONF), have led the managing body to reconsider former practices and their subsequent repercussions: lowering of the watertable in the valleys, regressive erosion and increased summer drought with localised oak dieback.

ACTIONS IMPLEMENTED

In May 2015, the ONF signed a partnership agreement with the Rhône Mediterranean Corsica Water Agency and the University of Franche-Comté to carry out restoration works on the upstream tributaries of the Clauge. These restoration works, on around 45 km of streams (three stretches of 15 km each), began in July 2015. They consisted in redirecting the flow into the former natural meanders of the stream. The work continued over the following summers. Three stretches of 15 km have now been completed.

- Complete filling in of drains and ditches in the upstream part of the streams at the edge of the plateaux
- Setting up of obstructions and counter obstructions elsewhere to allow the streams to return to their old bed and/or create a new bed

The length of the streams has been approximately doubled. The project has also improved the taking into consideration of the streams in forestry operations and the search for alternative solutions to conventional service tracks in order to preserve the restored streams and avoid crossing them.

Scientific and technical monitoring to assess the results of the project :

- Scientific monitoring by the University of Franche-Comté : piezometric monitoring (changes in the level of the watertable) and monitoring of aquatic insects;
- Dendrometry and forestry monitoring carried out by the ONF.

GOVERNANCE ADOPTED

Setting up a steering committee which meets twice a year to monitor the methodological, technical and scientific aspects of the work and its impact on flora and fauna.

List of Natura 2000 Steering Committee member organisations:

- ONF Jura
- Mediterranean Corsica Water Agency
- University of Franche-Comté
- Franche-Comté Regional Environment, Planning and Housing Directorate (DREAL)
- Jura Departmental Directorate of Territories (DDT)
- Grand Dole conurbation inter-commune grouping
- The Saône-Doubs Public Territorial River Basin Institution (EPTB)
- Doubs-Loue Syndicat Mixte (grouping of different types of organisations)
- Jura Departmental Wetlands Committee (Jura Hunters' Federation)
- Jura Angling Federation
- French Biodiversity Agency (OFB)
- Franche-Comté Natural Areas Conservancy (CEN)

The French National Forest Office (ONF) and the Syndicat Mixte Doubs Loue are jointly responsible for the general management of this project.

CALENDAR

PROJECT SCHEDULE

2015 - 2019

Restoration of stretch 1, 2 then 3 :

- Filling in ditches and drains with wooden palisades covered with clay materials taken from the site
- Logjams of deadwood fascines found on site
- Restoration of former meanders with recharging by means of triple banks of aggregates

BENEFITS AND CONTRIBUTIONS OF THE PROJECT



BENEFITS REGARDING TARGETED ADAPTATION ISSUES

- **Low-water availability** : a two-week extension of the period when water is available in the soil in late spring and autumn. In response, the time when the upper water table is present increases by about a month in both seasons, i.e., two months over the whole hydrological year.
- **Erosion** : the works lifted the riverbed, reducing current speeds and sediment transport.



BENEFITS FOR THE PROTECTION, MANAGEMENT AND RESTORATION OF BIODIVERSITY

- Increase in the number and quality of temporary wetland habitats
- Return of certain aquatic insects
- Increase in amphibian reproduction
- Effects on the forest stands have not yet been highlighted, due to the long reaction time.

OTHER BENEFITS ACHIEVED



Others benefits achieved : the dune walk that has been created has notably helped to highlight these environments and raise public awareness through educational panels along the route. Today, all the urbanized neighborhoods are connected to the various authorized beach access points. Moreover, although the work carried out represented a significant investment, it helps to limit annual maintenance costs. Today, this maintenance, which costs the community around €10,000 to €20,000 per year, ensures the preservation and stability of 2.5 kilometers of dunes and the protection of the urban areas located just behind.

MONITORING INDICATORS

Adaptation to climate changes

Erosion : piezometric monitoring (changes in the level of the watertable in the ground) - University of Franche-Comté

Biodiversity

Dendrometry and forestry monitoring - ONF



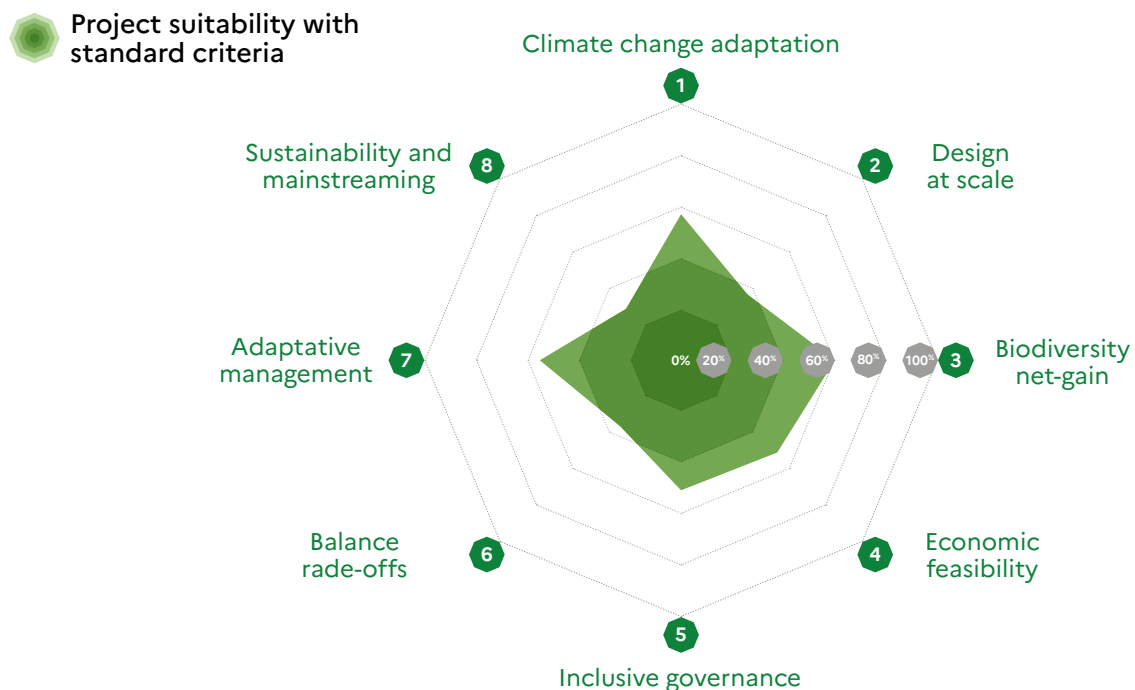
LEVERS FOR SUCCESS

- **Concertation** : the same organisation, the ONF is responsible for both managing the forest and project management for the works, which facilitates exchanges because they between different units of the same agency, particularly concerning the tree-felling. programme and the scheduling of restoration works.

RECOMMENDATIONS

- **Administrative procedures** : Take into account the time required for administrative procedures (Natura 2000 impacts, water law and public inquiries).
- **Technical expertise** : Develop the number of companies experienced in this type of work.
- **Reproducibility** : To expand and develop this project to enable the restoration of the 400 km of watercourses located in the forest massif so as to have a real effect on flooding, drought and erosion, etc.
 - Restoration of the Tanche, a tributary of the Clauge, pre-project study commissioned in 2021
 - Restoration of streams in the Doulonne river basin
 - The Doubs-Loue Syndicat Mixte wishes to pilot all future actions in the Forêt de Chaux catchment area as within the framework of the GEMAPI, which would root the project more firmly in the area

ANALYSIS ACCORDING TO THE IUCN'S GLOBAL STANDARD FOR NATURE-BASED SOLUTIONS



FOR FURTHER INFORMATION

Project web page on the ONF website :
<https://www.onf.fr/vivre-la-foret/+/39a::restauration-de-cours-deau-en-milieu-forestier.html>

PROJECT LEADER

- **Hélène Gervaise**
Natural Habitats Risk Project Manager – Water
ONF - The French National Forest Office
helene.gervais@onf.fr

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FACT FILE EDITOR

Marion Poncet
IUCN French
Committee
marion.poncet@uicn.fr

