

PLANTING FLOOD CONTROL HEDGES IN THE LÈZE VALLEY

2009 - 2017



IDENTITY CARD

GEOGRAPHICAL LOCATION

Catchment area - Lèze valley
(Ariège, Haute-Garonne)
Occitanie region

NATURAL RISKS TARGETED

- Erosion, flooding
- Mud slides
- Water runoff

ECOSYSTEM CONCERNED

Rivers

TYPES OF NBAS

Restoration and creation of habitats

Flood control hedge
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PROJECT LEADER AND PARTNERS

SMIVAL (Syndicat Mixte
Interdépartemental de la Vallée
de la Lèze, an inter-departmental
grouping of various organisations)

FUNDERS AND BUDGET

3.1M€ for PAPI Lèze (2006-2016),
of which 317 k€ for hedges.
State, Occitanie region, Ariège
and Haute-Garonne departments,
Adour-Garonne Water Agency,
European Commission



PROJECT OBJECTIVES

- Reduce the risk of flooding and mudslides
- Reduce the river's energy and erosion potential
- Recreate a traditional heterogeneous landscape
- Increase biodiversity and restore connectivity



CONTEXT AND ISSUES

300 km of hedgerows disappeared in 30 years (1980-2008) in the Lèze valley, i.e. a quarter of all hedgerows. As a result, the valley's slopes are exposed to recurrent flooding from mudflows, which reached their peak during the storms of May and June 2007. To tackle this threat, the SMIVAL, which brings together the valley's 30 communes, implemented a public policy of planting hedgerows, enabling 30 km of hedgerows to be replanted over the period 2009-2017. These flood-control hedges, located at the bottom of the valley or on the slopes, help to intercept runoff and reduce the risk of flooding by delaying the spread of high-water peaks and holding back mudflows in steep plots.

REGULATORY CONTEXT

- GEMAPI (management of aquatic habitats and flood prevention)
- PAPI (flood prevention action programme, 2006-2016)

ACTIONS IMPLEMENTED

Living hedges made up of 3 to 5 rows of native trees, shrubs or bushes suited to the local soil, and to climatic and epidemic conditions. The hedges are planted on the floodplain, perpendicular to the riverbed, and are regularly spaced (every 300 to 500m). The trial site and planting programme were launched in 2009-2010 with the planting of 2 pilot hedges. In all, between 2009 and 2017, around 30km of hedges were planted across the Lèze floodplain and on the hillsides, at a rate of 5km per year.

GOVERNANCE ADOPTED

The implementation of the hedgerow planting project is supervised by a technical committee, co-chaired by the Prefect and the Chairman of SMIVAL.

As the project concerns cultivated areas, SMIVAL has involved the chambers of agriculture in all the steps relating to agricultural issues (consultation phase, definition of the land policy) and in proposing various types of agreements to owners and farmers.

In addition, several methods of involving stakeholders (farmers, local residents) have been used, such as the institutional consultation linked to the development of the Lèze PAPI, public meetings, local consultation workshops, field visits, the production of information, press releases, brochures, etc.

CALENDAR

PROJECT SCHEDULE

| | |
|--------------------|--|
| 2009 - 2015 | Planting of young hedgerows (1 year to promote the development of a strong root system) 5km/year Weather and flood monitoring |
|--------------------|--|



BENEFITS AND CONTRIBUTIONS OF THE PROJECT



BENEFITS REGARDING TARGETED ADAPTATION ISSUES

2D hydraulic modelling (HERMEL et al., 2010) indicates that covering a floodplain with evenly spaced hedgerows over a 40 km stretch can delay the propagation of the high-water peak by 10% but would have a negligible effect on peak flow. Hydrological modelling of the entire Lèze valley (AGERIN 2006) indicates that transforming a landscape devoid of hedgerows into bocage would reduce peak flood discharge by around 40%.



BENEFITS REGARDING THE PROTECTION, MANAGEMENT AND RESTORATION OF BIODIVERSITY

It is clearly recognised that increasing the length of hedgerows (which are not used for forestry) is beneficial for biodiversity, both fauna and flora. However, no ecological monitoring was carried out during this project.



OTHER BENEFITS ACHIEVED

Educational benefit : a botanical trail has been set up by pupils from a local school. It enables local residents to learn more about the ecosystem in which they live.

MONITORING INDICATORS

Adaptation to climate changes

Feedback on rainfall disasters (meteorological monitoring and monitoring of mud flows and flooding of roads and properties) is collected every year. This tends to demonstrate the local effectiveness of hedges in preventing runoff, erosion and mudflows.

Biodiversity

To be developed

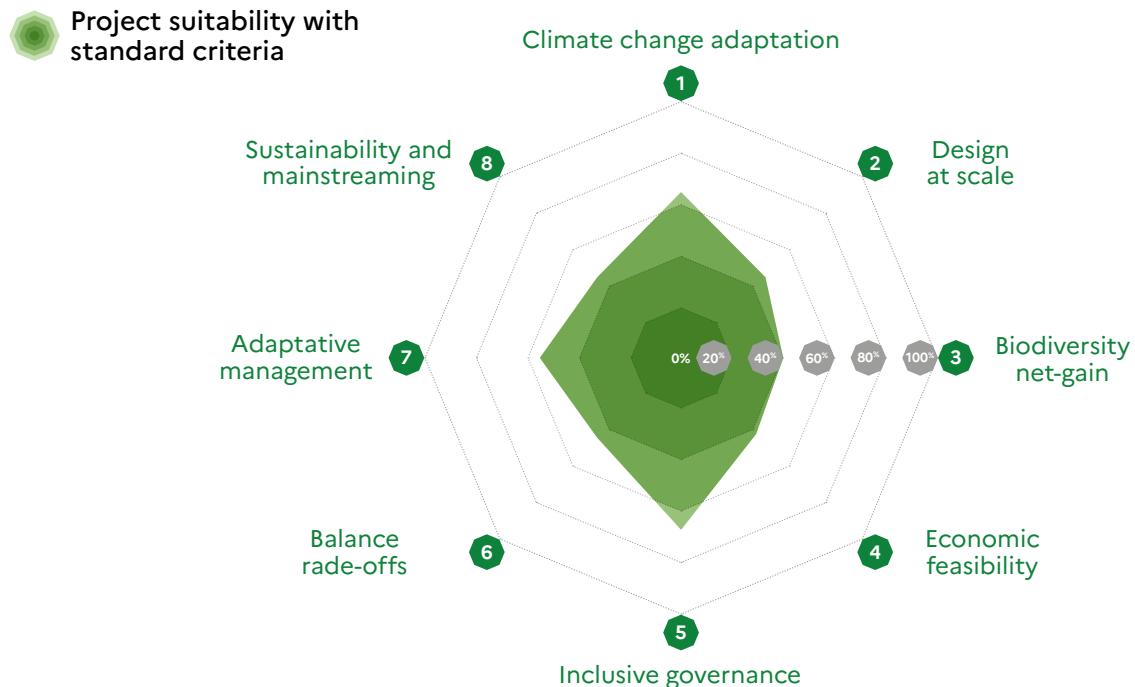
LEVERS FOR SUCCESS

- **Feedback** : The effectiveness of windbreak hedges against risk is a good mediation tool to engage farmers in creating these hedges, which lead to an increase in biodiversity..

RECOMMENDATIONS

- **Operability** : Develop biodiversity monitoring. Particularly as Criterion 2 of the IUCN standard, which defines a project as a Nature-based Solution, implies measuring the net gain in biodiversity.
- **Reproducibility** : scale up and promote this project to enable the restoration and creation of linear hedgerows in areas where there are none and where flooding is increasingly severe and devastating.

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



FOR FURTHER INFORMATION

- SMIVAL website (in French) :
<http://www.smival.fr/inondations/les-haies-brise-crue>
- Presentation of project
https://www.cerema.fr/system/files/documents/2018/11/7_Plantation%20de%20haies.pdf
- Feedback on mudslides
http://www.smival.fr/images/documents/Poster_REX_coulees_de_boue_2009-2016.pdf

PROJECT LEADER

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