



## Natural Water Retention Measures

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# Case Study

## Flood meadows, Marais Poitevin



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# Table of content

I. Basic Information .....	1
II. Policy context and design targets .....	2
III. Site characteristics .....	3
IV. Design & implementation parameters .....	3
V. Biophysical impacts.....	5
VI. Socio-Economic Information .....	6
VII. Monitoring & maintenance requirements .....	7
VIII. Performance metrics and assessment criteria .....	7
IX. Main risks, implications, enabling factors and preconditions .....	7
X. Lessons learned.....	7
XI. References .....	8

## I. Basic Information

Application ID	<i>France_02</i>		
Application Name	<b>Floodmeadows Marais Poitevin</b>		
Application Location	Country:	France	Country 2:
	NUTS2 Code	FR51-Pays de la Loire FR53-Poitou-Charentes	
	River Basin District Code	FRG-La Loire, les cours d'eau côtiers vendéens et Bretons	
	WFD Water Body Code	Sèvre Niortaise et Marais Poitevin	
	Description	The Marais Poitevin is located in Western France. This is the second largest wet area in France (about 100 000 ha). It is astride two administrative regions (Pays de la Loire and Poitou-Charentes) and three Département (Vendée, Deux-Sèvres and Charente-Maritime). It is located between the cities of La-Roche-sur-Yon (to the North), La Rochelle (to the South) and Niort (to the East). The Atlantic Ocean is located to the West of the Marais Poitevin. Common floodmeadows cover about 2000 ha. They are located near the Northern and Southern borders of the Marais Poitevin.	
Application Site Coordinates <i>(in ETRS89 or WGS84 the coordinate system)</i>	Latitude: 46,3	Longitude: -0,8	
Target Sector(s)	Primary:	Agriculture	
	Secondary:	Hydromorphology	
Implemented NWRM(s)	Measure #1:	<i>A1 Meadows and pastures</i>	
	Measure #2:	<i>N3 Floodplain restoration and management</i>	
Application description short	The Marais Poitevin is the 2nd largest wetland in France. About 2000 ha of floodmeadows are owned by local municipalities and commonly managed by local farmers. Such meadows play an important role for water regulation. For instance, they contribute to the storage of water during flood events, to ground water recharge, to the removal of pollutants, etc. In the 1980s, in reaction to their destruction, management agreements between municipalities, the Parc Interrégional du Marais Poitevin and environmental NGOs as well as agreements between municipalities and farmers were signed. They reinforce the traditional agri-environmental management (pluri-specific pastures: cattle, horses, geoses) in order to preserve the numerous services provided by the Marais Poitevin.		

## II. Policy context and design targets

Brief description of the problem to be tackled	For 10 centuries, these areas were used as pastures by local farmers. Local environmental conditions (floods, presence of salt in the soil, etc.) and management by humans (pasture...) created very specific ecosystems. In the 1970s and 1980s, only a few breeders used the meadows. Ecosystems as well as all services provided by these common meadows (regulation of water cycle, flood protection...) were endangered. Municipalities (owners of the common meadows) discussing with the Parc Naturel Régional du Marais Poitevin in order to change the management of meadows. An management agreement was found in 1989.		
What were the primary & secondary targets when designing this application?	Primary target #1:	Regulation of hydrological cycle and water flow	
	Primary target #2:	Biodiversity and gene-pool conservation in riparian areas	
	Secondary target #1:	Natural assimilation (purification) of effluents through dilution, dispersion, and physico-chemical processes	
	Secondary target #2:	Flood control and flood risk mitigation	
	Remarks		
Which specific types of pressures did you aim at mitigating?	Pressure #1:	Choose an item.	
	Pressure #2:	Choose an item.	
	Remarks	The main pressure was the abandonment of floodmeadows. They were not used any more as pastures. This was a pressure for ecosystems.	
Which specific types of adverse impacts did you aim at mitigating?	Impact #1:	Floods Directive identified impact	Economic activity
	Impact #2:	Floods Directive identified impact	Rural Land Use
	Impact #3:	Floods Directive identified impact	Property
	Impact #4:	Floods Directive identified impact	Other Environmental impacts
	Remarks		
Which EU requirements and EU Directives were aimed at being addressed?	Requirement #1:		
	Remarks		
Which national and/or regional policy challenges and/or requirements aimed to be addressed?			

### III. Site characteristics

Dominant Land Use type(s)	Dominant land use	231-Pastures
	Secondary land use	321-Natural grasslands
	Other important land use	Type in the relevant Code Level3
	Remarks	
Climate zone	cool temperate moist	
Soil type		
Average Slope	nearly level (0-1%)	
Mean Annual Rainfall	600 - 900 mm	
Mean Annual Runoff		
Average Runoff coefficient (or % imperviousness on site)		
	Remarks	
Characterization of water quality status (prior to the implementation of the NWRMs)		
Comment on any specific site characteristic that influences the effectiveness of the applied NWRM(s) in a positive or negative way	<i>Positive way:</i> Good management of water levels throughout the year	
	<i>Negative way:</i> Bad management of water levels throughout the year (water in late spring) Health problems of cattle	

### IV. Design & implementation parameters

Project scale	Medium (eg. public park, new development district)	18 common meadows, about 2000 ha
Time frame <i>NWRM(s) Installation date and lifespan</i>	Date of installation/construction	1989 (for the first agreements aiming at protecting floodmeadows) For more than 10 centuries (retreat of the sea and use as pasture)
	Expected average lifespan (life expectancy) of the application in years	<i>Specify</i>
Responsible authority and other stakeholders involved	<i>Name of responsible authority/ stakeholder</i>	<i>Role, responsibilities</i>
	1. Parc Interrégional du Marais Poitevin (PIMP)	Responsible authority: in charge of the coordination of the program at the scale of the 2000 ha of floodmeadows. Also in charge of technical support to farmers (for example, health monitoring)

## CS: Flood meadows, Marais Poitevin, France

	2. 18 Municipalities	Responsible authority: In charge of the coordination at the level of each municipality.	
	3. WWF and LPO	Supporting. Environmental NGOs.	
	4. Farmers	Involved in the management through agreements with municipalities. They benefit from CAP's subsidies and do not pay a rent for using common meadows, but they pay a tax to municipalities for benefiting from services provided by the PIMP and municipalities. They are responsible for their livestock even when it is in the common meadows.	
The application was initiated and financed by	First (in the 80s), a few municipalities were thinking about the management of their common floodmeadows. The Parc (PIMP) joined the process a bit later and at the end of the 1980, guideline agreements between the PIMP, municipalities and two environmental NGOs were signed. It was financed by the PIMP and the involved municipalities.		
What were specific principles that were followed in the design of this application?	Bring together agricultural/economical issues and environmental issues Responsibility of farmers (administrative procedures for farmers in order to avoid problems in the common meadows) Common meadows should provide incomes to municipalities		
Area (ha)	Number of hectares treated by the NWRM(s).	About 2000 ha	
	Text to specify		
Design capacity	The common meadows play a central role in the water management of the Marais Poitevin. The volume of stored water is hard to estimate. Depending of the year, the 2000 ha are totally or partly flooded from October/November to Mars/April.		
Reference to existing engineering standards, guidelines and manuals that have been used during the design phase	<i>Reference</i>		<i>URL</i>
	1.		
	2.		
	3.		
	4.		
	5.		
Main factors and/or constraints that influenced the selection and design of the NWRM(s) in this application?	Common floodmeadows are used as a pasture for 10 centuries. Pasture by multi-specific herd (cattle, horses, geese) went on because it is a good way to valorize the produced biomass and to maintain ecosystems and landscapes. Soil structure (micro relief) prevented from using machinery for mowing and ecosystem services (flood protection, water purification, role in water circle...) would have been lost if such areas were used for cropping. They are common land owned by municipalities.		

## V. Biophysical impacts

Impact category (short name)	Impact description (Text, approx. 200 words)	Impact quantification (specifying units)	
		Parameter value; units	% change in parameter value as compared to the state prior to the implementation of the NWRM(s)
Select from the drop-down menu below: 			
Runoff attenuation / control			
Peak flow rate reduction			
Impact on groundwater	<i>During the winter season, water is stored at the surface of the common meadows. This contributes to the recharge of groundwater reserves.</i>		
Impact on soil moisture and soil storage capacity			
Restoring hydraulic connection	<i>Common floodmeadows play an important role in the hydraulic management of the Marais Poitevin. A system of channels, sluices, etc. is used in order to manage the water level.</i>		
Water quality Improvements	<i>Floodmeadows contribute to the purification of water. This is particularly important for shellfish farming downstream the Marais Poitevin.</i>		
WFD Ecological Status and objectives			
Reducing flood risks (Floods Directive)	<i>Floodmeadows store a large amount of water (surface but also groundwater). This helped avoiding floods in some inhabited areas.</i>		
Mitigation of other biophysical impacts in relation to other EU Directives (e.g. Habitats, UWWT, etc.)	<i>Very important role for biodiversity (very specific fauna and flora)</i>		
Soil Quality Improvements			
Other			

## VI. Socio-Economic Information

What are the benefits and co-benefits of NWRMs in this application?	<p>Economic benefits:</p> <ul style="list-style-type: none"> <li>- For municipalities: source of incomes</li> <li>- For farmers: common meadows are used as pastures</li> <li>- For inhabitants: increase of the value of neighboring goods (houses...)</li> <li>- Tourism, etc.</li> </ul> <p>Social benefits:</p> <ul style="list-style-type: none"> <li>- Very important for creating social links between stakeholders (farmers, managers, elected representatives, inhabitants, NGOs...)</li> </ul>		
Financial costs	<b>Total:</b>		
	<i>Capital:</i>		
	<i>Land acquisition and value:</i>		
	<i>Operational:</i>		
	<i>Maintenance:</i>		
Were financial compensations required? What amount?	Was financial compensation required: Yes		
	Total amount of money paid (in €):		
	Compensation schema: Common meadows are not rented by farmers. However, farmers have to pay a tax to municipalities when they benefit from services such as the health monitoring of the herd, maintenance of common meadows, fences, etc.). Amount of the tax : about 280 €/head		
	Comments / Remarks: Farmers benefit from the CAP subsidies (including agro-environmental measures)		
Economic costs	<i>Actual income loss:</i>		
	<i>Additional costs:</i>		
	<i>Other opportunity costs:</i>		
	<i>Comments / Remarks:</i>		
Which link can be made to the ecosystem services approach?	<p>Provided ecosystem services:</p> <ul style="list-style-type: none"> <li>- Water provision to deliver water services to the economy both for drinking and non-drinking purposes.</li> <li>- Flood security and protection.</li> <li>- Biomass production.</li> <li>- Amenities (associated to habitat protection): fish and plants, tourism, recreation, and others.</li> <li>- Benefits of improved coastal water quality and ecological status for a sustainable commercial production of shellfish with human health and welfare values.</li> </ul>		

## VII. Monitoring & maintenance requirements

Monitoring requirements	Farmers are responsible for the monitoring of their herds. Health monitoring, animal identification, etc. is the responsibility of the Parc (PIMP) with the cooperation of farmers.
Maintenance requirements	Maintenance of common meadows is the responsibility of municipalities (with the support of the PIMP)
What are the administrative costs?	

## VIII. Performance metrics and assessment criteria

Which assessment methods and practices are used for assessing the biophysical impacts?	No assessment
Which methods are used to assess costs, benefits and cost-effectiveness of measures?	No assessment
How cost-effective are NWRM's compared to "traditional / structural" measures?	No assessment
How do (if applicable) specific basin characteristics influence the effectiveness of measures?	
What is the standard time delay for measuring the effects of the measures?	

## IX. Main risks, implications, enabling factors and preconditions

What were the main implementation barriers?	Sanitary problems at the beginning. Common meadows were seen as responsible for giving pests to cattle.
What were the main enabling and success factors?	Close relationship and trust between farmers, municipalities and the PIMP. This is helped by the governance scale (important role of municipalities, direct interaction between municipalities and farmers...)
Financing	Municipalities, the Parc Interrégional du Marais Poitevin.
Flexibility & Adaptability	This case study is closely linked to the very specific property rights regimes of flood meadows (common lands owned by inhabitants of municipalities).
Transferability	

## X. Lessons learned

Key lessons	The Marais Poitevin is the 2nd largest wetland in France. About 2000 ha of floodmeadows are owned by local municipalities and commonly managed by local farmers. Such meadows play an important role for water regulation. For instance, they contribute to
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## CS: Flood meadows, Marais Poitevin, France

	<p>the storage of water during flood events, to ground water recharge, to the removal of pollutants, etc. In the 1980s, in reaction to their destruction, management agreements between municipalities, the Parc Interrégional du Marais Poitevin and environmental NGOs as well as agreements between municipalities and farmers were signed. They reinforce the traditional agri-environmental management (pluri-specific pastures: cattle, horses, geese) in order to preserve the numerous services provided by the Marais Poitevin.</p> <p>It seems very important to establish a relationship of trust between stakeholders (particularly between farmers, municipalities and the Parc Interrégional du Marais Poitevin). This is time- and energy-consuming (many dialogues, to make sure that everybody can give its opinion...) but it helps anticipating problems and finding solutions and it improves the acceptability of the measure through time and through difficulties which may occur. Building and maintaining social links (also with inhabitants and other stakeholders) should not be neglected.</p>
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### XI. References

Source Type	<i>Website</i>	<i>Grey Literature</i>	
Source Author(s)	Parc Interrégional du Marais Poitevin	Parc Interrégional du Marais Poitevin	
Source Title	Les Marais Communaux du Marais Poitevin	Recueil d'expériences: les communaux du Marais Poitevin	
Year of publication	Value	2008	
Editor/Publisher	Parc Interrégional du Marais Poitevin	Parc Interrégional du Marais Poitevin	
Source Weblink	<a href="http://www.parc-marais-poitevin.fr/index.php/Les-actions-du-Parc/Les-programmes-d-actions-du-Parc/Les-Marais-communaux-du-Marais-poitevin">http://www.parc-marais-poitevin.fr/index.php/Les-actions-du-Parc/Les-programmes-d-actions-du-Parc/Les-Marais-communaux-du-Marais-poitevin</a>	<a href="http://ec.europa.eu/environment/life/project/Projects/index.cfm?fuseaction=home.showFile&amp;rep=file&amp;fil=Marais_Poitevin_Recueil_Communaux.pdf">http://ec.europa.eu/environment/life/project/Projects/index.cfm?fuseaction=home.showFile&amp;rep=file&amp;fil=Marais_Poitevin_Recueil_Communaux.pdf</a>	
Key People		<i>Name / affiliation</i>	<i>Contact details</i>
	1.	<i>Didier Naudon</i>	<i>Responsible for pastoralism issues at the Parc Interrégional du Marais Poitevin</i>