

THE QUEICH MEADOWS - TRADITIONAL IRRIGATION AS A CLIMATE ADAPTATION MEASURE



Source: Contentivity



Name	Queichwiesen/Queich Meadows
Country	Germany
Biogeographical Region	Continental region
Region	Southern Palatinate
Landscape/ Eco system type / protected area	The Queich Meadows are situated between the Rhine and the Palatinate Forest, in Rhineland-Palatinate. They are part of an EU bird sanctuary and the Special Protected Areas „Offenbacher Wald“, „Bellheimer Wald“ and „Queichwiesen“
Size / Scope	450 hectares in 7 municipalities
Type of farm	Multiple and different kinds of farms are involved
Agricultural Use	Grassland used as fodder for horses and cattle
Best-practice / main idea	Reactivated traditional irrigation ditches are dammed successively, flooding the adjacent grassland to secure the profitability and biodiversity of the meadows.
Involved Stakeholders/ Partners	Farmers, people responsible for operating the weirs and sluice gates, local authorities, and seven municipalities are involved in the process. The Landcare Association „Landschaftspflegeverband Südpfalz e.V.“ and the Interest Group „Queichwiesen“ (IG) have mediated the process from the very start.



Duration	Water Meadows exist since the Middle Ages; reviving unused structures since the early 2000s until today
Goals	- Water retention - Preserving open landscapes - Increasing the amount and quality of the fodder - Preserving the practice of traditional irrigation in water meadows - Bird and species protection
Measures addressing water management	Weirs in the river Queich and sluice gates in ditches in grasslands and forests.
Measures addressing soil management	The regular flooding of the meadows with water from the rivers improves soil health and fertility.
Measures addressing other public goods	The wet "Queich" meadows are a habitat for many protected bird species (Natura 2000 site).
Funding / Financing	Initial reactivation measures were funded by the private environmental sponsor "Deutsche Bundesstiftung Umwelt" and co-financed by the program "Aktion Blau" from the state Rhineland-Palatinate. River and ditch maintenance is financed by the respective communities. The irrigation itself is financially viable without external funding. It improves the quality of the grass.
Transferability	The general idea to dam ditches is transferable. It also does not work exclusively with irrigation ditches. There are plenty of examples that use sluice gates in drainage ditches for water retention. The key is a well-coordinated irrigation schedule and cooperation.
Tip / suggestion from the farmer / Landcare association	Including all stakeholders early in the process promotes acceptance of the project. Also, working out everyone's interests and boundaries and possible conflicts of interest as early as possible increases the chances of success in the long run.
Role of Landcare Associations (LCA)	Initiating and carrying out the project, recruiting and informing farmers, and mediation between different stakeholders.
Further information	German short film about the Queichwiesen https://queichwiesen.de/ Intangible Cultural Heritage of Humanity
Contact information	Deutscher Verband für Landschaftspflege (DVL) e.V./ Landcare Germany, info@dvl.org

"We farmers benefit from the water meadow; it ensures good fodder quality, even during dry periods. The second harvest is only profitable because we irrigate the meadows."

Carsten Carius, farmer

Aim of the irrigation in meadows

In the 2000s, many farms in the region suffered yield losses because of severe droughts. Despite subsidies, cultivating the land in the catchment area of the river Queich was barely profitable anymore. To preserve the meadows, the traditional irrigation method – which, at that time, was only taking place in two municipalities – was to be expanded and secured between 2004 and 2008. Many sluice gates and weirs had to be repaired, and new ones were installed. Equally important was the preservation of the Queich Meadows as a Natura 2000 site that is the habitat of many protected bird species.



Photo: Pirmin Hilsendegen, Interessengemeinschaft Queichwiesen

Cooperation leads to success

The project was initiated by the Landcare Association LPV Südpfalz through collaboration among nature conservation organisations, the agricultural and water sectors, local authorities and municipalities. The primary aim was to protect the open landscape from natural succession and increase acceptance of the Natura 2000 sites in the Queich valley. Farmers were willing to participate; however, they demanded that traditional irrigation be re-established. Otherwise, cultivating the grasslands would simply not have been profitable. When the project began, a project advisory board was set up. At the same time, the Interest Group Queich Meadows (IG) was founded. The Landcare Association Südpfalz (focusing on Natura 2000 site management) and the IG (focusing on strengthening and improving traditional meadow irrigation) aimed to bring all stakeholders together. Before the start of the project, several municipalities had ceased their irrigation activities, and in some cases the original irrigation plan was lost and forgotten. Following extensive consultations with various stakeholders, the Landcare association submitted a project application in collaboration with DVL/Landcare Germany - the umbrella organization of all German Landcare associations. The aim was to safeguard the existing irrigation of the Queich Meadows

and extend it to neighbouring areas, as well as to increase the general acceptance of the Natura 2000 network. Furthermore, the requirements of the management plan for the Natura 2000 site, which was then under development, were to be implemented. All planned measures were discussed within the advisory board. Planning, financing, and implementation were coordinated with representatives of the lower and upper nature conservation authorities, upper water authority, forestry, and the Federal Ministry of Environment.

Coordination is key

There is no overarching authority responsible for the operation of the irrigation meadows – the IG and the advisory board merely serve as a platform for professional exchange. Responsibility for each section of the Queich Meadows lies with the respective municipalities.



Map: Overview of the Queich Meadows. Blue areas are irrigated by damming the Queich. Red dots indicate the position of weirs in the river. The small sluices in the ditches are not shown. Source: OSM

Each of the seven municipalities has a person responsible for the irrigation. There is, however, an irrigation plan that has been developed, refined, and agreed on by all municipalities involved. The irrigation plan is binding. Irrigation takes place in two periods, once between April and May and once between July and August. "The planning of who is allowed to use how much water at what time requires coordination and trust," explains Pirmin Hilsendegen from the Landcare association LPV Südpfalz. Local authorities and their maintenance depots are responsible for the maintenance of rivers and ditches (using mulchers or mowing baskets). Where necessary, suitable equipment is loaned to other local authorities for a fee. The maintenance is planned by an environmental office to ensure a positive impact of the maintenance measures for river habitats and their species. Sometimes, and whenever necessary, for example following recurring floods, silted-up ditches are dredged using an excavator. The grasslands are cultivated regularly and, in some cases, receive funding through CAP measures (AECM), e.g., late cutting or no use of fertilizers.

Challenges and Solutions

No irrigation possible: On several occasions in the past, some municipalities have been unable to irrigate their sections because the river Queich did not carry enough water. Under current law, the Queich must maintain a certain minimum water level. The issue was quickly resolved within the Interest Group Queich Meadows: initially, it was decided to continue the irrigation plan from the point where irrigation had to be paused. However, this shifted the irrigation period to unfavourable times, where irrigation would have happened during harvest. Consequently, it was agreed that a water-level-related interruption to irrigation must be accepted by the affected municipalities.

Longitudinal connectivity: According to the European Water Framework Directive, water bodies like rivers, creeks, and, in some states, even ditches, must be passable for fish and other organisms. That means weirs and sluice gates are not allowed. However, the stakeholders of the Queich Meadows made an agreement with the local water authority: weirs in the Queich River do not constitute an obstacle to longitudinal connectivity when the water is only dammed up temporarily (2–3 days), and the weir is not completely closed (leaving a small but passable gap between the riverbank and weir). Still, one weir obstructs longitudinal passage even when the water is not dammed, as the drop in water level is too great. Fish and other animals are generally unable to overcome this difference in height. Therefore, a fish ladder has been installed.

Listed buildings: There are some very old structures, such as weirs, in the Queich River. Nowadays, they are classified as listed buildings under the Heritage Act and cannot simply be restored without consulting the local heritage protection authority.

Weirs and sluice gates



Photos: Various structures are used in the Queich River and in the ditches, such as simple sluice gates (top left), crank weirs (top right and bottom left), or a very large weir (bottom right - a fish ladder was built around this weir to ensure longitudinal connectivity. Photos: Peter Keller, Pirmin Hilsendegen

The Queich River is usually dammed by large weirs. During the restoration of old weirs or construction of new ones, a planning office and a hydraulic engineering office were involved to draw up plans and obtain permits for extracting water from the river. The construction of the weirs was contracted to a civil engineering and a hydraulic engineering office. Simple sluice gates are used in the irrigation ditches. There, the sluice gates are lowered with a crank, or a wooden panel is inserted into a concrete frame.

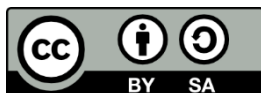
Public relations promote acceptance

Experience in the Queich Meadows has shown that field trips and public outreach are essential for gaining acceptance of the traditional irrigation of water meadows. Acceptance is especially important in local councils, which have a major influence on the continuation of the water meadows. The value of the traditional water meadows is increasingly recognized. In 2023, traditional irrigation was inscribed on the Representative List of the UNESCO Intangible Cultural Heritage of Humanity.



Photo: Thomas Köhler, DVL

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