Traditional and historic irrigation system – Management in the Cáñar-Barjas, Spain

Photo: The irrigation system of Cáñar-Barjas has been subject of multidisciplinary studies, in order to better understand how this cultural practice, and the communal governance system sustaining it, is linked with the conservation of natural and seminatural habitats, especially in a context of climate change.

Photo: Sergio Couto

Name	Irrigation Community of Cáñar-Barjas
Country	Spain
Biogeographical Region	Mediterranean
Region	Andalucia
Landscape/ Eco system type / protected area	Sierra Nevada Biosphere Reserve, Sierra Nevada National Park, Natura 2000 site
Size / Scope	543 ha
Agricultural Use	Traditional extensive pastoral and agriculture systems
Best-practice / main idea	Using historic irrigation system to enable traditional farming and ensuring water availability to aquifers
Involved Stakeholders/ Partners	362 local commoners, Muincipality of Cáñar

	• Laboratory of Biocultural Archaeology of the University of Granada (MEMOLab-UGR
Duration	Ongoing since 10th century
Goals	Although the original purpose of the ditches is to irrigate agricultural land, they also prove essential in replenishing aquifers, which ensures a water supply in the dry months. This irrigation system also contributes to the conservation of the cultural landscape (which arose in the medieval times) and its biodiversity. Thanks to this irrigation system the rural community is able to farm extensive pastoral and agriculture systems.
Activities	With the support of the Laboratory of Biocultural Archaeology of the University of Granada (MEMOLab-UGR), the community is implementing several governance improvement tools including: • An administrative agreement with the municipality of Cáñar, in which the municipality recognize the "general interest" of the community activity and provide several types of support in exchange of the ecosystem services the traditional irrigation system provides (economic, cultural, social, environmental, etc.). • Participatory Management Plans. In order to improve the participation and joint reflection of the whole community in the decision-making process, while clarifying a programmatic vision of the irrigation system useful for internal and external use.
Measures addressing water and/or soil management	• Distributing water according to traditional and equitable allocation rules. • Maintaining water infrastructure, springs, headwaters, and water sources. • Meltwater is channelled to strategic recharge areas to replenish aquifers during periods of drought and water scarcity

Measures addressing biodiversity, climate	• Irrigation of semi-natural grasslands in the mountains to protect these ecosystems and use it as extensive pastures • By filling up the aquifiers and irrigate the old forests endemic species depending on water for centuries can survive • By an sustainable use and not overuse of water/aquifers they maintain the fragile ecosystem and its species • As an indirect measure the Cáñar serves as ecological corridors.
Funding / Financing	By the commoners with support from the municipality of Cáñar for the provided ecosystem services
Transferability	Unique historic system, but collaboration in the community to provide ecosystem services could be transferred
Role of Landcare Associations	The Laboratory of Biocultural Archaeology of the University of Granada (MEMOLab-UGR) has a Land Stewardship agreement for scientific-technical support, mediation in stakeholder conflicts and volunteering programmes to support the nature conservation that the community implements in the area through their traditional activity
Further information	https://www.youtube.com/watch?v=_zXPQ1zg7fo
Contact information	Sergio, Couto Gonzáles, Universidad of Granada sergiocouto@go.urg.es

"The traditional irrigation system of Cáñar is key of facing many of the current challenges we are facing as society: from climate change to depopulation or biodiversity loss. Supporting its irrigation community is one of the best ways to face these threats." Sergio Couto, Universidad Granada

II Detailed Description

The irrigation area of Cáñar-Barjas is an emblematic historical and traditional irrigation system located on the western slopes of the southern side of the Sierra Nevada mountain range, in the Alpujarra region of Granada, Spain. This area covers 543 hectares of traditional, outstanding biocultural landscape, including dry stone terraces and a net of more than 36 kilometres of traditional ditches (locally called acequias). This communal system maintains an outstanding mosaic of family farming crops and natural and seminatural habitats, such as grasslands and forests. This communal system is governed by the Irrigation Community of Cáñar-Barjas, formed by 362 local commoners who arrange, according to the watering rights of each of the land plots, how the watering should be governed, maintain the common infrastructure and solve disputes.

Cultural rights dating back more than 1.000 years

The Community's irrigation system was created during the Islamic period, with the system already established and consolidated by the 10th century. After the Castilian conquest (1492) and the expulsion of the “Moriscos” (1571), the systems were preserved, and water management and its communal governance system have been maintained to this day.
Despite this long track record, the irrigation community governance rights on the waters were not officially recognised by the National or Regional governments until recently, after a long and administrative complex procedure undertaken by the community to safeguard their rights. Eventually, in 2019, the Regional Delegation of Agriculture, Livestock, Fisheries, and Sustainable Development of the Regional Government of Andalusia in Granada published the resolution granting a public water concession and registration in the Water Registry in favour of the Cáñar-Barjas Irrigation Community, with a resolution date of January 24, 2019, and for a term of 20 years.

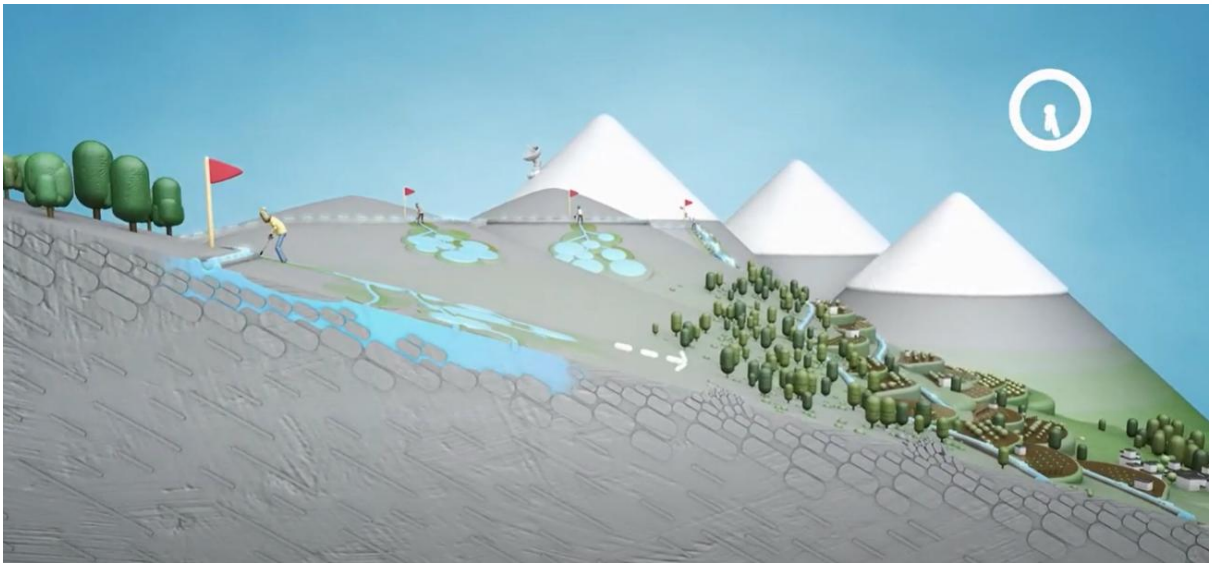

Photo: Some of the cultural techniques of the Sierra Nevada traditional irrigation system are unique at world level, such as the "careos", through which the community artificially refill aquifers they know will provide water months later, in the dry season. Source: **https://www.youtube.com/watch?v=_zXPQ1zg7fo**

Improving governance plays a key role

Improving governance has always been a goal for the community. A general assembly oversees how the community is organised and how it functions. All the landowners who have land with water rights also have the right to attend and participate in this assembly, with both voice and vote. The assembly designates one or several "acequiero/s", who are the person in charge of supervising the management regime of the water. This is especially important in a context of growing pressure on natural resources (namely water) by external actors, rural depopulation (which weakens governance institutions), and cultural erosion, e.g loss of traditional knowledge.

Looking to the future

The Irrigation Community of Cáñar/Barjas has managed the water for centuries according to traditional use and customs. Their success is evidenced through the long-term presence and sustainability of the water system. Although the original purpose of the ditches was to irrigate agricultural land, they have also proven essential in replenishing aquifers, which ensures a water supply in the dry months. This irrigation system also contributes to the conservation of the cultural landscape (which arose in the medieval times) and its biodiversity. Thanks to this irrigation system, the rural community is able to farm extensive pastoral and agricultural systems as opposed to intensive farming, which uses a large amount of inputs (e.g. water, energy, plastic, concrete, and other pollutants, artificial food for the livestock, etc.), contributing to the over-exploitation of resources and deepening the environmental challenges that we face today as a society.

Author: José María Martín Civantos, Sergio Couto González, Elena Correa Jiménez, Estefanía Fernández Fernández, Universidad of Granada, 13.10.26

This work is licensed under CC BY SA 4.0. Photographs containing identifiable persons are excluded from this license and may not be used without additional permission.

Water~Farmers

Co-funded by the European Union

'Funded by the European Union. However, the views and opinions expressed are solely those of the author(s) and do not necessarily reflect those of the European Union or the European Education and Culture Executive Agency (EACEA). Neither the European Union nor the EACEA can be held responsible for them.'