

GOOD PRACTICES GUIDE

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OBJECTIVE OF THE GUIDE

Since November 2023, actors and stakeholders in the rural areas of Spain, Italy and Slovenia, together with SURF project partners, have been exploring and researching how rural communities and rural localities perceive, mitigate and adapt to climate change.

In various workshops, during the implementation of the SURF training programme, co-financed by the Erasmus mechanism, and in daily communication with different rural communities, we have identified an interesting fact: in everyday practices, local populations respond to existing climate change in different ways and develop interesting practices of **perception, mitigation and adaptation**.

Therefore, we have decided to collect interesting examples of such actions in different rural communities and in different rural areas and publish them in the **SURF Good Practices Guide**.

We have collected examples that address:

- different **economic activities** in rural areas (agriculture, forestry and fisheries, tourism, sports and recreation, infrastructure, etc.);
- examples of different **adaptations to a certain type of climate change - hazards** (e.g. changed precipitation regime and amount of precipitation, more extreme temperature regime, etc.);
- how different **target groups** (e.g. beekeepers, hunters, tourism providers, etc.) adapt their activities in changed climate conditions;
- the functioning of different levels of **governance** (local, regional, national) and their systemic and programmatic approach to perceiving, mitigating and adapting to climate change.

We have collected rich and diverse responses to climate change. The later can be used as information, inspiration or a tool in addressing changing climate conditions, which also require re-thinking and action in rural areas. Since we believe that the collected material can also be useful outside the countries and regions (Valencia in Spain, Emilia Romagna and Sicily in Italy and Gorenjska region in Slovenia) where the SURF project partners come from, we have also invited rural actors and stakeholders from various European countries to provide information.

For this purpose, we have prepared a **SURF online web browser**, in which you can asses to a large number of cases, which we have classified using two filters: which economic activity they refer to and which climate risk they address.

LINK TO GOOD PRACTICES ONLINE BROWSER:

<https://www.arcgis.com/apps/dashboards/078e4abc6dd14191b7a533da4c7b55c0>

In this way, we have collected a multitude of cases and identified some common features:

- that it is necessary to strengthen communication in rural communities and increase the inclusion of rural people with the so-called **participatory approach** in addressing climate change;
- that related climate changes also indicate some common and related approaches in their mitigation and adaptation, therefore it makes sense to strengthen **interlocal, interregional and international exchange of information and knowledge**;
- that it is necessary to encourage **connections between different levels of governance** within individual countries and between countries: so that we move on from climate change adaptations as pilot activity, towards the climate change adaptation **process** which should be truly comprehensive, systemic, interdisciplinary, resilient and sustainable.

GOOD PRACTICES

ITALY



CINQUE TERRE NATIONAL PARK AND THE PROJECT STONEWALLS4LIFE

The Cinque Terre National Park, covering 3,868 hectares, is one of Italy's smallest yet most populated national parks, with around 4,000 inhabitants across five villages: Riomaggiore, Manarola, Corniglia, Vernazza, and Monterosso al Mare. Over centuries, people transformed steep hillsides into cultivated "ciàn," supported by kilometers of dry-stone walls. This deeply anthropized landscape defines the park, known as the Park of Man and listed as a UNESCO World Heritage site.

In recent decades, the area faces rising temperatures, floods, and landslides. While direct climate change adaptation is challenging, efforts are underway to support energy transition and sustainable mobility. Trains are promoted as the main access to the park, reducing car use and emissions, and encouraging low-impact travel.

A key adaptation measure is preserving traditional dry-stone walling techniques, essential for maintaining terraces, preventing erosion, and enhancing water management. These structures improve resilience to extreme weather events.

Monitoring systems in terraced agricultural areas help collect data to understand meteorological impacts and inform adaptation strategies.

Through the LIFE-funded project STONEWALLS4LIFE, a climate adaptation plan was created for the park, outlining actions to preserve ecosystems and assist local communities in facing climate challenges. It demonstrates how ancient dry-stone walls can strengthen territorial resilience, protecting both landscapes and communities.



Source: StoneWalls4Life project.

USEFUL LINKS

- www.parconazionale5terre.it
- www.stonewalls4life.eu

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RESILEA - BRIDGING TRADITION AND SUSTAINABILITY ON THE ISLAND OF PANTELLERIA

The Earth's resilience - a delicate balance sustaining biodiversity and the human-nature bond - is now under threat from climate change. Nowhere is this more evident than in the Mediterranean, especially on the island of Pantelleria. Facing reduced rainfall, rising temperatures, and drought, the local community has adapted through centuries-old agricultural practices like "dry farming."

Pantelleria is a symbol of resilience through techniques such as the Pantescan Sapling Vine and the Creeping Olive Tree - both adapted to extreme conditions. The vine is cultivated in humidity-retaining basins, while the olive trees grow low and horizontally on terraces that absorb and release moisture at night.

From this legacy emerged Resilea, a community cooperative and microcosm of sustainability. Rooted in Local Ecological Knowledge (LEK), Resilea fosters a renewed human-biosphere relationship by engaging rural communities as stewards of resilience. Its systemic approach connects local people with universities, administrations, and different stakeholders.

Resilea supports family farming, promotes sustainable value chains, and offers shared services and responsible tourism. But it goes further: through research, youth education, festivals, community theatre, and nature workshops, it positions the community as a collective enterprise, dedicated to protecting common goods and shaping a sustainable future.



Image: The Art of Creeping Olive Tree
Source: Resilea's facebook page

USEFUL LINKS

- <https://vimeo.com/720840898> (Resilea Project - English version)
- <https://vimeo.com/305194102> (Video of Pantelleria made for the national park)
- <https://vimeo.com/954423976> (School project on the enhancement of the Art of Creeping Olive Tree)

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PERMACIMA - ALPINE PERMACULTURE

PermaCima (a combination of words “Cima Rest” plateau and “Permaculture”), is a place deeply connected to nature, where people can (re)learn to live in harmony with it. It supports the wellbeing of nature, animals, and people. Permaculture is a design system for sustainable living. It offers not only methods for regenerative gardening and farming, but also tools to help communities adapt to climate change.

At PermaCima, we created an alpine permaculture example to demonstrate that mountain gardening can succeed even in harsh conditions such as cold winters, late frosts, steep and rocky terrain, by blending traditional mountain farming with modern ecological knowledge.

Our practices include terracing for slope control, maximizing sun exposure, and harvesting rainwater wherever possible. We carefully select suitable plants such as perennials, ancient-hardy, fast-maturing, and alpine-adapted native species. To increase productivity and self-sufficiency, we add nitrogen-fixing plants like legumes and lupines. For frost protection, we use a semi-underground greenhouse built into the slope, which acts as a windbreak and stores ground heat; it is currently covered with branches used by poultry for shelter.

We integrate wild and farm animals to regenerate the soil, encourage beneficial insects and wildlife for natural pest control, pollination, and manure, and preserve valuable plant genetic resources through seed saving and propagation. We also plant trees and hardy shrubs like berries and currants for both food and protection.



*Images:
PermaCima's
autumn colors
and climate-
smart sunken
greenhouse.*

USEFUL LINKS

- https://www.youtube.com/watch?v=z_2Oxpzxztw

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CLIMATE CHANGE AND DESERTIFICATION RISK IN SICILY

Sicily, due to its Mediterranean location, is especially vulnerable to climate change and extreme weather events. Declining rainfall and rising temperatures, combined with natural and human-induced pressures, contribute to soil degradation. Desertification, drought, and climate change are closely interlinked, which makes collective action among all stakeholders essential to achieving land degradation neutrality.

Sicily has a strong research base on desertification risk, including detailed cartographic studies. The most widely used model is MEDALUS (Mediterranean Desertification and Land Use), which identifies areas at risk through the Environmental Sensitivity Area Index (ESAI). In 2009, Professor Piccione's team from the University of Catania published a bi-temporal analysis of desertification risk, comparing data from the first and second halves of the 20th century. The improvement seen over time is largely attributed to reforestation, reduced illegal grazing, creation of parks and reserves, and the natural regeneration of abandoned land.

Currently, the team is advancing three research lines: 1) developing a synthetic index (ESPI) to measure "fever level" of

soil on a 0–100 scale for specific land units; 2) applying Landscape Ecology metrics to environmental sensitivity data to develop new land-use planning protocols in line with recent policies for soil protection; 3) using drone-mounted sensors for high-resolution analysis of desertification risk, to support development of precision agriculture and innovative land management services.

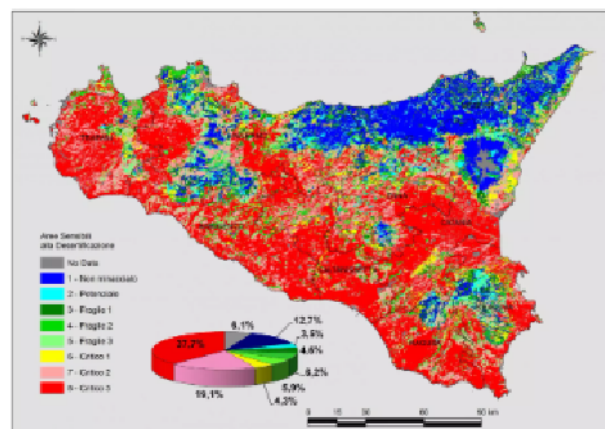


Image: Desertification Risk Map of Sicily in the Second Half of the Last Century.

Source: Asvis website.

USEFUL LINKS

- <https://scuola.repubblica.it/static/scuola.repubblica.it/sicilia-messina-lcfrancescomaurolico/index.html?p=782.html>

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THE GORGES OF TIBERIO

The Gorges of Tiberio (Gole di Tiberio) is a UNESCO-recognized Geopark site located along the Pollina River at 100 meters above sea level, between San Mauro Castelverde and Castelbuono, within the Madonie Park.

Formed over 200 million years ago during the Upper Triassic, the Gorges stretch approximately 450 meters and are divided into three distinct sections. The first, about 100 meters long, is rich in caves and walkable on foot. The central section, the most spectacular, is 250 meters long and over 50 meters high. It can only be crossed by dinghy, as the water depth exceeds 8 meters even in summer; halfway through lies a boulder once used as a secret passage. The final 100 meters resemble a still, enchanted lake.

In recent decades, the area has experienced rising temperatures, drought, hailstorms, and strong winds. To adapt, Madonie Outdoor ASD - a sports association established in 2012 and active in the Madonie Park - is monitoring and adjusting its guided routes according to seasonal hydrological conditions.

In spring (April to June), routes follow the riverbed to access the small gorges.

However, in recent years, drying conditions by late June have required shifts upstream and route modification according to where small lakes still hold water. During storms, the gorges face increased flood risk and remain closed when unsafe.

In all cases, sustainable tourism ensures environmental protection while adapting to ongoing climate challenges.



Image: Tiberio Gorges.

Source: Gole di Tiberio website.

USEFUL LINKS

- <https://goleditiberio.com/>

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CELAVIE - SOILLESS CULTIVATION AND AQUAPONICS

The Celavie Project creates a synergistic system combining aquatic animal reproduction and plant cultivation within a modular, transportable, and energy self-sufficient “cell.” This technological unit enables a circular cycle where plants and fish support each other, offering a sustainable solution adaptable to diverse production needs.

Led by CORERAS, the Celavie project developed a zero-impact, self-sufficient nursery prototype, co-financed by the European Union under the ENI Cross-Border Cooperation Programme Italy-Tunisia 2014-2020, managed by the Presidency of the Sicilian Region.

The cell is especially valuable for soilless cultivation, offering an alternative for areas where soil fertility is compromised by climate change or intensive agriculture. Its design also serves small communities in remote locations, disaster-stricken areas, and humanitarian or educational contexts, such as refugee camps or schools.

By promoting climate change awareness and encouraging the use of sustainable technologies, the project supports the transition to more resilient agricultural practices. Celavie exemplifies how

innovation in products and processes can reduce environmental impact and address the growing global food demand.

The effects of climate change are thus mitigated through the design of initiatives aimed at spreading awareness of its impact and promoting the adoption of best practices. In the long term, this model contributes to reshaping food production systems, offering scalable solutions as the world’s population approaches ten billion by 2050, under increasing ecological pressure.

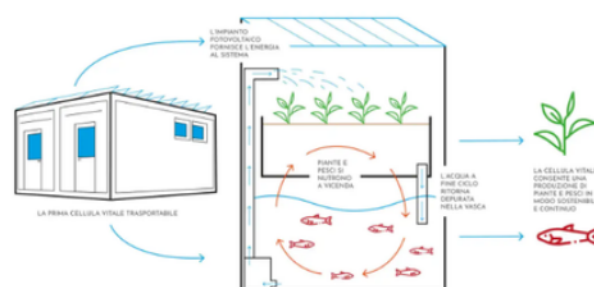


Image: Cell of life.

Source: Blog Sicilia website.

USEFUL LINKS

- <https://www.rinnovabili.it/agrifood/celavie-vivaio-tecnologico-trasportabile/>

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VILLA MIRTO - CLIMATE-RESILIENT FARMING AND TOURISM

Villa Mirto is a historic farm and agritourism business owned by the Mirto family since 1868. Located just 17 kilometers from Palermo, near the historic town of Monreale, it is situated in the Renda district of the Pioppo area, a hilly landscape rich in biodiversity. In recent decades, this territory has been increasingly affected by climate change, with noticeable impacts such as desertification, rising temperatures, and declining rainfall. These changes have prompted the farm to adopt a proactive adaptation strategy.

To cope with water scarcity, Villa Mirto has shifted toward cultivating crops that require less water and has developed systems to make better use of natural local water sources, including streams and underground aquifers. One key adaptation has been the construction of wells to collect both rainwater and groundwater, enabling water storage for use during dry periods.

The agritourism's hospitality infrastructure also reflects this sustainable approach. A notable example is the swimming pool, which previously required daily disposal of large amounts of water. Today, this water is chlorinated

and reused, significantly lowering overall water consumption and exemplifying circular resource use.

Villa Mirto demonstrates how agricultural heritage, hospitality, and sustainability can coexist. Through targeted actions and smart resource management, the farm turns climate-related challenges into opportunities for regeneration and resilience, optimizing resources and minimizing waste to actively mitigate the impacts of climate change.



Image: Villa Mirto in Sicily.

Source: Villa Mirto website.

USEFUL LINKS

- www.agriturismovillamirto.com

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PASTORALP - PASTURES VULNERABILITY AND ADAPTATION STRATEGIES TO CLIMATE CHANGE IMPACTS IN THE ALPS

PASTORALP is a LIFE funded project coordinated by the University of Florence with Italian and French partners from research, institutional and management areas. It focuses on Alpine permanent grasslands, identified as hotspots of climate and land-use changes experiencing less precipitation, higher temperatures, drought, floods and landslides, and less snow.

By combining biophysical and socio-economic approaches, the project assesses the vulnerability of Alpine pastures and improves the capacity to reduce it through adaptation measures. Solid science-based knowledge of baseline conditions and projected impacts guides the work, centred on two representative Western Alpine parks: Parc National Des Ecrins (France) and Parco Nazionale del Gran Paradiso (Italy). Stakeholder consultation and engagement are core elements of the work plan.

The main output is platform tools that facilitate the adoption of adaptation strategies in the two parks. The platform offers a web interface for wide dissemination, a webgis section with climate, pastoral and vegetation maps,

and the pastoral and diagnostic plans developed for the permanent demonstration areas established in each park.

Strategies and tools created by PASTORALP can be easily exploited in other pastoral areas across the Western Alps, supporting decision-making, sustaining biodiversity and safeguarding livelihoods under accelerating climate change.



Image: Pastoralp area

Source: Pastoralp website.

USEFUL LINKS

- <https://www.pastoralp.eu/homepage/>

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PATERNO - COMMUNITY-LED RESPONSES TO CLIMATE CHALLENGES THROUGH NATURE-BASED SOLUTIONS

Paternò, a municipality in the province of Catania, is located in an inland area of Sicily marked by environmental fragility and territorial marginalization. The rural community faces growing exposure to climate change impacts, including rising temperatures, drought, extreme weather events such as floods and landslides, and a decline in biodiversity and geodiversity.

In response, Paternò is embracing an innovative and participatory approach. Citizens, associations, institutions, and researchers are working together to promote environmental sustainability and social cohesion. Awareness-raising campaigns, participatory planning, and the testing of sustainable agricultural practices have been launched, alongside efforts in integrated land management and the enhancement of local natural and cultural assets.

A key example is the participatory ecological redevelopment of the Simeto River. Through workshops, exploratory walks, and focus groups, community members have co-designed actions for riverbank renaturalization and sustainable water resource management. These nature-based solutions aim to reduce hydrogeological risk, improve river

ecosystem quality, and enhance local resilience. Another important step has been involving Paternò's residents in mapping environmental vulnerabilities. This process contributes to a shared, informed, and place-based adaptation strategy. The integrated approach, grounded in local knowledge and shared responsibility for landscape care, offers a valuable model for addressing the intensifying effects of climate change.



Image: Simeto River.

USEFUL LINKS

- <https://www.presidiosimeto.it/> <https://www.di3a.unict.it/docenti/teresa.graziano>
<https://www.di3a.unict.it/docenti/feliciana.licciardello>

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THE PADERNELLO MODEL OF RURAL REGENERATION AND AGROECOLOGICAL TRANSITION

The Padernello Castle Foundation is dedicated to managing, restoring, enhancing, and promoting the castle and village of Padernello, in the Bassa Bresciana area. This generative initiative began as a grassroots effort by local citizens, who restored the ruins of the castle and transformed it into a vibrant cultural hub and driver of territorial regeneration.

Among its flagship initiatives is the “Mercato della Terra Slow Food di Padernello”, a local economy model where 35 to 40 producers offer tastings of their products to around 30,000 visitors each year, embracing the principles of good, clean, and fair food. Another key project is “Il Bosco di Simone”, a five-year reforestation effort aiming to plant 5,500 trees, developed in collaboration with the Municipality of Borgo San Giacomo.

The Foundation also launched the “Generare Comunità” project, a pilot focused on sustainable agriculture and short supply chains. Tested in Cascina Bina - an area of historical significance - the project involved sowing barley and chickpeas, with harvests collected by gribirificio del Graal and the Palestinian

restaurant Dukka, promoting biodiversity and direct producer-consumer links.

The “Padernello Laboratory” (formerly “Verso il Borgo”) promotes a return to agriculture rooted in biodiversity, crop rotation, and youth employment. With support from Slow Food TerreAcque Bresciane, the Foundation also offers training in sustainable agriculture, reducing environmental impact and preserving rural knowledge through innovation and local engagement.



Image: Padernello Castle

Source: website Fondazione Castello di Padernello

USEFUL LINKS

- <https://www.castellodipadernello.it/>

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GOOD PRACTICES

SLOVENIA



GORENJSKA REGION STRATEGY ON CLIMATE CHANGE ADAPTATION

Gorenjska region is one of the most progressive and active NUTS-3 regions in Slovenia in tackling climate change at different levels and in different sectors. In spring 2025, it was also the first Slovenian region to adopt a special strategy, the Gorenjska region strategy on climate change adaptation.

The strategy is the result of several years of cooperation between municipalities, development agencies, experts and civil society, coordinated by the Local Energy Agency of Gorenjska (LEAG), and was developed in the framework of region's integration with the EU Climate Change Adaptation Mission and the MIP4Adapt project.

The strategy identifies key future challenges of the Gorenjska region based on an in-depth analysis of climate risks – more frequent and intense heat waves, reduced snow cover, longer periods of drought, and heavy rainfall that increases the risk of floods and soil erosion. In order for the region to be resilient to these changes in the future, the document pays special attention to ten essential sectors in its economic, social, and environmental stability, while also being the most exposed to climate impacts. The document dedicates about

half of its extent to comprehensive analyses of priority measures for each of these sectors: forestry, tourism, transport, regional spatial planning, water management, agriculture, infrastructure and buildings, public health, disaster risk reduction and extreme weather events, and nature conservation. The first three of these are highlighted as particularly important for the region.

The Gorenjska region continues its work on developing an Action Plan for Climate Change Adaptation, which is expected to be completed by the end of 2026.



Image: Gorenjska region on the way to the CO2 neutrality. Source: [Fonts](#).

USEFUL LINKS

- https://www.ra-sora.si/wp-content/uploads/2025/05/Strategija-prilagajanja-Gorenjske-regije-na-podnebne-spremembe_21.5.2025.pdf

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MILDER WINTERS AND A SHORTER WINTER SEASON ON POHORJE MOUNTAINS

The Areh ski resort, located on Mariborsko Pohorje Mountains, features over 40 kilometers of groomed ski slopes (easy, intermediate, and advanced) and more than 15 ski lifts. In addition to skiing, Areh and Mariborsko Pohorje Mountains serve as an excellent starting point for winter hikes, as the area is known for its preserved natural environment, extensive forests, a primeval forest, and hiking trails that attract visitors year-round.

Climate change has gradually increased average temperatures, impacting the amount of snow and the duration of snow cover. Today, the average winter ski season is 34 days shorter than in previous decades. The ski resort increasingly relies on artificial snowmaking, which significantly raises operational costs.

Adapting to milder winters on Pohorje Mountains requires the development of tourism offerings that are less dependent on snow and skiing. Activities that attract visitors year-round need to be expanded and promoted.

Pohorje Mountains boasts numerous natural features that support the development of hiking and cycling, as well

as activities such as adventure parks and wellness services. Some of these services are already in place to a certain extent.



Image 1: Bike park as an example of alternative tourism offerings in Pohorje Mountains. Source: Slovenia Guide, Bike Park Pohorje, 2020



Image 2: Hiking trail to Lovrenška Lakes on Pohorje Mountains. Source: Turistist Destination Rogla-Pohorje, 2019.

USEFUL LINKS

- <https://www.pohorje-slovenija.si/kontakt>

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SNOW SHORTAGES AND THE WANING TRADITION OF CROSS-COUNTRY SKIING IN BOHINJ

In recent years, due to increasingly milder winters, Bohinj has often faced situations where maintaining cross-country skiing trails, once a staple of every winter, is no longer possible. As a result, visitors now prefer going to nearby Pokljuka, where cross-country trails are consistently maintained every winter. This is largely because Pokljuka is situated at a higher altitude and benefits from lower temperatures, which provide better conditions for preparing cross-country skiing trails.

In Bohinj, this situation impacts tourism workers, who struggle to offer visitors the opportunity to enjoy cross-country skiing when there are no trails in the valley. It also affects employees at the Senožeti ski area, who are responsible for preparing trails in the Upper Bohinj Valley, and the workers who maintain trails in the Lower Bohinj Valley. Additionally, the situation significantly affects local residents, who used to enjoy the trails for winter recreation, as well as visitors and tourists staying in Bohinj during the winter season.

To adapt to the situation, Bohinj could implement a more efficient artificial

snowmaking system, which would allow at least a portion of the trails in the valley to be preserved, particularly in shadier areas. Each winter, Bohinj experiences temperatures suitable for trail preparation for at least a few weeks. However, the larger issue lies in the insufficient amount of snow, which in recent years has often been too scarce to allow for the creation of cross-country skiing trails.



*Image: Cross-country skiing trails by Lake Bohinj.
Source: Tourism Bohinj.*

USEFUL LINKS

- <https://www.bohinj.si/tek-na-smuceh/>

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INCREASINGLY PROLONGED DROUGHT PERIODS AT LAKE CERKNICA

Due to rising temperatures, Lake Cerknica is drying up more frequently, requiring the rescue of endangered fish species, which are relocated to Rešeto or nearby fishponds. Rešeto is a part of Lake Cerknica that was dammed in the past to retain water in its channel.

The Notranjska Regional Park organizes workshops to raise awareness among the local population and other visitors to Lake Cerknica about the problems that have increasingly emerged in the lake's ecosystem. Additionally, between 2017 and 2022, the LIFE Stržen project was carried out at the lake, aiming to return the Stržen stream to its original course to retain water in the channel for longer periods.

The Cerknica Fishing Club is also highly active in raising awareness through social media and directly participating in the rescue of fish from the lake. The fishing club has many members, ranging from the youngest to the oldest, who also act as lake guardians during low water levels, when fishing and swimming in the lake is prohibited.

The work of the Cerknica Fishing Club and Notranjska Regional Park is crucial

for preservation of native fish species, which face increasing challenges to survival. Droughts often occur during the spawning period of native fish, causing the majority of eggs to fail. Non-native fish species, on the other hand, spawn later, resulting in their population continuing to grow. Building additional pools where fishermen could relocate the eggs of native fish and later return them to the lake might be a necessary solution.



Image: Fishermen of all ages rescuing fish populations. Source: Tine Šubic, 2024.

USEFUL LINKS

- <https://rdcerknica.si/>
- <https://life.notranjski-park.si/sl/>

CONTACT PERSON

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Miha Urh, representative of the Cerknica Fishing Club



MORE FREQUENT FLOODS IN THE KARST FIELD OF RETJE

Floods are among the most noticeable and impactful consequences of climate change. Global warming has altered precipitation patterns and intensity, while also increasing the severity of weather events. Floods can cause significant material damage (destruction of buildings, infrastructure, agricultural land, etc.), economic losses, biodiversity decline, damage to agricultural areas, and contamination of drinking water.

The village of Retje, located in the Municipality of Loški Potok, is situated in a karst field that is occasionally flooded. Flooding typically occurs during the peak rainfall seasons in spring and autumn, although severe flooding events occur only every few years. Despite being accustomed to floods, the residents of Retje village were significantly impacted by the floods in 2010 and 2014. The flood in 2014 was the worst, with more than 40 houses, garages, boiler rooms, and barns inundated. Water remained in the area for more than 10 days.

To protect against floods, various defensive mechanisms have been implemented, such as constructing flood embankments, establishing natural floodplain areas, and building residential and commercial structures in zones not affected by floodwaters. Flooding is a

serious issue that is becoming increasingly frequent due to intensifying climate change. However, by improving flood preparedness and avoiding settlement in flood-prone areas, the negative impacts of flooding can be mitigated.



*Image 1: Village of Retje during the 2014 floods.
Source: Blaž Mohar Radoš.*



Image 2: Flooded restaurant in the village of Retje in 2010. Source: Žurnal24.

USEFUL LINKS

- <https://www.gov.si/drzavni-organi/organi-v-sestavu/direkcija-za-vode/>

CONTACT PERSON

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CLIMATE CHANGE CONTRIBUTES TO INCREASED LANDSLIDE RISK

Landslides, as geomorphological processes, are a natural part of the Earth's system. Today, climate change can amplify these phenomena by increasing their scope, frequency, intensity, and overall impact. In Slovenia, some of the primary causes of landslides include unfavorable geological conditions, varied topography, and heavy rainfall. Human activities such as urbanization, improper land use, inadequate water drainage, and vegetation removal are also significant factors contributing to the increased risk of landslides.

Residents of Koroška Bela village face the challenge of landslides and grow concerned with every heavy rainfall, aware of the potential danger. The area is prone to medium-depth landslides, where prolonged precipitation could trigger a landslide resulting in debris flow that could extend to the valley below. Although some remedial work has already been carried out and monitoring systems are in place as part of regular maintenance, additional measures will be necessary to improve safety against landslides.

The first phase of planned measures includes constructing a larger barrier

above the settlement, with work expected to begin in 2025/2026. While landslides, whose effects in this area have become more pronounced due to changes in rainfall patterns, cannot be entirely prevented, steps can be taken to mitigate their impacts and reduce risks. Key to this effort is collaboration between local communities, experts, relevant institutions, and joint planning of strategies.



Image: : Urbas
landslide. Source:
Mojaobcina.si.

USEFUL LINKS

- <https://www.jesenice.si/medijsko-sredisce/novice/item/24400-sobivanje-z-zemeljskimi-plazovi-v-zaledju-koroske-bele>

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IRRIGATION SYSTEM FOR AGRICULTURE IN THE MUNICIPALITY OF ŠENČUR

In the Municipality of Šenčur, more than 40% of its territory is covered by flat, high-quality arable and grassland, which is an exceptionally high proportion of such land for Slovenia. Although the number of active farms is decreasing, most are market-oriented, specialized in livestock farming and horticulture, and economically more successful than the Slovenian average. Once, farms in Šenčur were known for potatoes, but today they produce a large portion of Slovenia's cabbage. The average farm here uses 13 ha of land (6.8 ha average in Slovenia) and raises 17 heads of cattle (5.6 in Slovenia).

Agriculture in this area is facing drought conditions as a result of climate changes. The establishment of an irrigation system by capturing water from the Trbojsko Lake accumulation on the Sava River began in 2017 as an initiative of local farmers and the Regional Chamber for Agricultural and Forestry. After obtaining the building permit, a tender for selecting a contractor was announced in 2022, but only overpriced bids were received. The Ministry of Agriculture ensured 100% funding for eligible costs of 2.1 million euros, which did not cover these higher costs.

This led to rationalization of the project. The irrigation area was expanded from the initially planned 100 hectares to 231 hectares in the villages of Trboje, Žerjavka, and Prebačevo. Expansion required a renewed environmental impact assessment and revision of the construction permit, while the tender for a contractor had to be reissued. Farmers were informed and actively involved in the process. Unfortunately, results were again unsuccessful with overpriced bids. Although the Municipality of Šenčur withdrew from the contract with the ministry, it did not halt irrigation plans. It remains the only municipality in Gorenjska region planning a multi-user irrigation system.



Image: Trbojsko Lake, a source of water for irrigation. Source: Municipality of Šenčur.

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ORGANIC REGENERATIVE VEGERILA FARM

The Vegerila organic farm is situated at the foot of the Karavanke Mountains, where annual precipitation reaches 1400–1600 mm. Established in 2016 by Tilen Praprotnik, with no prior farming background, it has developed in a non-traditional way. The farm spans over 16 hectares at altitudes from 500 to 1500 m, mostly meadows occasionally used as pastures. About 95% of the land, as well as most agricultural machinery and facilities, are rented, with modular and movable infrastructure prevailing.

The foundation of this climate-change-adapted farm, conceived as an organic intensive market garden, is holistic management. Its main offer consists of 40–60 types of vegetables and herbs grown on just 0.5 ha, with most customers living within 15 km. Pasture-raised poultry and Jezersko-Solčava sheep are integral to operations, also grazing in high-stem orchards. Water use is carefully calculated: for example, small livestock need 1.5 litres/day/animal and vegetables 4.2 litres/day. Production planning considers rainfall distribution to coordinate targeted irrigation. Within the organic approach, animals reach water sources independently, recognizing seasonal variability in needs.

Soil ecology is a priority: only living, organic matter-rich soils ensure good conditions for plants and animals. Increasing soil organic matter by 1% raises water retention capacity by 13,000–95,000 litres per hectare. Practices such as permanent soil cover reduce evapotranspiration.

At Vegerila, resilience to extreme weather relies on holistic management combining organic farming with agroecology, permaculture, and regenerative agriculture. By integrating crops, livestock, water management, and soil health, the farm demonstrates how small-scale, diversified agriculture can adapt to climate variability while ensuring sustainable production.



Image: Resilient farming on the Vegerila farm. Source: Archive of Vegerila Farm.

USEFUL LINK

- <https://semenjalnica.si/med-uporabniki-novih-tehnologij-zmagala-vegerila/>

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WARMER WEATHER AND WILDLIFE INJURIES DUE TO EARLY MOWING

Increasingly warmer winter and early spring is affecting vegetation, leading to earlier first mowing, which now occurs as early as at the beginning of May (whereas decades ago, it was performed at the end of May or early June). Mowing is essential for maintaining habitats and preventing overgrowth, but it must be done at an appropriate time and executed correctly. To support larger wildlife populations, grassland and forest areas should be well interconnected. These measures are particularly important in areas with a high density of herbivorous ungulates, such as roe deer, red deer, mouflons, and chamois.

Hunters organize annual campaigns to raise awareness about the presence of young animals in grasslands. Farmers should equip the front of their tractors with wildlife detection sensors. Mowing should begin in the center of the meadow and proceed outward toward the edges, and the speed of mowing should be adjusted accordingly. If needed, young animals can be relocated to the edges of fields using cut grass bundles. In cases where a young animal is accidentally injured during mowing, grass within a 40 cm radius must be removed, as it is unsuitable for feeding domestic animals.

In spring, dogs must be kept on leashes during walks and should not be allowed to roam freely in meadows, as they may encounter and harm young animals. Wildlife injuries due to early mowing can range from minor (scratches and cuts) to severe (amputated legs, neck injuries, or even death).



Image 1: Injured deer fawn in the grass.

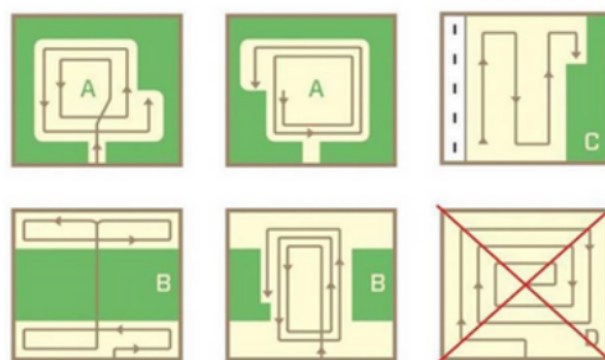


Image 2: Instructions for farmers on proper mowing techniques.

Source: Slovenian Hunters' Association, 2024.

USEFUL LINKS

- <https://www.lovska-zveza.si/2022/05/05/previdno-v-naravi/>

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Slovenian Hunters' Association



LET'S HELP THE BEES

In Slovenia, spring frosts are becoming more frequent, while summer increasingly brings longer periods without rainfall and episodes of high temperatures. As a result, nectar-producing plants that bees rely on for pollen are drying out. This affects not only beekeepers but also the bees themselves, as a single bee colony consumes about 70 kg of honey per year.

A bee colony consists of a queen, around 60,000 worker bees, and several thousand drones. Honey consumption is the highest in summer, when the colony is the largest and most active. If there is not enough honey in the hive, beekeepers must “feed” the bees with a mixture of sugar and water.

For several years now, the Slovenian Beekeepers' Association, in cooperation with local beekeeping societies and the company Hofer Slovenia, has been organizing an annual campaign to plant nectar-producing plants, thereby improving bee habitats and living conditions. Children participating in the campaign learn how to provide better conditions for bees, plant beneficial plants, and strengthen their connection with nature. These events are both educational—raising awareness of ways

to mitigate climate change—and community-building, as sharing the content on social media helps to reach a wider audience.



Images: Sign indicating late mowing of urban meadows and the campaign logo. Source: Slovenian Beekeepers' Association, 2025; Local Community Mesto Idrija, 2023.

USEFUL LINKS

- https://www.czs.si/objave_podrobno/14119?sif_file=objave_podrobno&sif_parent=14119&sif_ob=35
- <https://www.idrija.com/ustvarjajo-boljsi-svet-za-cebele/>

CONTACT PERSON

Slovenian Beekeepers' Association,
<https://www.czs.si/index.php>

GOOD PRACTICES

SPAIN



THE EXPERT NETWORK - CULTURAL MEDIATION AND KNOWLEDGE MOBILISATION IN RURAL AREAS

The Xarxa Experta (Expert Network) is an initiative led by the University Extension Programme of the Universitat Jaume I (PEU-UJI), aimed at connecting academic knowledge with rural territories, particularly in municipalities with fewer than 5.000 inhabitants. The network is composed of experienced cultural professionals who act as mediators between the university and local communities.

Through cultural mediation and knowledge mobilisation, it promotes citizen participation, local identity, and long-term resilience. Although rooted in culture, the initiative also aligns with climate action goals of decarbonisation, mitigation, and adaptation.

The initiative encourages sustainable attitudes and imaginaries. Cultural professionals act as mediators, facilitating the circulation of environmental knowledge and fostering dialogue on ecological challenges. This participatory approach builds social capital, a prerequisite for communities to embrace renewable energy projects, sustainable land management, and other mitigation strategies.

The strongest contribution lies in adaptation. By mobilising knowledge and reinforcing cultural identity, the network enhances community resilience. It provides rural areas with accessible tools and perspectives to integrate scientific approaches into locally grounded practices, preparing them to face climate uncertainties.



Source: www.uji.es

USEFUL LINK

- <https://www.uji.es/com/noticies/2022/7/2q/xarxa-experta/?urlRedirect=https://www.uji.es/com/noticies/2022/7/2q/xarxa-experta/&url=/com/noticies/2022/7/2q/xarxa-experta/#> <https://novaruralitat.org/xarxa-experta-mobilitzacio-del-coneixement/>

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ALIFARA - COMMUNITY PARTICIPATION FOR HEALTH IN ELS PORTS

Alifara is an active community participation project based in the rural region of Els Ports (Castellón, Spain), launched in January 2020 with the goal of improving local health through collaborative work between citizens and local organisations. The initiative responds to the specific challenges of this rural area, such as an ageing population, depopulation, and low population density, all of which directly impact quality of life.

The project was carried out in three main phases:

1) Creation of a county-wide participation space: After receiving basic training, a group of local residents co-designed the first-ever health survey of the region, distributed both online and in print to ensure accessibility for those without internet access.

2) Collective analysis of the region's health status: The survey — comprising 115 questions on topics such as diet, wellbeing, services, environment, occupation, and social networks — saw a historic response, with over 800 responses in just 7 days, representing around 10% of the local population.

3) Design of concrete health actions: The results were returned to the community through local meetings and focus groups. These were led by previously trained residents, who worked with their communities to co-create realistic and effective health promotion actions tailored to each municipality.

Alifara shows how a participatory health strategy, rooted in local knowledge and shared responsibility, can contribute to rural development through community-based and equitable approaches.

Image: The Alifara working group



Source: <https://projectealifara.com/>.

USEFUL LINKS

- <https://projectealifara.com/>

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INTERPRETA NATURA - RURAL LABSCAPE

RURAL LABSCAPE is a rural Living Lab based in Vall de Almonacid (Castellón, Spain), created as a collaborative space where citizens, researchers, institutions, and private actors co-design solutions for revitalising rural landscapes. Led by the University of Alicante, WWF-Spain, Interpreta Natura, and the Herbes del Molí Foundation, the initiative blends social and environmental innovation to regenerate agroforestry areas.

At the heart of the project is the creation of a rural Living Lab — a participatory innovation space where citizens, researchers, the private sector, and public institutions work together in real-life settings to co-create solutions for revitalising agroforestry landscapes and rural territories. RURAL LABSCAPE promotes low-carbon land uses such as extensive grazing, agroecology, and the cultivation of aromatic plants. These practices reduce dependency on intensive, fossil-fuel based models while supporting a circular, local bioeconomy.

The Living Lab fosters biodiversity conservation and multifunctional landscapes that capture carbon and stabilise ecosystems. By diversifying economic activities and valuing natural

and cultural heritage, it strengthens the role of rural territories in climate solutions.

Participatory territorial strategies, combined with training programmes and a rural coworking hub, equip local actors with knowledge, tools, and spaces to respond collectively to environmental and demographic challenges.



Source: <https://interpretayeduca.com/>

USEFUL LINK

- <https://interpretayeduca.com/es/un-laboratorio-viviente-rural-en-vall-de-almonacid/>

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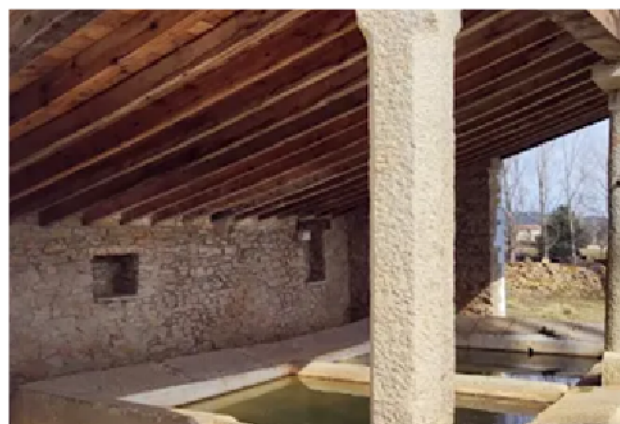
LLAVADORS LOVERS - HERITAGE, PARTICIPATION AND SUSTAINABILITY THROUGH RURAL WASHHOUSES

Llavadors Lovers is a community engagement project aimed at revitalising the old public washhouses of Vilafranca as living spaces for intergenerational learning, creativity, and social connection. Using a participatory methodology and both tangible and intangible heritage as drivers for change, the initiative fosters social cohesion, gender equality, and sustainability in a rural context affected by depopulation and ageing.

The project seeks to recover the historical and social value of the washhouses, highlight the role of women in local memory, and promote sustainable practices rooted in traditional knowledge. It encourages community participation and collaboration, connecting educational, cultural, and environmental stakeholders across the territory.

Llavadors Lovers encourages sustainable practices rooted in traditional knowledge, such as soap making and natural dyeing, which reduce dependence on industrial, carbon-intensive products. By reactivating local heritage spaces, it also avoids the need for carbon-heavy cultural consumption outside the municipality.

Clean-up activities carried out by local youth within broader environmental programmes help preserve ecosystems, reduce waste, and promote more sustainable everyday habits. These actions reinforce a cultural narrative that connects heritage with ecological responsibility. Washhouses become symbolic and practical spaces for collective learning, where sustainable practices are preserved and reinvented to address current challenges.



Source: Llavadors Lovers website.

USEFUL LINK

- <https://www.uji.es/cultura/base/peu/xarxa-territori/enclau-uji/>

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LLAVORS D'ACÍ - CONSERVING AGRICULTURAL BIODIVERSITY AND TRADITIONAL KNOWLEDGE

Llavors d'ací is a non-profit association that has been working since 2007 to promote and conserve agricultural biodiversity in the Valencian Region, as well as the traditional knowledge and culture associated with it. The organisation emerged in response to the urgent need to preserve local crop varieties, which are increasingly endangered by the spread of uniform commercial seeds controlled by large agro-industrial corporations.

The association promotes short food chains, local seed use, and organic farming, reducing reliance on carbon-intensive agro-industrial systems and transport, conserving and reintroducing diverse local crops strengthens ecosystem services, soil fertility, and agroecological balance. The association fosters exchanges among farmers, professionals, and amateur growers, embedding sustainable practices into everyday agriculture while reducing dependence on chemical inputs.

Main activities include a seed bank available to members, preserving traditional varieties, and a network for exchanging seeds and knowledge among

farmers, professionals, and amateur growers. They also organize workshops and courses on seed saving, germplasm conservation, climate adaptation, and related topics. In addition, they hold talks, seed exchanges, and local variety tastings, creating spaces to share cultural and gastronomic knowledge. Finally, they actively participate in agroecological networks, such as the Spanish Seed Network and the Food Sovereignty Platform of the Valencian Region, while also engaging in advocacy efforts to promote public policies that support traditional varieties.



Source: Llavors d'ací website.

USEFUL LINKS

- <https://llavorsdaci.org/>

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LIMNE FOUNDATION - PARTICIPATION AND ENVIRONMENTAL ACTION

The Limne Foundation is a Valencian organisation that, since 2005, has been working for the conservation of aquatic ecosystems —rivers, streams, and wetlands—through citizen involvement and nature-based solutions. Limne has created a wide environmental volunteer network, where hundreds of people monitor water quality and take part in restoration activities. Flagship programs such as Projecte Rius, Manos al Río and the Monitoring of Turtles allow citizens to collect environmental data while directly improving river ecosystems.

The foundation also develops environmental education initiatives, especially through the Nature Interpretation Centre in Quart de Poblet. Also, it promotes corporate volunteering and partnerships with universities, companies, and public administrations, fostering shared governance of water and territory.

Limne focuses on river restoration: removing invasive species, planting native vegetation, stabilising riverbanks, and creating green spaces. particularly relevant initiative is Fluviatilis: Stewardship for Resilience, which

promote the restoration of rivers in several Spanish regions as a strategy for climate change adaptation. By applying nature-based solutions and river stewardship, Fluviatilis strengthens ecosystem services, supports local bioeconomy, and advances co-management of river basins. The Limne Foundation exemplifies how social participation and ecological restoration can move forward together: empowering citizens through volunteering, education, and citizen science, while simultaneously improving aquatic ecosystems and their resilience to climate change. It thus stands as a reference in the integration of community engagement and transformative environmental action.



Source: Limne website.

USEFUL LINK

- <https://www.limne.org/es/inicio/>



RURAL SUSTENTABLE - A MOVEMENT FOR THE RURAL FUTURE

Rural Sustentable is an initiative by the Fundación Galicia Sustentable that draws on over a decade of experience to drive transformative, energetic activism in rural areas. It's a dynamic movement uniting organisations, businesses, and leading professionals connected to the rural world. The initiative works hand-in-hand with local change-makers—those already transforming their communities—by channelling their expertise toward innovative and sustainable solutions. It supports their tireless efforts to ensure rural areas not only survive but thrive, building a bright and sustainable future for all inhabitants.

Rural Sustentable's activities are designed to be practical, participatory, and directly aligned with climate and sustainability goals. They focus on simplifying administration in rural areas by addressing bureaucratic barriers to enable quicker adoption of sustainable technologies and projects. In collaboration with Gradiant, they deliver practical workshops on IoT solutions that help small farmers optimise resources, reduce waste, and minimise footprints

through precision agriculture. They also promote proximity consumption and seasonal products at events like the Feria 1900 in Arteixo, reducing food miles and supporting low-carbon local supply chains. Additionally, through the Rural Sustentable Forum (FRS23 & FRS24), they create essential spaces for dialogue and strategy among rural initiatives, researchers, businesses, and civil society, defining collective pathways toward a prosperous and climate-resilient rural future.

Image: Rural sustainable forum



Source: Rural Galicia Sustentable website.

USEFUL LINK

- <http://rural.galiciasustentable.org/>



ULGES PROJECT

The ULGES Project – Local Units for Ecosystem Management, led by Interpreta Natura in collaboration with the Vall de Almonacid Town Council and the Forest Species Research Centre (CIEF), is a pilot initiative designed to address rural depopulation and promote territorial sustainability in line with the Sustainable Development Goals and the Spanish Urban Agenda 2030. It adopts an integrated approach that links environmental, social, and economic dimensions, aiming to improve local ecosystem management, prevent wildfires, recover agricultural land, and protect forests, while also fostering sustainable tourism, rural schooling, access to housing, job creation, sustainable farming, and renewable energy.

ULGES follows a participatory and collaborative methodology. It combines a Technical Board with an external Technical Office and expert consultations, while involving diverse local actors such as volunteers, associations, farmers, and students. This approach has enabled the definition of clear priorities and the mobilisation of significant financial resources. Tangible results include the recovery of farmland, the creation of

community participation spaces, the revitalisation of rural tourism, and the reopening of the local school, which has grown from four to ten pupils.

The project has also built alliances with organisations such as the mODS network, WWF, and Kiwa, facilitating knowledge transfer and the replication of the model in other municipalities. In sum, ULGES represents a transformative experience that combines ecosystem management with social and economic revitalisation, showing that global challenges can be effectively addressed through local action with the community at its core.

Image: Presentation of ULGES project



Source: Ulges website.

USEFUL LINK

- <https://ulges.es/>



LA SURERA - A HUB FOR TERRITORIAL INNOVATION

La Surera – Rural Meeting Space, managed by the cooperative Canopia Coop. V. in Almedíjar (Castellón, Spain), is a cooperative project that transforms a small village of fewer than 200 inhabitants into a hub for territorial innovation. It defines itself as a self-managed rural space that combines rural accommodation (hostel), training, artistic residencies, environmental volunteering, and cultural and artisanal workshops.

The project's deeply participatory model strengthens community resilience—a key asset for climate adaptation. It actively tackles rural challenges like depopulation and wildfire risk through activities such as environmental volunteering for fire prevention and residencies that recover ancestral knowledge. Heritage routes (Cork, Water and Forgotten Plants), traditional skills and creative residencies reinforce local identity while advancing low-carbon, place-based development.

Working with cork-oak landscapes and collective volunteering also supports wildfire risk reduction, biodiversity and ecosystem services, strengthening adaptation. Its cooperative governance and entrepreneurship training build social economy capacity—keeping value and

people in the territory—and make climate action practical and everyday.

In terms of mitigation, La Surera integrates practices such as ecological farming, the use of natural fibres, and landscape conservation. These activities sustain ecosystem services, preserve biodiversity, and foster a balanced relationship between cultural heritage and the environment.

The Sostenibilitat al plat programme on sustainable, proximity-based school meals in Alto Palancia (training workshops in 2022) complements La Surera's approach, linking local food systems to climate mitigation and community awareness.

Image: Peripheral encounters.



Source: Lasurera website.

USEFUL LINK

- <https://lasurera.org/>

EUROPEAN RURAL NETWORK

In order to increase visibility and strengthen mutual connections in the exchange of knowledge and experience, we have designed an international network of rural communities and rural areas that want to share their findings with others and continue to inform and help each other in the future. Therefore, you are invited to the SURF European Rural Network.

EUROPEAN RURAL NETWORK INVITATION

<https://surfproject.eu/european-rural-network/>

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GOOD PRACTICES GUIDE

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