

CHALLENGES, INITIATIVES AND CONNECTIONS REPORT

SUSTAINABLE RURAL FUTURE
ERASMUS+ KA2 COOPERATION
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WELCOME

SURF - Sustainable Rural Future is a European co-funded Erasmus+ project, focused on Climate Change Adaptation in Rural Areas! SURF embraces the idea that climate change is an undeniable reality and aims to empower rural communities to learn, adapt, and thrive in the face of this change. Its main objective is to create an innovative adult training itinerary to enhance opportunities for rural areas amidst the green transition and adaptation to climate change.

The project seeks to empower rural communities by:

- improving their understanding and knowledge of climate change impacts and adaptation strategies;
- fostering social participation to involve them in decision-making processes;
- creating a European Rural Network for promoting the exchange of information, best practices and initiatives about climate change adaptation among Europe.

EXECUTIVE SUMMARY

CHALLENGES, INITIATIVES, AND CONNECTIONS REPORT

The Erasmus+ [SURF – Sustainable Rural Future](#) project set out to help rural communities understand climate risks, co-design practical responses, and build a European network for long-term collaboration. Over two years, partners in Spain, Italy and Slovenia delivered learning resources (a Climate Adaptation Handbook and three courses), ran eight local workshops, hosted two international webinars, compiled a Good Practice Guide, and launched an interactive online map and the SURF European Rural Network. Together these activities created a shared evidence base and a toolbox for action in rural areas.

RURAL COMMUNITIES INVOLVED

Four pilots were chosen because, together, they mirror wider European rural realities and make lessons readily transferable:

Brescia Lowlands (IT) – intensive plains agriculture; **Province of Palermo (IT)** – Mediterranean coastal-inland mix with water stress and wildfire risk; **Gorenjska (SI)** – Alpine foothills exposed to floods/landslides and seasonal pressures; **Province of Castellón (ES)** – inland, low-density agro-forestry mosaics with growing climate variability. This diversity surfaces common pressures under similar governance settings (municipalities, LAGs, civic organisations) and shows how approaches can scale with light local tailoring.

EXECUTIVE SUMMARY

CHALLENGES, INITIATIVES, AND CONNECTIONS REPORT

FINDINGS

Two **core hazards and impacts** stand out everywhere:

- Prolonged droughts — average risk score ≈ 50 (high likelihood; severe–very severe impacts).
- Floods & heavy rainfall — average ≈ 43 (high likelihood; significant–very severe impacts).

Other frequently cited threats: extreme weather (heatwaves, storms, late frosts), rising wildfire risk (esp. Mediterranean), and temperature increase.

Cascading effects: soil degradation/erosion, water security and quality issues, yield instability and agri-food volatility, ecosystem stress (pests/diseases, biodiversity loss), and socio-economic impacts (infrastructure damage, seasonal job insecurity, depopulation).

Cross-cutting vulnerabilities: fragmented land/water governance, ageing/depopulation, gaps in rural infrastructure, and skills needs in climate-smart practice and risk planning.

EXECUTIVE SUMMARY

CHALLENGES, INITIATIVES, AND CONNECTIONS REPORT

WHAT COMMUNITIES ARE ALREADY DOING

Across pilots, stakeholders pointed to practical measures already in motion: irrigation upgrades and water harvesting; crop diversification (resistant varieties, rotations, agroforestry); sustainable forest management and wildfire prevention; nature-based river restoration; participatory planning and youth-focused engagement. SURF partners have developed a [Good Practices Guide](#) featuring examples from partner countries, as well as a [SURF online browser](#) that provides access to more than 60 additional examples. These examples are classified using two filters: the economic activity they refer to and the climate risk they address.

CONNECTIONS

The Connections analysis shows strong convergence in perceived risks and viable responses despite contrasting geographies. Shared priorities include: coordinated water management, soil stewardship, wildfire risk reduction, diversified rural economies, and participatory governance linking citizens, schools, administrations and LAGs. The SURF European Rural Network and the Good Practice Map enable peer learning and replication across similar rural contexts.

EXECUTIVE SUMMARY

CHALLENGES, INITIATIVES, AND CONNECTIONS REPORT

SURF RESULTS

Many SURF solutions are transferable with light local tailoring. The Climate Change Handbook helps communities improve their knowledge of climate change and adaptation, and determine risks to better prioritise adaptation strategies. The Good Practice Guide, interactive map and European Rural Network reduce duplication and accelerate peer learning across contexts. Participatory diagnostics (PAR) helps to prioritise measures and to maintain buy-in across administrations, LAGs and civic groups.

SURF PROCESS

1

CLIMATE
CHANGE
HANDBOOK



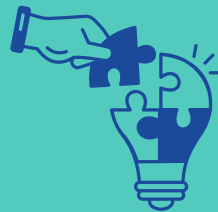
2

CHALLENGES
REPORT



3

INITIATIVES
REPORT

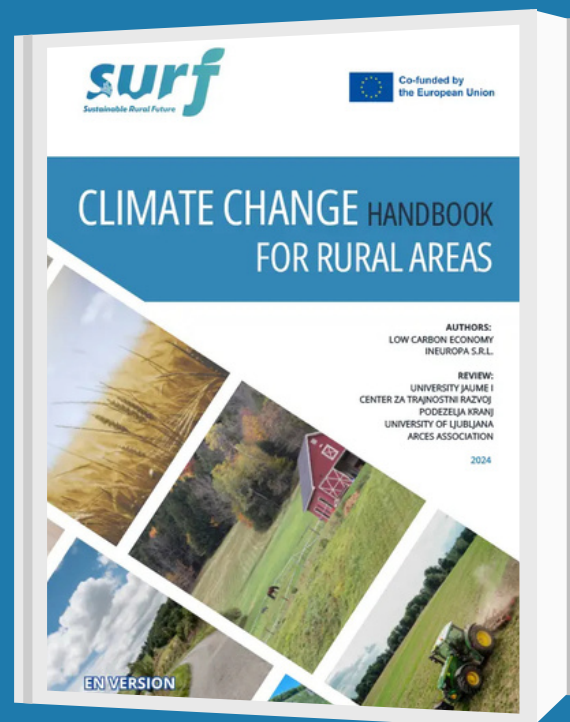


4

CONNECTIONS
REPORT



CLIMATE CHANGE HANDBOOK



This Handbook is an introductory framework for the project and serves as an essential resource designed to **enhance the understanding and engagement of climate change adaptation**, particularly in rural settings. The guide aims to educate and empower **adult educators, community members, local authorities and other stakeholders** by providing essential knowledge, engaging resources, and interactive elements that foster community participation and dialogue. By enhancing understanding and involvement, the guide will serve as both a learning tool and a starting point for collaborative identification and addressing of local climate adaptation challenges. This guide will encourage discussions and enable citizen participation in **identifying problems and developing climate change adaptation strategies** tailored to each community.



CHALLENGES REPORT

The first step of SURF project seeks to **enhance the knowledge about climate change and sustainable options for the rural areas, with active involvement from the local communities to detect their needs and challenges.**

To do so, SURF partners implemented:

- a **webinar** targeting adult educators, rural development experts, community members, local administration staff, and individuals wanting to improve their knowledge on climate issues. The session provided key insights into the impacts of climate change, historical climate trends, and core principles for building effective adaptation strategies. It also featured inspiring examples of community-driven decision-making and encouraged open discussions on tackling climate-related challenges.
- Four **local workshops** involving the members of SURF local communities, focused on identifying and assessing key risks and vulnerabilities of the pilot rural areas selected by each partner. These workshops encouraged attendees to recognise/ identify climate risks and list their consequences/ effects on the areas concerned, scoring the level of vulnerability and impact on the local ecosystem.

The challenges report collects data on the activities carried out and analyses the identified challenges, comparing and evaluating the results.



INITIATIVES REPORT

The second part of SURF project aims at **involving the rural population of the four local communities to discuss and propose adaptation initiatives to address the challenges detected** in the previous phase. The activities will foster a participative approach, to enhance community engagement and encourage participation of all community relevant stakeholders.

To do so, SURF partners implemented:

- An educational training which consists of three **courses**:
 - (1) Social Research Techniques for Local Development,
 - (2) Participatory Tools for Community Development,
 - (3) Participatory and Sustainable Local Development Planning,offered by the University Jaume I (UJI), aimed at enhancing skills in social research, participatory tools, and sustainable development strategies.
- Four **local workshops** involving the members of SURF local communities, focused on identifying and sharing strategies and good practices that offer opportunities and viable solutions to adapt to climate change. They also explored collaborative methodologies to strengthen the connection between the different stakeholders composing the rural communities (associations, local administrations, farmers, etc).
- An international conclusive **webinar**.

The initiative report collects data on the activities carried out, comparing and evaluating the results.



CONNECTIONS REPORT

The third part of SURF project intends to **explore connections between rural communities across Europe, focusing on actions, initiatives and challenges that can contribute to local development as good examples and practices of adaptation to the climate crisis.**

The report analyses the challenges, concerns, initiatives, and capacities of these communities, providing a detailed comparison of the four participating communities while offering a broader perspective on other European rural areas, based on data collected from the [SURF Good Practices online browser](#) and the [European Rural Network toward Climate Change Resilience](#).

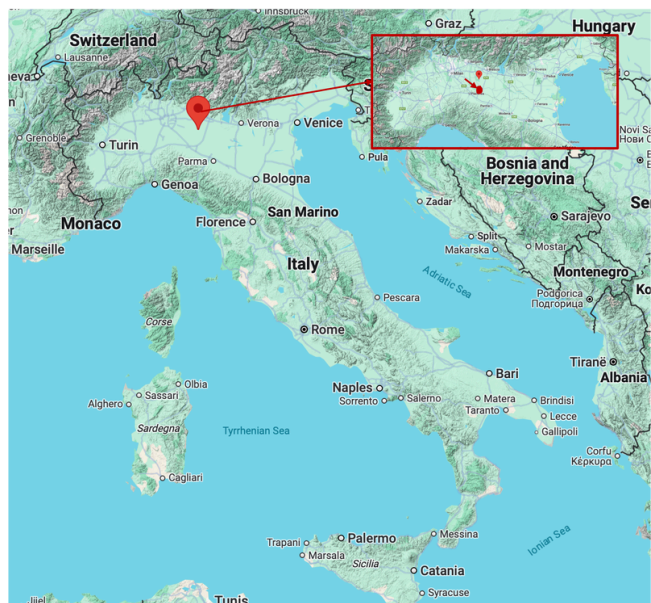
This will help rural communities to overcome challenges and successfully adapt to climate change, while also supporting the community's long-term development.

RURAL COMMUNITIES INVOLVED

TERRE BASSE BRESCIANE – BRESCIA LOWLANDS



The Brescia Lowlands (Pianura Bresciana), or Lower Brescia (Bassa Bresciana), is a large area located south of Brescia. It is made up of 64 municipalities and accounts for about a quarter of the province's land area and a third of its population. Given its size, the area is divided into Western Lower Brescia, Central Lower Brescia, and Eastern Lower Brescia.



It is typically an agricultural region, characterised by medium to large fields in the northern part, near the provincial capital, which gradually expand as you move south. It is also marked by farmhouses and agricultural complexes, alternating with small towns and inhabited centers. The cultivation, once primarily focused on crop rotation, is now centered around the dominant monoculture of corn. Other crops are still cultivated today, such as barley and wheat, including the ancient monococco wheat from Cigole.

This flat territory, green and natural, is rich in water and is crossed by the rivers Oglio, Mella, Chiese, and Gambara, which over the years have made it fertile and shaped its historical developments. The region's ancient yet still present and appreciated food and wine traditions offer delicious cuisine and fine wines.



The area has been chosen because, according to 2024 Ispra report (Italian Institute for Environmental Protection and Research), for the Lombardy countryside, the percentage of emissions in the total is more than double of the national average and the Lower Brescia area has the highest number of livestock units and intensive livestock farming in the country (cattle and pigs) and possesses high rates of intensive agricultural practices. However, the impact generated by agriculture can be reversible, and in this region, there is an increasing focus on actions to further reduce and offset emissions through sustainable practices. The goal is to become a model for proximity agriculture, valuable craftsmanship, sustainable tourism, and soft mobility. This enhancement strategy recognizes the central role of people because development, to be sustainable, must be shared with the local community.

SURF is focusing on the Central Lower Brescia area, where the Fondazione Castello di Padernello is based (in Borgo San Giacomo), InEuropa's local active partner.

SOURCES:

- <https://www.in-lombardia.it/it/turismo-in-lombardia/brescia-turismo/alla-scoperta-della-pianura-bresciana>
- <https://lombardinelmondo.org/la-pianura-bresciana/>
- https://it.wikipedia.org/wiki/Bassa_Bresciana
- https://www.comuniterebasse.it/progetto/https://brescia.corriere.it/notizie/economia/24_ottobre_08/secondo-l-ispra-nella-bassa-bresciana-stalle-e-campi-producono-piu-inquinamento-di-automobili-e-caldie-b3499e1a-102f-45fa-a0b2-5a81e60d6x1k.shtml





RURAL COMMUNITIES INVOLVED

PROVINCE OF PALERMO



The province of Palermo consists of over 80 municipalities, each with its own history and unique features. Notable towns include Monreale, known for its splendid Cathedral, Bagheria, famous for its 18th-century villas, and Cefalù, a popular tourist destination with its beach and historic center. Other significant towns are Partinico, Villabate, and Carini.



The population is diverse, with a population density varying greatly between urban and rural areas. Palermo is the most populous city in Sicily, with over 1.2 million people, while smaller rural municipalities have fewer residents.

The province features a variety of landscapes, from the coastal areas of the Gulf of Palermo to the Madonie mountains, offering natural parks and opportunities for rural tourism and mountain agriculture. The interaction between city life and rural traditions makes Palermo a unique combination of modernity and tradition. However, the region is increasingly vulnerable to climate change, as the Mediterranean climate is undergoing significant shifts, posing environmental and socio-economic challenges.



The area of Palermo and its province, particularly certain areas such as the municipality of Pioppo, just 17 kilometers from Palermo, near the historic center of Monreale, and the municipality of San Mauro Castelverde in the Madonie Park, are emblematic regions affected by the impacts of climate change.

In recent years, both areas have experienced phenomena such as desertification, rising average temperatures, and a reduction in rainfall; drought, storms, hail, and strong winds.

These areas have undergone profound environmental changes related to climate change, and some businesses located in these regions have had to respond to these challenges by reorienting their activities.

Even in the city of Palermo itself, though it is a metropolitan city and not entirely rural, these phenomena have occurred and have generated problems not only on an environmental level but also social and economic.

These are the reasons why the aforementioned areas have been selected as “pilot” regions for the project.



SOURCES:

- www.ogriturismovillamirto.com
- <https://goeditiberio.com/>

RURAL COMMUNITIES INVOLVED

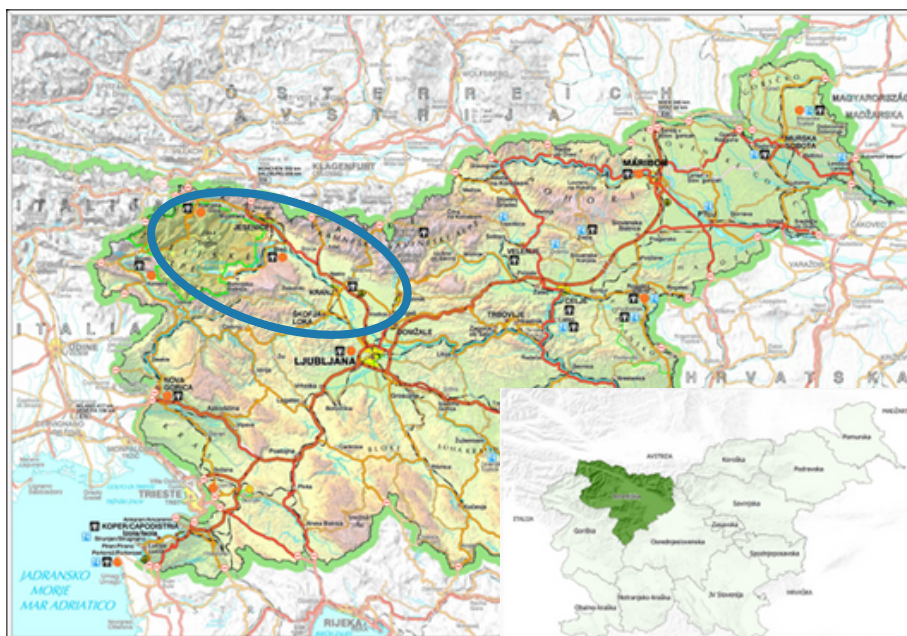
REGION OF GORENJSKA



Gorenjska Region is located in the north-western part of Slovenia, with an area of 2,137 km², around 210,000 inhabitants, and is made up of 18 municipalities. It has a characterized by diverse Alpine landscapes, where 70% of the territory is mountainous (40% of which is 1 000 m above sea level), with only 30% in the valley-plain area. 68% of Gorenjska is covered by forests and 20% by agricultural land. Population is concentrated in the central lowland part. Almost half of the region is covered by protected nature areas. Gorenjska is, due to abundant rainfalls, very rich in various water resources, including being the source area of the Sava river basin. Torrential nature of watercourses in the hilly/mountainous areas and erosion processes are a significant problem.



Air quality in Gorenjska is mainly affected by emissions from the still growing road and air traffic. The population density is around 96 inh./km², while it is over 200 inhabitants/km² in some urbanised areas. There is still an increase in daily migration and a concentration of dispersed construction in transport corridors, where production and commercial zones are being developed on new undeveloped land. Population of Gorenjska is still slightly increasing, but since 2005 the age structure has been unfavourable, especially in some municipalities. Jobs in services and industry predominate, with only around 5% of employment in agriculture, which is important for the preservation of the cultural landscape. Region has traditionally been an important tourist destination, and the number of tourists has been growing even faster in recent years. Of the agricultural land in use, 72.5% is permanent grassland and pastures and only 23.8% arable land. The number of agricultural holdings is still decreasing and about 2/3 of them have less than 5ha of agricultural land. Around 8% of agricultural holdings are organic.



Gorenjska region has been chosen to be a SURF pilot area for Slovenia for number of reasons; it is important for conditions of wider river (water) network across Slovenia, for the economy of Slovenia (tourism, transport, ...) and also because is feasible to develop there some approaches and solutions in dealing with climate changes and adoptions which will be useful and applicable in other regions in Slovenia, especially in other Alpine regions. Region has several points of risk (e.g. torrential mountain watercourses) and sectors at risk (tourism, fodder plant production, ageing population), but also important resilient elements (water resources, forests, biodiversity, etc.). The region now needs to mobilise participation of rural population, especially by empowering them, for active approach towards impacts of climates changes and climate change adoption.



RURAL COMMUNITIES INVOLVED

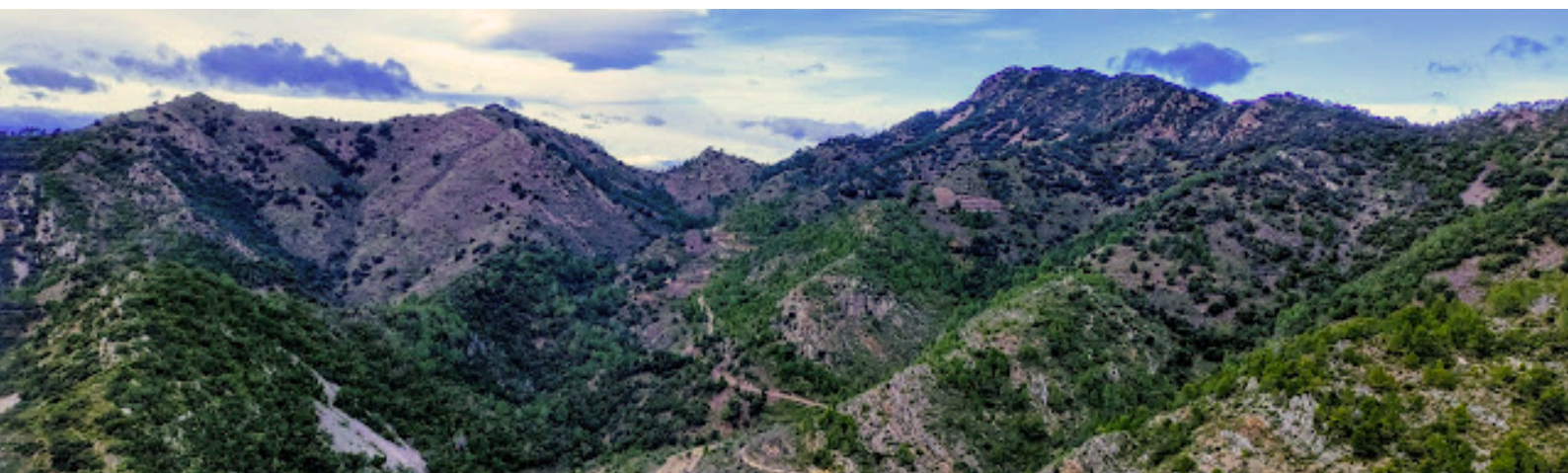
PROVINCE OF CASTELLÓN



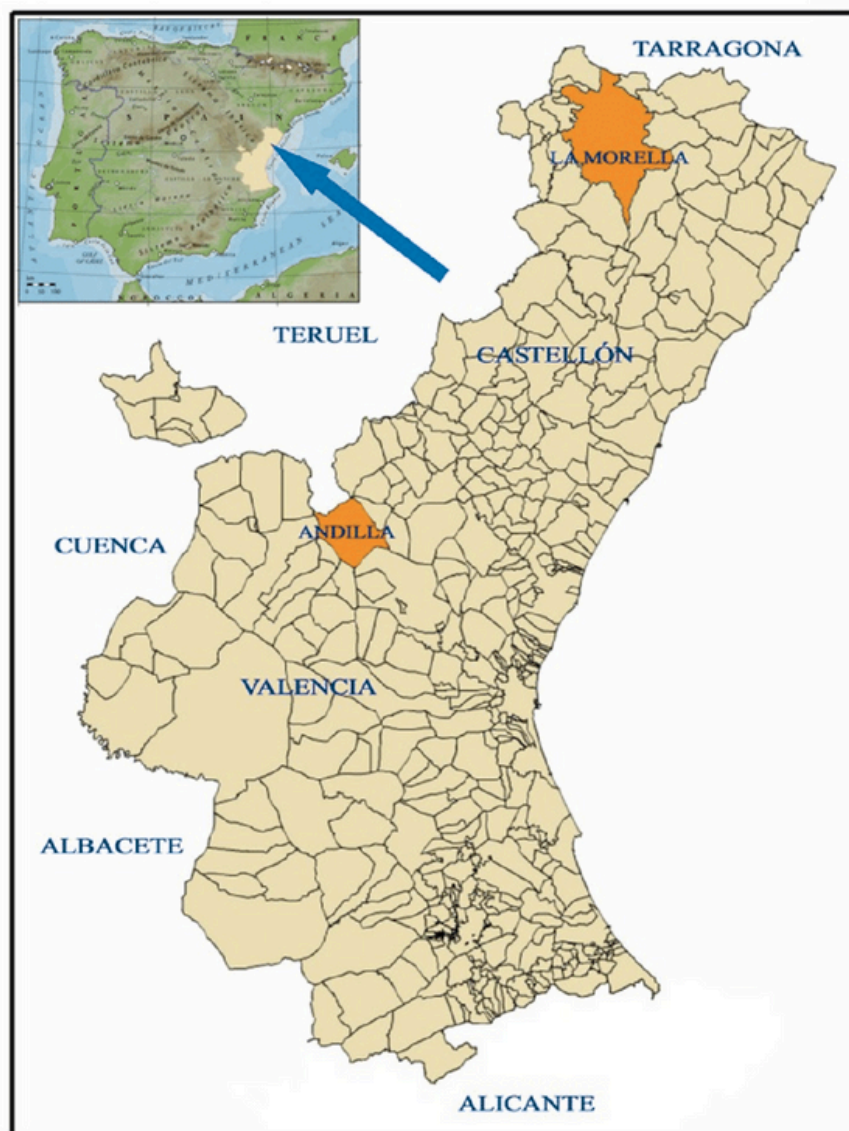
The province of Castellón, located in the north of the Valencian Community, has a great geographical and landscape diversity that combines coastal areas with extensive, predominantly rural inland territories. With 135 municipalities, most of which have a population of less than 1.000 inhabitants, the province presents a high degree of population dispersion and a marked duality between the coastal strip, more densely populated and with diversified economic activity, and the inland regions, with a strong dependence on agriculture, livestock and forestry.

Areas such as Alto Palancia, Alto Millars or Alcalatén are representative of this rural environment, with towns such as Azuébar, Vistabella del Maestrat or Llucena, which have experienced strong depopulation and an aging population in recent decades. However, these territories preserve a rich natural and cultural heritage, with protected areas such as the Serra d'Espadà Natural Park or the Penyagolosa Natural Park, and agricultural traditions that have been maintained thanks to the initiative of small producers and collaborative rural revitalisation projects.

These areas, like other Mediterranean regions, are highly exposed to the effects of climate change. Drought episodes, irregular rainfall, rising temperatures and an increase in extreme phenomena such as hailstorms and forest fires are frequent. This has forced many people and local initiatives to adapt and transform their models of production and management of the territory, opting for more sustainable practices, economic diversification and social innovation.



These reasons have led to the selection of several municipalities in the interior of Castellón as pilot areas within the SURF project, with the aim of strengthening the resilience of rural communities in the face of current environmental, social and economic challenges. Within this framework, workshops and training have been organised that have contributed to generating shared knowledge between local and international actors, highlighting the potential for sustainable transformation of the rural world.



CHALLENGES

REPORT

The challenges report introduces the first steps of the SURF project, aiming at improving the knowledge about climate change and sustainable options for the rural areas, directly involving the community to detect their climate challenges.

To do so, SURF partners implemented:



An introductory **international webinar** aimed at presenting SURF project and its steps, enhancing participants' knowledge of climate change impacts and adaptation strategies and fostering community involvement in the decision-making process through sharing inspiring cases.

The webinar was held on zoom on 9th July 2024.



4 local workshops on risks and vulnerabilities aimed at understanding how to assess predominant local risks in the four different local communities engaged in the SURF project.

The workshops were held in presence in Italy, Spain and Slovenia between December 2024 and January 2025.

The process used in these workshops followed this structure:

- Pinpointing the most significant specific **hazards** for the area;
- Determining **exposure**: identifying the agents (rural populations, livestock, crops etc.) exposed to this threat;
- Evaluating the **vulnerability** of the territory: identifying the **sensitivity** (people, systems, sectors, infrastructures, areas which are susceptible to damage) and the **adaptive capacity** (ability to cope with and overcome the effects) of the area;
- Assessing the **risks**: outlining the key components of the risk assessment, the level of probability (what is the likelihood of being affected) and consequence (to what extent could the effects or impacts be critical);
- Highlighting the type of consequences which could be caused by the selected hazards.

This thorough analysis is the baseline for selecting adaptation objectives and creating viable adaptation options which can be strategically planned.

The following sections include a summary of both the webinar and the workshops, highlighting the most significant insights, analysing the findings and comparing them underlining similarities and differences between the four involved areas.

WEBINAR 1

PATHWAYS TO RESILIENCE: ADAPTING TO CLIMATE CHANGE IN RURAL COMMUNITIES



09/07/2024 – online

76 participants from 3 countries.



Profiles of attendees: diverse mix of professionals and academics working in rural areas, including: administrative and project managers, presidents of associations, sectoral advisors, cultural managers, directors for research and development, heads of European programmers, young and junior researchers, professors, and third-year environmental science students.



Designed primarily for adult professionals working in rural areas, members of the rural community, local administration personnel, and students of the field, the webinar aimed at presenting SURF project and its steps, enhancing participants' knowledge of climate change impacts and adaptation strategies and fostering community involvement in the decision-making process through sharing inspiring cases.



Highlights:

- Deeper understanding of global warming, its root causes, and its profound effects on the environment, particularly in rural areas;
- Enhanced awareness among local organisations about the importance of climate action and sustainable practices;
- Active participation from community members and local organisations, fostering discussions about practical climate change solutions;
- Networking among experts who can collaborate on future environmental education projects;
- Identification of specific knowledge gaps and areas where further training and support are needed.

**WATCH
NOW!**



LOCAL WORKSHOPS ON RISKS AND VULNERABILITIES



The main objective of the workshops is to understand and assess predominant local risks by:

- Pinpointing the most significant hazards.
- Determining exposure.
- Evaluating the vulnerability of the territory.
- Assessing the risks.
- Highlighting the type of consequences.

This analysis supports the selection of adaptation goals and the development of practical adaptation strategies for strategic planning.



Methodology used: group activity in which participants were asked to complete a risks and vulnerabilities table by identifying the hazards faced by their local community, those exposed to the hazards, the specific vulnerabilities (both in terms of sensitivity and adaptive capacity) and assessing the probability and consequence of the risks identified. Initial suggestions for filling the table were given.

TABLE 1: RISKS AND VULNERABILITIES TABLE

		VULNERABILITY		RISK ASSESSMENT		WHAT TYPE OF CONSEQUENCE
HAZARD	EXPOSURE Identify who/what is exposed to the hazard	SENSITIVITY Identify who/what might be most affected specifically	ADAPTATIVE CAPACITY Identify who/what could already adapt to the hazard. Identify what resources are already available	PROBABILITY (improbable, unlikely, possible, likely, probable, very likely)	CONSEQUENCE (non-existent, minimal, low, moderate, significant, severe, very severe)	

TABLE 2: RISK ASSESSMENT TABLE

		0	3	4	5	7	9	10
		Non-existent	Minimal	Low	Moderate	Significant	Severe	Very severe
		CONSEQUENCE						
PROBABILITY	1 Improbable	0	3	4	5	7	9	10
	2 Unlikely	0	6	8	10	14	18	20
	3 Possible	0	9	12	15	21	27	30
	4 Likely	0	12	16	20	28	32	40
	5 Probable	0	15	20	25	35	45	50
	6 Very Likely	0	18	24	30	42	54	60

WORKSHOP



"THE CLIMATE CRISIS IN RURAL AREAS"



7/12/2024;

Castello di Padernello, Borgo San Giacomo (Brescia)



Rural community Terre Basse Bresciane.

Main actors involved: 15 members of local associations (environmental, territorial development, eco-tourism, Slow food), journalists, farmers, public administrators.



RISKS AND VULNERABILITIES TABLE

		VULNERABILITY		RISK ASSESSMENT		
HAZARD	EXPOSURE	SENSITIVITY	ADAPTATIVE CAPACITY	PROBABILITY	CONSEQUENCE	WHAT TYPE OF CONSEQUENCE
COMMON TO ALL THREE GROUPS						
Increase in temperatures and heatwaves	Population, animals, livestock, farmlands, farmers, plants, trees	Summer crops (corn, horticultural), vulnerable people, migratory animals, oxbow lakes, pig and poultry farms	Thermoregulated insulated housing, irrigation systems, alternative crops, resistant crops, alert systems	Very likely	Severe/significant	Production decrease, desertification, cost increase, crops change
Increase in drought periods	Population, animals, livestock, farmlands, farmers, plants, trees	Cows, summer crops (corn, horticultural), vulnerable people, migratory animals, oxbow lakes	Thermoregulated insulated housing, irrigation systems, alternative crops, resistant crops	Very likely/possible	Severe/significant	Production decrease, desertification, livestock reduction
Decrease in water resources	Population, animals, livestock, farmlands, farmers, plants, trees, energy production	Cows, summer crops (corn, horticultural), intensive livestock farming, vulnerable people, migratory animals, oxbow lakes, biogas/biomethane/hydroelectric plants	Thermoregulated insulated housing, irrigation systems, alternative crops, resistant crops	Very likely/Probable	Severe/significant	Production decrease, desertification, cost increase, crops change
Increase in the frequency of torrential rainfall episodes	Farmlands, housing, roads, infrastructures, agricultural activities, plants, trees, population	River networks, water reticulates, bridges, summer crops, solar farms, secondary roads, orchards, greenhouses, veggie gardens	property recovery (farmhouses), constant maintenance of environment and territory (river banks etc)	Very likely	Significant	Floods, infrastructure deterioration, social costs, territorial disasters

		VULNERABILITY		RISK ASSESSMENT		
HAZARD	EXPOSURE	SENSITIVITY	ADAPTATIVE CAPACITY	PROBABILITY	CONSEQUENCE	WHAT TYPE OF CONSEQUENCE
Increase in the frequency of severe storms	Farmlands, housing, roads, infrastructures, agricultural activities, plants, trees, population	River networks, water reticulates, bridges, summer crops, solar farms, tall trees, orchards, greenhouses, veggie gardens, secondary roads	property recovery (farmhouses), constant maintenance of environment and territory (river banks etc)	Very likely	Significant	Floods, infrastructure deterioration, territorial disasters, social costs
Increase in air pollution	Population, animals, livestock	Public administrations, health infrastructures, vulnerable people, cattle, pigs, poultry, bees	Increase of vegetation/reforestation, new generations change in habits	Very likely/possible	Severe	Increase of diseases (cardiopulmonary diseases), social costs
Appearance of invasive species	Farmlands, animals, population	Local crops, pastures and wildlife	Biodiversity recovery	Very likely	Severe	Social costs, biodiversity loss
COMMON TO TWO GROUPS						
Water erosion of soil	arable farmlands	Agricultural activities (corn, wheat, barley spelt, ryegrass)	Special crops, green manure, stable meadows	Very likely	Severe	Crops changing, CO ₂ increase, desertification
Increase in pest infestations	Farmlands, animals, livestock, population	Local crops, pastures and wildlife, chickens, pigs, vulnerable people, operators in the field	Biodiversity recovery	Very likely	Severe/Significant	Social costs, biodiversity loss, pandemics, epidemics

		VULNERABILITY		RISK ASSESSMENT		
HAZARD	EXPOSURE	SENSITIVITY	ADAPTATIVE CAPACITY	PROBABILITY	CONSEQUENCE	WHAT TYPE OF CONSEQUENCE
PRESENT IN ONLY ONE GROUP						
Increase in the frequency of flooding events	Farmlands, housing, roads, infrastructures, agricultural activities, plants, trees, population	River networks, water reticulates, bridges, summer crops, solar farms, secondary roads	constant maintenance of environment and territory (river banks etc)	Very likely	Severe	Floods, infrastructure deterioration, territorial disasters, social costs
Alteration in animal phenology and species distribution	arable farmlands	Agricultural activities (corn, wheat, barley spelt, ryegrass)	Special crops, green manure, stable meadows	Very likely	Severe	Crops changing, CO ₂ increase, desertification
Changes in soil carbon reserves	arable farmlands	Agricultural activities (corn, wheat, barley spelt, ryegrass)	Special crops, green manure, stable meadows	Very likely	Severe	Crops changing, CO ₂ increase, desertification
Changes in precipitation patterns	Farmlands, housing, roads, infrastructures, agricultural activities, plants, trees, population	River networks, water reticulates, bridges, summer crops, solar farms	constant maintenance of environment and territory (river banks etc)	Very likely	Significant	Floods, infrastructure deterioration, social costs
Zoonosis	Farmlands, livestock, animals, population	Local crops, pastures and wildlife	Biodiversity recovery	Very likely	Severe	Social costs, biodiversity loss, pandemics, epidemics
Social disruption	Population, society	Young generations	Changes in the participative models	Very likely	Severe	Loss of sense of community

RISK ASSESSMENT TABLE

HAZARD	CONSEQUENCE	PROBABILITY	RISK ASSESSMENT (ranked from the highest to the lowest for the area)
Increase in the frequency of flooding events	9	6	54
Changes in soil carbon reserves	9	6	54
Water erosion of soil	9	6	54
Alteration in animal phenology and species distribution	9	6	54
Appearance of invasive species	9	6	54
Zoonosis	9	6	54
Social disruption	9	6	54
Increase in pest infestations	9 - 7	6	Between 42 and 54
Increase in temperatures and heatwaves	9 - 7	6	Between 42 and 54
Decrease in water resources	9 - 7	6 - 5	Between 35 and 54
Increase in air pollution	9	6 - 3	Between 27 and 54
Increase in drought periods	9 - 7	6 - 3	Between 21 and 54
Increase in the frequency of torrential rainfall episodes	7	6	42
Increase in the frequency of severe storms	7	6	42
Changes in precipitation patterns	7	6	42



Highlights:

- Different backgrounds of the participants brought a multi-perspective view of the risks and vulnerabilities of the Terre Basse Bresciane.
- Consequences of the identified hazards were not only environmental, but also social.
- Emerging of the need to do more awareness and replicate the activity with more people and in different areas, particularly involving technicians of the municipal administrations of the Bassa Bresciana, high school students and teachers and adult citizens.

- 
- Adaptation capacities that already exist in the area were highlighted, to serve as a starting point for the development of future new and effective adaptation strategies (e.g. Orti Slow Food nelle scuole, Legambiente massive reforestation project in the Bassa Bresciana; active school methods like Montessori, Don Milani, Mario Lodi with socio-ecological approach of educating future generations)
 - Emergence of how many of the local skills and methodologies of the past can be a key to effectively adapting to the climate challenges of the present.
 - Importance of rethinking our lifestyles was highlighted, as sometimes what is done to reduce costs in terms of environmental respect is not a good example of an adaptation model (i.e. energy-saving house coats).
 - Emergence of the need to move away from the intensive model of livestock farming in the agricultural sphere of the Bassa Bresciana area, not only through reducing meat consumption at the individual level but with a radical change in the entire supply chain.

WORKSHOP



"CHANGING THE CLIMATE OF OUR LANDS: RISKS AND RESPONSES IN RURAL AREAS"



17/12/2024;
Associazione ARCES - Palermo



Rural community of Palermo and its province: San Mauro Castelverde (Parco delle Madonie), Pioppo (near Monreale).

Main actors involved: 13 volunteers, youth workers, entrepreneurs in the sector, students, researchers.



RISKS AND VULNERABILITIES TABLE

HAZARD	EXPOSURE	VULNERABILITY		RISK ASSESSMENT		WHAT TYPE OF CONSEQUENCE
		SENSITIVITY	ADAPTATIVE CAPACITY	PROBABILITY	CONSEQUENCE	
Increase in floods	Population, animals, farmlands	Buildings in specific areas, specific agricultural activities such as crops in greenhouses	Special water resources, water harvesting, integrated pest management systems	Very likely	Severe	Lack of food resources, land mutation
Increase in drought periods	Farmlands, plants	Specific crops such as vegetables, vulnerable people (elderly, children, disabled)	Water harvesting, resistant crops, irrigation systems	Very likely	Very severe	Desertification, loss of biodiversity, depopulation of rural areas, poor food availability
Expansion of toxic algae and invasive marine species	Animals, Plants	Specific crops, specific animals.	Specific trees/ plants, resistant crops	Likely	Significant	Decline in biodiversity, changes in eating habits
Increase in air pollution	Population, animals, animals	Buildings in specific areas, vulnerable persons (elderly, children, disabled)	Specific crops, specific trees and plants	Likely	Severe	Rise and fall in temperatures melting of glaciers, increase in lung diseases, extinction of animals and crops
Changes in soil carbon reserves	Forests, Fallow Fields	Specific areas such as woods and forests	Specific trees And plants	Probable	Moderate	Landslides, floods, worsening air quality
Appearance of invasive species	Marine Species, Livestock, and Population	Specific agricultural activities such as pests; specific crops such as aquaculture, specific areas such as marine areas	Pest Monitoring And control, introduction of predatory species	Likely	Significant	Extinction of native species, increase in crop loss, emergence of new non-native diseases

		VULNERABILITY		RISK ASSESSMENT		
HAZARD	EXPOSURE	SENSITIVITY	ADAPTATIVE CAPACITY	PROBABILITY	CONSEQUENCE	WHAT TYPE OF CONSEQUENCE
Increase in risk of forest fires	Animals, Infrastructure Population Forests	Buildings in specific areas; vulnerable people (elderly, children, disabled), specific animals.	Firebreaks, alarm/ alert systems	Very likely	Very severe	Increase in Extinction of native species, increase in crop loss, emergence of new non-native diseases disease, worsening air quality, soil infertility, damage to infrastructure
Retreat of beaches	Infrastructure roads buildings	Specific areas, Buildings in specific areas	Water harvesting	Probable	Significant	Flooding, reduction of land, reduction of bathing space (Sicily) and thus increase in costs of the few existing establishments.

RISK ASSESSMENT TABLE

HAZARD	CONSEQUENCE	PROBABILITY	RISK ASSESSMENT (ranked from the highest to the lowest for the area)
Increase in Drought periods	10	6	60
Increase in risk of forest fires	10	6	60
Increase in floods	9	6	54
Retreat of beaches	7	5	35
Increase in air pollution	9	4	32
Expansion of toxic algae and invasive marine species	7	4	28
Appearance of invasive species	7	4	28
Changes in soil carbon reserves	5	5	25



Highlights:

- Risks identified posed not only environmental challenges but also social, economic, and daily life disruptions.
- Emergence of the need for greater public awareness on these issues. Although everyone is affected by climate change, not everyone is aware of how it can be addressed.
- Retreat of beaches and sea areas is a closely monitored phenomenon in Sicily as it generates significant environmental (loss of biodiversity) and economic (high-cost, exclusive beach areas) consequences.

WORKSHOP

"CLIMATE CHANGES WITHIN OUR LOCAL COMMUNITY - HOW WE GONNA LIVE WITH AND ADAPT TO THEM"



UNIVERZA V LJUBLJANI
Filozofska fakulteta

Oddelek
za geografijo



CENTER ZA
TRAJNOSTNI RAZVOJ
PODEŽELJA KRANJ



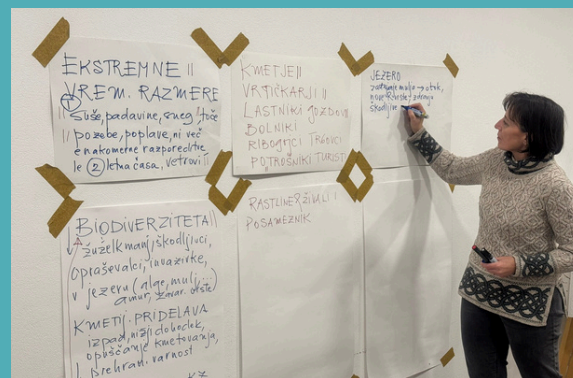
10/12/2024;

Community room of the the Local community of Mavčiče
(within the City municipality of Kranj)



Rural community of Mavčiče.

Main actors involved: 32 members of local associations
(environmental, social revival, cultural, eco-tourism, local
food supply), farmers, development experts, experts
from local government, active agriculture advisor from
public agriculture Advisory and retired forest expert.



RISKS AND VULNERABILITIES TABLE

		VULNERABILITY		RISK ASSESSMENT		
HAZARD	EXPOSURE	SENSITIVITY	ADAPTATIVE CAPACITY	PROBABILITY	CONSEQUENCE	WHAT TYPE OF CONSEQUENCE
COMMON TO ALL FOUR GROUPS						
Prolonging of the duration severity of droughts (linked to changes in precipitation patterns)	Farmers, forest owners, gardeners, patients, consumers , tourism providers, fish farmers	AGRICULTURE: crop failures, uncultivated agricultural land, early flowering, diseases in agriculture, e.g. pear blight in orchards WATER: Problems with potable water quantity (also by increased need for irrigation) increased needs for irrigation skills. Negative changes in the Trboje lake (algae, silt deposits, etc.), FORESTS (look in the box bellow)	AGRICULTURE: New fruit species, native vegetable and other plant varieties and comeback of some agriculture species that were important in the past (e.g. millet), Crop rotation (with improvement to help to the drought resilience), agroforestry (planting trees on agricultural land), irrigation, increase of organic farming and local food consumption in general (especially near large cities due to increased consumption), strengthening of beekeeping, increased knowledge on irrigation.	Probable	Severe	Production decrease (Reduced income, abandonment of farming, reduced food security)
			WATER: Water accumulations, rainwater containers, water tanks, water filters, water boreholes, gravel pits (they already exist and would need to be reactivated), reuse of grey water.			Reduced water quality (water security)
			FORESTRY: Sustainable forest management, including mixed forest patterns (to make tree species drought resistant), invasive plants/species control and removal (including trees).			Reduced forest production and forest ecosystem functions (eg. landslide protection, water purification,

		VULNERABILITY		RISK ASSESSMENT		
HAZARD	EXPOSURE	SENSITIVITY	ADAPTATIVE CAPACITY	PROBABILITY	CONSEQUENCE	WHAT TYPE OF CONSEQUENCE
COMMON TO THREE GROUPS						
Extreme weather events, with changing patterns of seasons (just 2 seasons instead of 4 even seasons in the past)	Farmers, forest owners, gardeners, patients, consumer, tourism providers, fish farmers, retailers,	FORESTS (also related to biodiversity): degradation of soils and paths, windthrows, spread of European spruce bark beetle, spread of new species (which are often less useful for use), spruce monoculture. BIODIVERSITY (changes and losses): new plant species, increase of harmful insects (ticks > diseases), invasive species (amur) and pests, and decrease of "good" insects and pollinators. Changes in the number of individuals of some species and in general of protected species. WATERS: Torrential rainfall: Negative impact on infrastructure, buildings, landslides, small private built infrastructure, flooding on the plains (damage to the harvest)	Sustainable forest management, including mixed forest patterns. Mosquito nets, vaccination (e.g. against ticks), invasive plants/species control and removal (including trees). Heat pumps and insulation of houses to face temperature ups and downs. Constant and sustainable management and improvement of watercourses.	Probable	Severe/Sig nificant	Agriculture production decrease (also abandonment of farmland and farming) leading to reduced food security Reduced water quality (water security) Reduced forest production and forest ecosystem functions... Increased fragility of public and private infrastructure, and their costs Reduced capacities for ecosystem services offered by nature, elements in general. Increased pressure on human health and well-being

		VULNERABILITY		RISK ASSESSMENT		
HAZARD	EXPOSURE	SENSITIVITY	ADAPTATIVE CAPACITY	PROBABILITY	CONSEQUENCE	WHAT TYPE OF CONSEQUENCE
COMMON TO TWO GROUPS						
Absence of snow	Farmers, consumers, tourism providers	Lack for water supply in late spring and summer months provided by melting snow Problems for ski resorts > impact on tourism	New sustainable tourism offer (walking paths infrastructure on and along water bodies for local leisure, cycling stations (for more use of bikes for mobility)	Very likely	Severe/Sig nificant	Agriculture production decrease leading to reduced food security Decrease of GDP due to drop of winter tourism activities and income
Frost	Farmers, forest owners, gardeners	Damage in agriculture, especially in fruit orchards Damage in forest due to ice storms.	Greenhouses (to avoid frost risks) Sustainable forest management, including mixed forest patterns	Very likely	Significant	Agriculture production decrease leading to reduced food security
Increased frequency and severity of floods (linked to changes in precipitation patterns)	Farmers, Forest owners, Gardeners, Tourism providers, Fish farmers	Damage to agriculture and its actors by destroying food products (crops, animals) and resources for food production (fields, meadow farms, ..)	Constant and sustainable management and improvement of watercourses (especially in the hinterlands) Sustainable forest management, including mixed forest patterns, along the river networks.	Very likely	Severe	Agriculture production decrease (also abandonment of farmland and farming) leading to reduced food security Increased fragility of public and private infrastructure, and rise of their costs
Increased severity of winds	Farmers, Forest owners, Tourism providers	Damage to agriculture and its actors by destroying products (fruits) ...) and especially resources for food production and forestry (fruit orchards, trees in general)	Trees/Green islands (roofs) Sustainable forest management, including mixed forest patterns.	Likely	Significant	Agriculture production decrease (also abandonment of farmland and farming) leading to reduced food security Increased fragility of public and private infrastructure, and rise of their costs

RISK ASSESSMENT TABLE

HAZARD	CONSEQUENCE	PROBABILITY	RISK ASSESSMENT (ranked from the highest to the lowest for the area)
Prolonging of the duration and severity of droughts (linked to changes in precipitation patterns)	8	6	48
Extreme weather events, with changing patterns of seasons	8	6	48
Increased frequency and severity of floods	9	5	45
Absence of snow	7	5	35
Frosts	7	5	35
Increased severity of winds	7	4	28



Highlights:

- The main climate change hazards identified were hazards which all of participants, no matter their generation or professional background, already faced in their private and professional life, respectively.
- Droughts have not been for a long time a severe problem for a majority of the Gorenjska region, due to its Alpine climate and abundance of precipitation in all forms and water streams/lakes. But severe problems with it in other parts of Slovenia and Europe, together with a rapid rise of summer temperatures also in Gorenjska most probably contributed to the perception of such high risk.
- The other notable hazards are a mixture of frequently occurring weather events which don't have, however, such a key impact on life of the majority of participants (frosts, absence of snow) or those which happened in an extreme form during the last few years (especially floods in August 2023).



- Current and short-term effects and dangers of climate change in this part of Slovenia are not perceived as dramatic; however, the rapidly rising number of extreme climate events—partly in Gorenjska and especially in nearby regions of Slovenia and Europe—has clearly increased the sense of uncertainty, fear, and unrest about the future. Consequently, most of these changes and hazards are defined as very likely or probable, with consequences assessed as severe or severe/significant.
- A mixture of short- and long-term adaption capacities and measures (technical, social, economic or mixed ones, and classical and innovative measures) together with mixture of approaches and actors, with a right proportion of shares of such different ones, which would include all community groups, could be an important asset to cope with climate changes and their consequences.
- The expression “new balance” has emerged, referring to the fact that changes in climate, society, and economy are both inevitable and irreversible. Achieving this balance again—ensuring quality of life—requires coordinated action across all levels. Key spatial planning documents, at different territorial scales, should reflect these realities and guide agriculture, construction, and other sectors by integrating climate hazards and the urgent need for adaptation and mitigation.



- Horizontal issues which are important to prevent climate changes, but also to mitigate them and to adopt them were underlined. One of such transversal topics was that we all need to move and activate ourselves instead of just waiting for someone “above”, and that these actions are first needed in our own local community.
- Improved neighbouring relations, coordination and agreements, especially among landowners, will become even more important.
- Education in all forms and on all levels plays a very important role, and local (traditional) knowledge, energy and initiatives should be used and considered.
- Local good practices of sustainable development, adjustments and adoptions should be presented more often by and within local community members and stakeholders.
- Culture and cultural activities should be used as a tool of social capital for community adaptation to climate change.

WORKSHOP



"PARTICIPATORY WORKSHOP: CLIMATE CHANGE ADAPTATION IN RURAL CONTEXTS"

low   
carbon  
economy® 



15/01/2025;
Municipality of Azuébar, Castellón



Rural community of Azuébar.
Main actors involved: 15 university representatives, entrepreneurs in cultivation sectors, unemployed, sustainability technicians, representatives from administrations.



RISKS AND VULNERABILITIES TABLE

HAZARD	EXPOSURE	VULNERABILITY		RISK ASSESSMENT		WHAT TYPE OF CONSEQUENCE
		SENSITIVITY	ADAPTATIVE CAPACITY	PROBABILITY	CONSEQUENCE	
Wildfires	Population. Intensification of the depopulation of rural areas	People	Drafting of a local plan for forest fires	Probable	Significant	Potential for rural depopulation
Droughts	Agriculture	Land, Garden crops	reservoirs reduction of water use in fountains and orchards	Very likely	Severe	Economic impact on agriculture
Increase of temperatures	Agriculture, Population	Population (old people)	valorisation of aquatic resources CO2 sequestration, energy adaptation	Probable	Significant	Health problems Difficulties for crop growing
Floods	soilcontaminati on	Old people,children,c ommercials	communication with the public prevention, weather shelters, adaptation of work schedules	Very likely	Minimal	Risks to humanhealth and safetyDamage of propertySoil degradation
Changes in soil carbon and forestbiomass stocks	loss of patrimony, collapse	Biodiversity	River cleaning, SECAPs	Probably	Significant	Loss of biodiversity Ecosystem collapse

RISK ASSESSMENT TABLE

HAZARD	CONSEQUENCE	PROBABILITY	RISK ASSESSMENT (ranked from the highest to the lowest for the area)
Droughts	8	6	54
Wildfires	7	5	35
Increase in temperatures and heatwaves	7	5	35
Changes in soil carbon and forest biomass stocks	7	5	35
Increase in the frequency of flooding events	3	6	18



Highlilghts:

- Droughts are highlighted as a significant issue, primarily due to the region's climate. This can cause problems in agriculture since it is the basic sector of the region particularly for crops such as almond and orange trees.
- Increasing frequency of wildfires and the increase of the temperatures impacting the health and the safety of the population and mainly vulnerable people such as elderly.
- Increasing floodings can lead to severe consequences for businesses, property damage, risks to human safety and soil contamination.

CONCLUSIONS

Risks&Vulnerabilities table referred to the 2 common hazards identified by all the four involved communities in Italy, Slovenia and Spain:

		VULNERABILITY		RISK ASSESSMENT		
HAZARD	EXPOSURE	SENSITIVITY	ADAPTATIVE CAPACITY	PROBABILITY	CONSEQUENCE	WHAT TYPE OF CONSEQUENCE
ITALY - INEUROPA						
Increase in drought periods	Population, animals, livestock, farmlands, farmers, plants, trees	Cows, summer crops (corn, horticultural), vulnerable people, migratory animals, oxbow lakes	Thermoregulated insulated housing, irrigation systems, alternative crops, resistant crops	Very likely/possible	Severe/sig nificant	Production decrease, desertification, livestock reduction
Increase in the frequency of flooding events	Farmlands, housing, roads, infrastructures, agricultural activities, plants, trees, population	River networks, water reticulates, bridges, summer crops, solar farms, secondary roads, orchards, greenhouses, veggie gardens	property recovery (farmhouses), constant maintenance of environment and territory (river banks etc)	Very likely	Significant	Floods, infrastructure deterioration, social costs, territorial disasters
ITALY - ARCES						
Increase indrought periods	Farmlands, plants	Specific cropssuch asvegetables,vulne rable people (elderly, children, disabled)	Waterharvesting, resis tantcrops,irrigationsy stems	Very likely	Very severe	Desertification,loss ofbiodiversity,depop ulationof rural areas,poor foodavailability
Increase infloods	Population, animals, farmlands	Buildings inspecific areas,specificagric ulturalactivities such ascrops ingreenhouses.	Special water resources,waterharve sting,integratedpestm anagementsystems	Very likely	Severe	Lack of foodresources,land mutation

		VULNERABILITY		RISK ASSESSMENT		
HAZARD	EXPOSURE	SENSITIVITY	ADAPTATIVE CAPACITY	PROBABILITY	CONSEQUENCE	WHAT TYPE OF CONSEQUENCE
SLOVENIA - UL & CTRPK						
Prolonging of the duration and severity of droughts (linked to changes in precipitation patterns)	Farmers, forest owners, gardeners, patients, consumers, tourism providers, fish farmers	AGRICULTURE: crop failures, uncultivated agricultural land, early flowering, diseases in agriculture, e.g. pear blight in orchards WATER: Problems with potable water quantity (also by increased need for irrigation) increased needs for irrigation skills. Negative changes in the Trboje lake (algae, silt deposits, etc.) FORESTS: (also related to biodiversity): degradation of soils and paths, windthrows, spread of European spruce bark beetle, spread of new species (which are often less useful for use), spruce monoculture	AGRICULTURE: New fruit species, native vegetable and other plant varieties and comeback of some agriculture species that were important in the past (e.g. millet), Crop rotation (with improvement to help to the drought resilience), agroforestry (planting trees on agricultural land), irrigation, increase of organic farming and local food consumption in general (especially near large cities due to increased consumption), strengthening of beekeeping, increased knowledge on irrigation WATER: Water accumulations, rainwater containers, water tanks, water filters, water boreholes, gravel pits (they already exist and would need to be reactivated), reuse of grey water Forestry: Sustainable forest management, including mixed forest patterns (to make tree species drought resistant), invasive plants/species control and removal (including trees).	Probable	Severe	Production decrease (Reduced income, abandonment of farming, reduced food security) Reduced water quality (water security) Reduced forest production and forest ecosystem functions (eg. landslide protection, water purification, ...

HAZARD	EXPOSURE	VULNERABILITY		RISK ASSESSMENT		WHAT TYPE OF CONSEQUENCE
		SENSITIVITY	ADAPTATIVE CAPACITY	PROBABILITY	CONSEQUENCE	
Increased frequency and severity of floods (linked to changes in precipitation patterns)	Farmers, Forest owners, Gardeners, Tourism providers, Fish farmers	Damage to agriculture and its actors by destroying food products (crops, animals) ... and resources for food production (fields, meadow, farms, ...)	Constant and sustainable management and improvement of watercourses (especially in the hinterlands) Sustainable forest management, including mixed forest patterns, along the river networks.	Very likely	Severe	Agriculture production decrease (also abandonment of farmland and farming) leading to reduced food security Increased fragility of public and private infrastructure, and rise of their costs
SPAIN - LCEF						
Droughts	Agriculture	Land, Gardencrops	reservoirs reduction of water use in fountains and orchards	Very likely	Severe	Economic impact
Floods	Soil pollution	Old people, children, commercials	communication with the public prevention, weather shelters, adaptation of workschedules	Very likely	Minimal	Risks to humanhealth and safety. Damage of propertySoil degradation

Risk assessment table referred to the 2 common hazards identified by all the four involved communities in Italy, Slovenia and Spain:

HAZARD	CONSEQUENCE	PROBABILITY	RISK ASSESSMENT (ranked from the highest to the lowest for the area)
ITALY - INEUROPA			
Increase in drought periods	9 - 7	6 - 3	Between 21 and 54
Increase in the frequency of flooding events	9	6	54
ITALY - ARCES			
Increase in drought periods	9	6	60
Increase in floods	10	6	54

HAZARD	CONSEQUENCE	PROBABILITY	RISK ASSESSMENT (ranked from the highest to the lowest for the area)
SLOVENIA - UL & CTRPK			
Prolonging of the duration and severity of droughts (linked to changes in precipitation patterns)	8	6	48
Increased frequency and and severity of floods (linked to changes in precipitation patterns)	9	5	45
SPAIN - LCE			
Droughts	8	6	54
Floods	3	6	18

From the table on risks and vulnerabilities of the four local communities considered, it is possible to underline how, even if the regions are different in terms of their geography, morphology (landforms, elevation, soil, etc.), and even climate history, they are experiencing similar effects from climate crisis because of underlying global processes.

Prolonging of the duration and severity of droughts and increased frequency and severity of floods are the two common risks to all the four areas. Even though these areas are not alike, they experience similar actors susceptible to damage (farmers and farmlands, local population), similar disruptions to natural resources (desertification, loss of biodiversity and ecosystem functions), similar threats to human livelihoods (farming abandonment, depopulation, food poverty due to food production decrease), and similar pressures to adapt.



Based on the risk assessment table of the four local communities considered, which offers a clear and measurable method for prioritising and addressing potential threats, the increase in drought periods is rated on an average of 50. This indicates that in all the four areas there is a similar trend of a high probability of occurrence, with severe to very severe consequences. With reference to the flood risk, it is rated on an average of 43, indicating a high probability of occurrence, with significant to very severe consequences.

The ability of the territories to cope with and overcome the effects of these hazards vary from context to context, however there is common ground on some adaptive strategies already in place with relation to irrigation systems, alternative crops and agricultural techniques (resistant crops, crops rotation, agroforestry) and water reservoirs.

This shows how climate change, while not uniform in its details, produces parallel stressors in ecosystems and societies, therefore the necessity to respond to climate change threats by adaptation in rural communities is crucial for safeguarding livelihoods, enhancing resilience, and maintaining sustainable living conditions. Without these efforts, the impact of climate change can lead to devastating consequences (natural, economic, social, cultural) for both rural communities and the broader global ecosystem.

INITIATIVES

REPORT

The initiatives report follows up on the first steps of the SURF project, summarised in the Challenges Report, and aims at building capacities in the Participatory Action Research (PAR) approach and involving the rural community in proposing initiatives to adapt to climate change. It provides a step-by-step path for implementing the PAR approach in different contexts, based on the PAR approach course and on the findings and suggestions coming from the other activities implemented. This will enable individuals interested in PAR to build the skills and confidence needed to apply PAR techniques effectively, fostering participation and engagement in rural communities. It will also help them work with these communities to identify strategies and best practices that provide opportunities for a better adaptation.

To do so, SURF partners implemented:



Course 2 “Participatory Tools for Community Development” - Main course

It provides theoretical and practical tools for developing and implementing territorial development strategies with a participatory approach. Key concepts include knowledge dialogue, qualitative social research techniques, group dynamics, participatory methodologies and community analysis.

With this course you will learn how to conduct effective analyses in rural areas and evaluate local development projects, all while promoting inclusive and respectful community practices.

Availability: This central SURF course is available in Spanish/Valencian, English, Italian, and Slovenian, ensuring all participants can participate in their preferred language.



Course 1 “Social Research Techniques for Local Development”

Local development professionals in rural areas often face challenges due to training rooted in urban approaches, which emphasize technical planning based on external diagnoses. However, rural development requires a more holistic approach, addressing areas like employment, culture, tourism, and community participation. Technicians must engage in all stages of development—from assessing local realities to planning and executing initiatives. This training aims to equip technical staff working in rural areas (and others in similar contexts) with skills to better understand their territory and effectively implement development projects.

Note: This supplementary course is freely available online in Spanish and automatically translated into English, Italian, and Slovenian. It offers extra methodology but is not mandatory for the core SURF pathway.



Course 3 “Participatory and Sustainable Local Development Planning”

Rural development is a complex area that requires a holistic vision and the active participation of the population. In this context, professionals must design and implement local development policies that take into account the needs and perspectives of the community. This course focuses on strategic planning of territorial development, offering principles and examples to achieve coherent and successful projects. The aim is to create a shared vision that is viable and credible, fostering collaboration between institutions, social entities and the general population.

Note: This supplementary course is freely available online in Spanish and automatically translated into English, Italian, and Slovenian. It offers extra methodology but is not mandatory for the core SURF pathway.



4 local workshops focused on identifying and sharing strategies and good practices that offer opportunities and viable solutions to adapt to climate change in the different rural communities. They also explored collaborative methodologies to strengthen the connection between the different stakeholders composing the rural communities (associations, local administrations, farmers etc).



1 international conclusive webinar aimed at sharing the SURF project knowledge, tools and results and to spread the European Rural Network with the aim of creating a stronger and long-lasting network to face the challenges linked to Climate Change in Rural Areas, going on collecting and sharing good practices of adaption set up across Europe and beyond.



The following sections include a summary of both the courses, the workshops and the webinar, highlighting the most significant insights, analysing the findings and comparing them underlining similarities and differences between the four involved areas.

COURSE 2

PARTICIPATORY TOOLS FOR COMMUNITY DEVELOPMENT

This course equips you with both theoretical foundations and practical tools for designing and implementing territorial development strategies using a participatory approach. It covers key concepts such as knowledge dialogue, qualitative social research methods, group dynamics, participatory methodologies, and community analysis. It teaches you to carry out effective analyses in rural areas and assess local development projects, while fostering inclusive and respectful engagement with communities.



Objectives:

1. Understanding the dialogue of knowledge and the democratization of knowledge. Examine cultural capital, the social construction of culture, and the impact of globalization; analyze the interrelation between civil society, knowledge, and culture; and explore citizen science and the role of science in rural communities.
2. Introduction to social research methodology. The presentation introduces social research methods and techniques, highlighting their importance in local development, citizen participation, scientific objectivity, and the phases of the research process.



3. Develop skills in group dynamics techniques. Identify the phases of a participatory process: problem identification, diagnosis, proposal formulation, planning, and evaluation; apply group dynamics techniques for decision-making and conflict management; use participatory methodologies and digital tools such as Miro, Mentimeter, and GroupMap; build future scenarios for the eco-social transition; and practice nonviolent communication and sociocracy for collective decision-making.

4. Implement participatory rural diagnoses. Understand Participatory Rural Diagnosis (PRD) as a tool for community self-assessment; apply principles of cultural respect, inclusion, and participation of marginalized groups; learn the steps for an effective PRD, from planning to field analysis; identify key success factors in PRD implementation; and apply methodologies to practical cases such as the Tourism Development Plan of Benassal.

5. Analyse the community and evaluate local development. Integrate participatory evaluation as a key tool for local development; apply principles of community-based action research; follow the steps for effective participatory evaluation; learn about different types of evaluated programs, from direct services to social campaigns; and identify the advantages of community involvement in project evaluation.

Lesson 1: Mobilisation and dialogue of Knowledge

- Appropriation and Construction of Knowledge
- Cultural Capital and Its Reproduction
- Globalisation, Glocalisation, and Culture
- Civil Society and Social Organizations
- Dialogue of Knowledges and Citizen Science



Lesson 2: Introduction to Qualitative Research Techniques in Social Investigation

- The Importance of Knowledge in Social Research
- The Role of Research in Local Development
- Scientific Methodology and Objectivity
- Research Methods and Techniques
- Phases of the Research Process



Lesson 3: Techniques for group dynamics

- Phases of a Participatory Process
- Techniques for Group Dynamics
- Participatory Methodologies and Digital Tools
- Building Future Scenarios
- Nonviolent Communication and Sociocracy



Lesson 4: Participatory Rural Diagnosis and other approaches to the rural social environment

- Definition and Purpose of Participatory Rural Diagnosis (PRD)
- Key Principles of PRD
- Steps in the PRD Process
- Success Factors for PRD
- Application Example: Benassal's Tourism Development Plan



Lesson 5: Community analysis

- Participatory Evaluation as a Key to Local Development
- Community-Based Action Research Principles
- Steps in the Participatory Evaluation Process
- Types of Programs Evaluated
- Advantages of Community Involvement in Evaluation



CERTIFIED ONLINE COURSE



March - April 2025



74 participants: 49 from Italy; 16 from Slovenia; 8 from Spain; 1 from Somalia; 1 from Perú.

Profile: university students, university professors, university administrative staff, technicians from local municipalities, project managers and project designers, professionals in rural development, LAG professionals (territorial animators and directors), trainer facilitators.



1.5 ECTS, certified by the Jaume I University (Castellón), for an estimated total of 37.5 hours, divided as follows:

- 15 hours of theoretical video lectures (in Catalán with subtitles on Spanish, Italian, Slovenian and English) on methodologies and techniques to develop territorial development strategies with a participatory approach and case study analysis.
- 22.5 hours of estimated independent work, for study, preparation for the evaluation tests scheduled at the end of each lecture and the final activity.



The course evaluation was composed of two parts. First, there was a test for each lesson and at the end the submission of a practical assignment.

A total of nine projects addressing diverse issues in a variety of geographic and social contexts have been analysed. They all share the goal of promoting citizen participation processes to address social, economic, or environmental challenges from an inclusive, situated, and transformative perspective.

CERTIFIED ONLINE COURSE



Projects cover a wide range of community-relevant topics:

- **Social inclusion and coexistence:** Saúl Gallego's project tackles school conflicts and lack of cohesion in a high school in Castelló, while Silvia Lambone works on revitalising a degraded urban area in Palermo with a focus on gender and childhood.
- **Gender inequality and decision-making power:** Jeferson Herrera's work examines how patriarchal culture shapes the life paths of adolescent girls in Belen (Perú), with a strong methodological proposal to amplify silenced voices.
- **Rural economy and sustainable tourism:** Cassandra Serban and Isotta Martini explore the revalorisation of the territory through local participation. Serban works in Ljubljana with youth, while Martini explores new uses for underutilised public assets in the Susa Valley.
- **Youth employment and economic development:** Gabriele Menegaldo addresses youth unemployment in Torgiano (Italy) and proposes participation as a way to design employment projects eligible for European funding.
- **Climate change and quality of life:** Another project focuses on how climate change affects community life and how to address this impact from a local perspective.
- **Community diagnosis in rural settings:** The project in Quaratica (Val di Vara) proposes a territorial engagement plan to promote responsible tourism, heritage valorisation, and economic resilience.

CERTIFIED ONLINE COURSE



Most of the projects apply or propose methodologies inspired by Participatory Rural Appraisal (PRA) or Participatory Action Research (PAR). Common techniques and approaches include:

- **Participatory mapping and territorial analysis** (Giovanelli, Martini, Salvatori): to understand the use, perception, and potential of community spaces.
- Techniques such as **“World Café,” “Six Thinking Hats,” and sociograms** (Gallego, Serban, Val di Vara): foster deliberation and inclusive decision-making.
- Creative and playful participatory **workshops** with youth and women (Herrera, Lambone): create safe spaces for expression and co-construction of knowledge.
- **Qualitative interviews, surveys, and open assemblies** as tools for deepening and validating community processes.
- All projects include, to varying degrees, the importance of sharing results with the community and monitoring the processes.

This set of projects showcases the potential of participatory approaches to address complex challenges from the ground up and with citizen involvement. The thematic and geographic heterogeneity is an asset, and the methodological diversity constitutes a valuable toolbox for future research and community action experiences.

WATCH
NOW!



COURSE 1

SOCIAL RESEARCH TECHNIQUES FOR LOCAL DEVELOPMENT

Local development professionals in rural areas are often trained with an urban-focused approach, which can hinder their effectiveness. Their work tends to be narrowly technical, relying on external diagnoses. However, rural development requires a more holistic perspective that includes employment, business, culture, tourism, heritage, and community participation. Professionals must engage in all stages of the development process—from understanding local realities to planning and implementation. This course supports technical staff in rural settings to improve their territorial analysis and successfully implement comprehensive development projects, with relevance to other social contexts as well.



Objective: to acquire basic skills in the use of elementary techniques of social research applied to the diagnosis of the social situation of a locality with the aim of obtaining necessary information for the elaboration and implementation of territorial development strategies.

Topic 1: Introduction to the methods and techniques of social research.

Topic 2: Quantitative techniques applied to local development.

Topic 3: Qualitative techniques applied to social development.

Topic 4: Analysis of information, triangulation and report writing.



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COURSE 3

PARTICIPATORY AND SUSTAINABLE LOCAL DEVELOPMENT PLANNING

Rural development demands a holistic approach and active community involvement. Professionals must design policies that reflect local needs and perspectives. This course focuses on strategic territorial planning, providing principles and examples for creating coherent, effective projects. Its goal is to build a shared, credible vision that promotes collaboration among institutions, social organizations, and the wider community.



The objective of this course is to acquire the basic skills in the elaboration and implementation of territorial development strategies with the involvement of the community on which these strategies act.

Topic 1: Introduction to the Development of Rural Communities.

Topic 2: Agents and interests in the rural territory.

Topic 3: Context and strategy of territorial development.

Topic 4: The analysis of the labour and productive structure.

Topic 5: Innovative strategic planning in local development.

Topic 6: Community activation of cultural heritage.

Topic 7: Tourism programs from rural communities.

Topic 8: Gender perspective in local development.

Topic 9: Participatory evaluation of local development.



LOCAL WORKSHOPS

ON GOOD PRACTICES AND OPPORTUNITIES



The main objective of the workshops is to identify and share strategies and good practices that offer opportunities and viable solutions to adapt to climate change in the different rural communities by:

- exploring collaborative methodologies to strengthen the connection between the different stakeholders composing the rural communities (associations, local administrations, farmers, etc);
- analysing weaknesses and strengths of existing practices;
- starting from the risks identified in the previous workshops, identifying existing strategies and new actions to be proposed which respond to the risk, with a focus on their applicability in the rural context.



Methodology used: group activity in which participants were invited to discuss and share existing good practices and strategies on climate change adaptation in rural contexts, starting from local examples, in order to explore identify future opportunities and define new targeted actions. Tables were used as supporting material to help participants to identify practices, analyse their weaknesses and strengths to identify opportunities and new targeted actions, considering benefits, barriers, costs, resources required, etc.

WORKSHOP



“THE CLIMATE CRISIS IN RURAL AREAS – ADAPTATION STRATEGIES AND OPPORTUNITIES FOR THE FUTURE”



14/06/2025;

Castello di Padernello, Borgo San Giacomo (Brescia)



Rural community Terre Basse Bresciane.

Main actors involved: 12 members from local associations (environmental, territorial development, Slow food), municipality and province representatives.





Highlights:

Existing good practices in the territory identified:

- Mella River Revaluation Project; Mella Greenway; GoodFood european project with Istituto Mantegna of Brescia; Castello di Padernello Foundation.

Barriers and challenges identified include:

- Lack of skills and willingness at the level of local municipal administrations.
- Lack of support and continuity in environmental projects due to staff turnover and the absence of a long-term vision.
- Bureaucratic obstacles which makes it difficult to launch and develop new initiatives, particularly in the social sphere.
- Low youth participation: the importance of educating young people about past ways of working was emphasized, so they can draw inspiration and learn from previous experiences. Additionally, there is a need to provide young people with informal spaces for interaction and dialogue, avoiding rigid agendas and formal contexts that hinder their freedom of expression. The lack of youth-oriented policies within current administrations was also highlighted.
- Lack of concrete action despite growing awareness of sustainability issues.



Key needs and opportunities to address in order to work for the future include:

- Encouraging youth activities and supporting associations in engaging young people.
- Offering young people informal opportunities for meeting and dialogue and promoting their active involvement.
- Promoting initiatives that involve different cultures and religions, creating opportunities for second and third generations to meet and connect.
- Creating effective communication support to promote projects and change public perception, while also listening to people's perspectives and suggestions to gain a broader and more complete vision.
- Engaging citizens and local administrations by organising events that address specific topics and promote active participation.
- Believing in shared values and working together toward common goals.
- Rethinking the use of resources, enabling people to express concrete alternatives and add value to the territory.
- Creating direct connections with schools and teachers, who are often more sensitive to environmental issues, as awareness-raising actions can have a stronger impact on younger generations.
- Attracting people through engaging initiatives, such as workshops and open discussions, starting with events like the SURF workshop.

WORKSHOP



"FACING THE CHANGING CLIMATE: STRATEGIES IN ACTION AND IN EVOLUTION"



18/06/2025;
Associazione ARCES - Palermo



Rural community of Palermo and its province: San Mauro Castelverde (Parco delle Madonie), Pioppo (near Monreale).

Main actors involved: 11 participants, civil service volunteers, students, workers in the sector (agronomist).



RISKS/HAZARDS	EXISTING STRATEGIES/SOLUTIONS/GOOD PRACTICES	NEW ACTIONS/STRATEGIES TO PROPOSE	WHOM TO INVOLVE	NOTES/FURTHER INFO
Increase in drought periods	Rainwater harvesting	Purification and desalination of water (rivers etc..)	Companies, politicians, civil society	-
Increase in risk of forest fires	Firebreaks	Care and greater control of the territory (elimination of dry grasses)	Individuals, farms, forestry department	Awareness campaigns
Retreat of beaches	Protection of existing reserves	Coastal decementification; prohibitions and limitations in construction	Politicians, individuals	-
Water erosion of soil (ineuropa)	Reforestation and mulching (pacciamatura)	New drainage systems	Farmers, forestry department	-
Appearance of invasive species (ineuropa)	Physical containment of the species	Inclusion of natural antagonistic species	Civil protection, zooprophylactic institute	Monitoring of local species
Increase in temperatures and heatwaves (Spain)	Wells, reservoirs and nature reserves	Greening of cities, increasing land resilience	Sicily Regional Administration, local communities, forestry department	Access to European calls for projects related to the issue
Absence of snow (Slovenia)	Reduction of greenhouse gases	Artificial snow	Institutions, mountain communities, ski facilities (Etna)	-



Highlights:

Most critical risks: increase in drought periods and the increased risk of wildfires.

Key needs and opportunities:

- As for the increasing drought periods, a rainwater harvesting strategy is already in place. New proposed actions include the purification and desalination of water (e.g., from rivers), to improve the current situation. These actions would involve civil society, political institutions and specific companies; everyone would benefit. To achieve optimal results, events and workshops should be organised both locally and on social media to raise awareness of the population.
- Regarding the increasing risk of wildfires, firebreak lines are already being implemented. However, it was proposed that greater maintenance and territorial monitoring are needed—e.g., the continuous removal of dry grass by forestry services, private citizens, and agricultural businesses.
- Through continuous awareness campaigns and communication efforts (both on social media and offline), the population could become more engaged and benefit from it, along with the animals inhabiting these areas and the tourism industry, which is one of the region's main sources of income.
- There was general agreement that greater action is needed, particularly from the Region and institutions, which should be the first to step in and “prevent” or find suitable solutions to tackle the serious consequences of climate change.

WORKSHOP

"PLANNING FOR RURAL DEVELOPMENT FACED WITH CLIMATE CHANGE"



FF

UNIVERZA V LJUBLJANI
Filozofska fakulteta

Oddelek
za geografijo



CENTER ZA
TRAJNOSTNI RAZVOJ
PODEŽELJA KRANJ



02/04/2025;

Blagnetova House (ethnological heritage house) in Šenčur



Rural community of Šenčur.

Main actors involved: 15 participants from development organisations, like experts from LAG Škofjeloško pogorje and Local Development Agency Sora (western part of Gorenjska region), LAG Ragor (northern part of Gorenjska region), LAG Barje (south from Ljubljana), from Slovene association for Rural Development, Association of School Organic Gardens, and students from the Dep. of Geography from University of Ljubljana.



RISKS/HAZARDS	EXISTING STRATEGIES/SOLUTIONS/GOOD PRACTICES
Real water problems: WG: - A1:Flash floods - A2: Landslides CG: B1: Sava river and it's tributary Tržiška Bistrica river: pollution by agriculture, industrial waste, conflict where to use and where not to use drinking water - B2: Kranjsko field: drought problems in the summer NG: - C 1: Vintgar Gorge – wooden bridges are carried away by high waters and soil erosion; - C2: Landslides above the village of Koroška Bela - C3: Old water pipes break down often and inhabitants of Jesenice stay without of water + water quality for consumers engangered	Good practices (of measures/solutions) WG: -A1: Flood retainer -A2: adoption of local farmers by choosing more resistant climate resistant varieties -A3: Local radio (with good warning services) CG: - B1: City of Kranj chosen as one of 100 EU candidates for climate neutral cities; - B2: Long table in Kranj: culinary event promoting local food and local businesses; NG: - C1: Alarm system (in Koroška Bela) + evacuation plan with civil protection service involved for a case of landslide; - C2: Metal grid for protection of visitors.
Potential water problems: WG: - A1:Droughts on fields (corn) and grassland (food for animals) - A2: Deteriorating of biodiversity in rivers and shrinking of the vegetation on the river banks B1: City of Kranj: problems with drinking water in the future; - C1: Lake Ledine (intermittent lake): problems with high waters > water levels raises and nearest houses and roads get flooded	
Other climate problems WG: -A1: Beetles -A2: Freak ice storm and wind breaking Storm CG: - B1: Airport: affecting soil, water damage, noise pollution NG: -C1: Ski resorts in lower regions: Koblja in Bohinj, Zatrnik, Pokljuka, Straža (Bled), Španov vrh (Jesenice) -C2: Beet barkers in all forests in the region -C3: High speeds of wind > damage in forests (windbreaker) in Radovna valley, Krma valley, ...	



Highlights:

Key needs and opportunities to address in order to work for the future include:

- Need for more education activities on climate changes and how to respond them, both general and specific ones (eg. about practical introduction of climate resilient crops)
- Using acquired knowledge (on changes and on responding) in practice.
- Connecting and detecting different actors to plan and act interdisciplinary.
- Need to think out of the box and bring new approaches and innovative methods or collaborations.
- Necessity to see results of such activities as this workshop in concrete plans and actions.

WORKSHOP

“PARTICIPATORY RESEARCH FOR RURAL DEVELOPMENT”



18/06/2025;

Universitat Jaume I (UJI) - Castellón



Rural community of Castellón.

Main actors involved: 11 participants of local development agencies (AEDLs) from Forcall, Barracas, Zorita, Palanques, and Villores; staff from rural NGOs and foundations active in environmental and territorial development; members of the Rural Network Xarxa Experta; academics, youth workers, and tourism professionals.





Highlights:

Existing good practices in the territory identified:

- Penyalgolosa.
- Mancomunitat Els Ports (Els Ports Region).
- Barracas.

Barriers and challenges identified include:

- Many organisations still face internal resistance or a lack of knowledge at the management level.

Key needs and opportunities to address in order to work for the future include:

- Growing interest among rural stakeholders in co-creation and participatory planning,
- Need to translate participatory methodologies into practical tools and accessible formats that enable local engagement and continuity.

WEBINAR 2

EMPOWERING RURAL EUROPE: FINAL REFLECTIONS FROM SURF

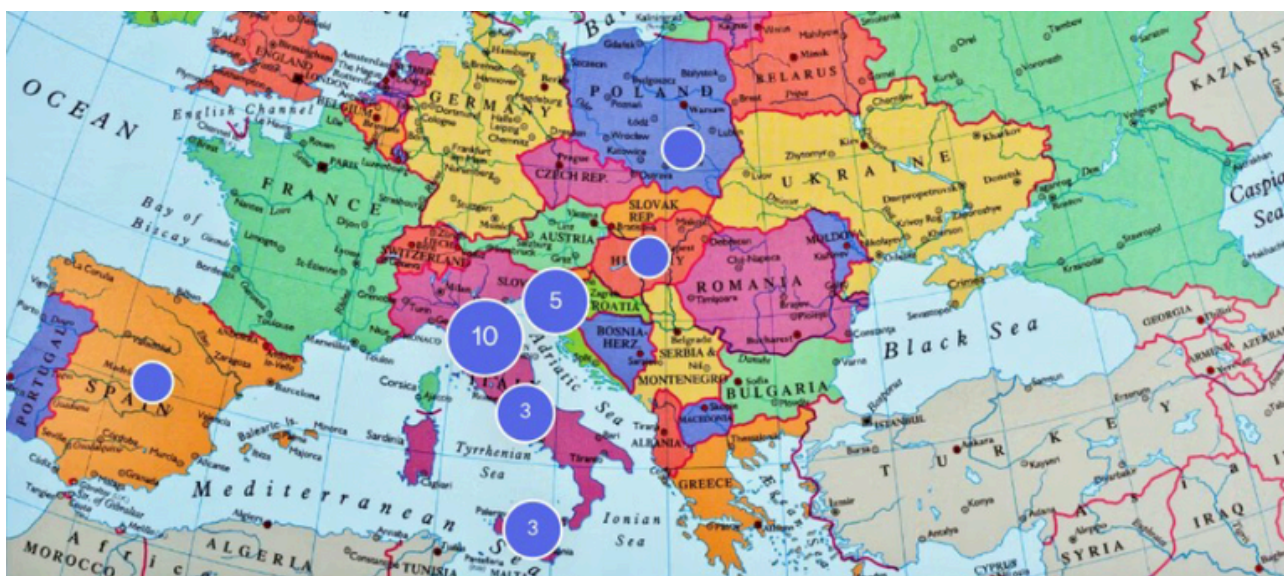


16/09/2025 – online

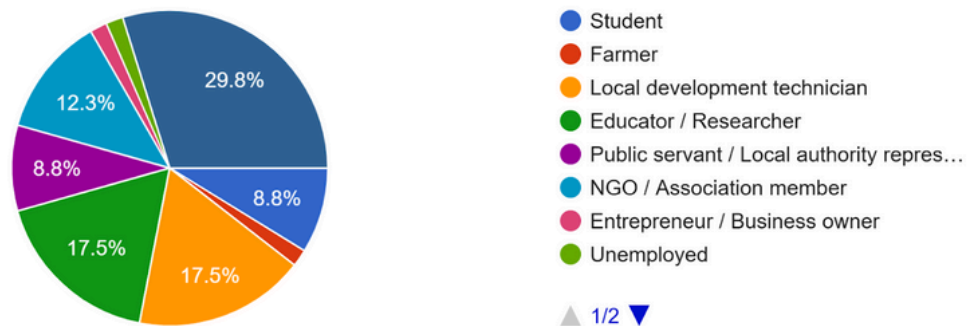
43 participants from different countries



Profiles of attendees: diverse mix of professionals and academics working in rural areas, including: administrative and project managers, presidents of associations, sectoral advisors, cultural managers, directors for research and development, heads of European programmers, young and junior researchers, professors, individual citizens.

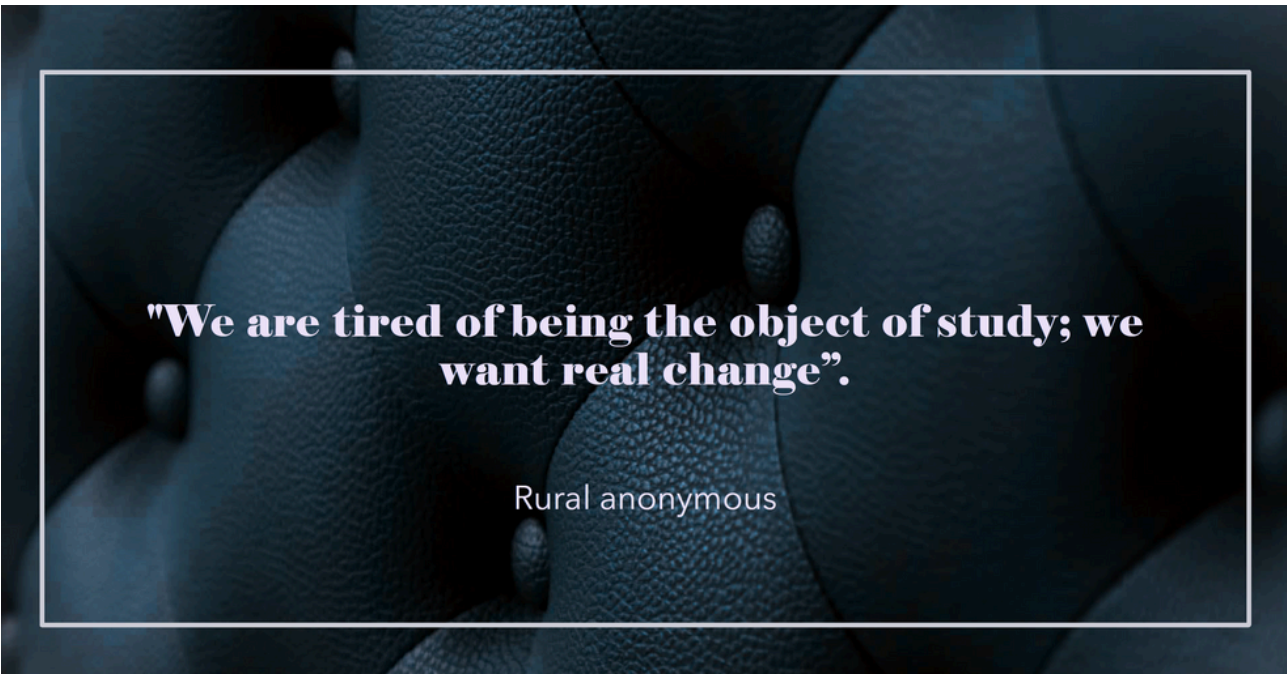


Occupation / Role
57 respuestas



The webinar aimed at presenting SURF project results and connecting rural realities while fostering community involvement through sharing useful practical tools like the [Handbook on adaptation to climate change](#), the participatory approach adopted, the good practices guide and the [SURF Good Practices online map](#), which was operatively tested during the event, and the [European Rural Network toward Climate Change Resilience](#), as an opportunity to share, collaborate and foster reciprocal support in rural areas and mainstream.

The partners presented together with an external expert, Prof. Antonio Javier González Rueda—Director of the Coordination Secretariat and Commissioner of the University of Cadiz—who gave participants a lecture on how it is important to foster local participation using the language of rural citizens, enhancing and starting from local creativity, culture, and heritage as key elements for an effective rural development.



"We are tired of being the object of study; we want real change".

Rural anonymous



Highlights:

- Key findings from SURF: missions, approach, impact, and outputs of the project.
- Reflections on common climate change hazards, common challenges and adaptation strategies.
- Focus on innovation, sustainability and participation in rural areas underlying the challenges of bureaucracy, depopulation and the leader approach from a cultural perspective.
- Introduction of the Good Practices Map and its Guide, plus engaging activities through break-out rooms to discover how to use the tool and its potential
- Presentation of the European Rural Network with a focus on the stakeholder map, and the sustainability plan, emphasising how the network enhances social engagement and collaboration between local actors.



CONCLUSIONS

To effectively work toward a resilient and inclusive future, several common themes emerge across the identified needs and opportunities. Central among them is the importance of active and inclusive community engagement—particularly with youth, educators, and culturally diverse groups—through informal dialogue, participatory planning, and creative initiatives that foster shared values and collaboration. Education and awareness-raising stand out as key drivers for change, especially in the context of climate adaptation, where both general knowledge and practical skills (e.g., climate-resilient agriculture, wildfire prevention, water management) must be communicated through accessible and innovative means. Stronger interconnections between citizens, local administrations, schools, and local associations are essential for building trust, facilitating co-creation, and translating strategies into concrete, impactful actions. In this regard, it is also crucial to invest in educating and training staff from local administrations, many of whom currently lack the practical skills and knowledge necessary to implement effective climate and community management strategies.



Furthermore, several good practices have already been identified across communities; these can serve as a foundation for building resilience by being shared, adapted, and expanded through participatory planning processes that value local insights, local language, culture and heritage, and collective learning. Moreover, the integration of cultural activities, interdisciplinary collaboration, and a balanced mix of short- and long-term measures ensures that sustainability efforts are rooted in both local realities and forward-looking innovation. Altogether, a comprehensive holistic approach that blends education, participation, cultural and creative expressions, and environmental responsibility offers a solid foundation for collective progress.

CONNECTIONS

REPORT



The connections report aim to compare and connect how four pilot rural communities selected perceive, mitigate, and adapt to climate change.

RURAL COMMUNITIES INVOLVED

These four pilot territories were selected because, together, they mirror the wider realities of their regions and offer a robust basis for transfer and scale.



**TERRE BASSE BRESCIANE
BRESCIA LOWLANDS**



**PROVINCE OF PALERMO
SICILY**



REGION OF GORENJSKA



PROVINCE OF CASTELLÓN



The Brescia Lowlands typify Northern Italy's intensively farmed plains; the Province of Palermo reflects Mediterranean coastal-island dynamics with water stress, wildfire risk and vibrant social economy; Gorenjska represents Alpine foothill communities exposed to floods, landslides and seasonal tourism pressures; and the Province of Castellón combines inland depopulating areas with agro-forestry mosaics and growing climate variability.

This diversity captures shared challenges—heatwaves, drought, extreme rainfall, wildfire risk, value-chain fragility and service gaps—under similar governance settings (municipal administrations, LAGs/LEADER groups, civic organisations).

As a result, the approaches tested and results achieved are readily replicable across comparable rural contexts in Europe, with only light adaptation to local capacities, ecosystems and policy frameworks.



Across the pilot territories, the project identified and documented a wide range of examples that capture local specificities and demonstrate innovative approaches to climate adaptation and mitigation in rural contexts.

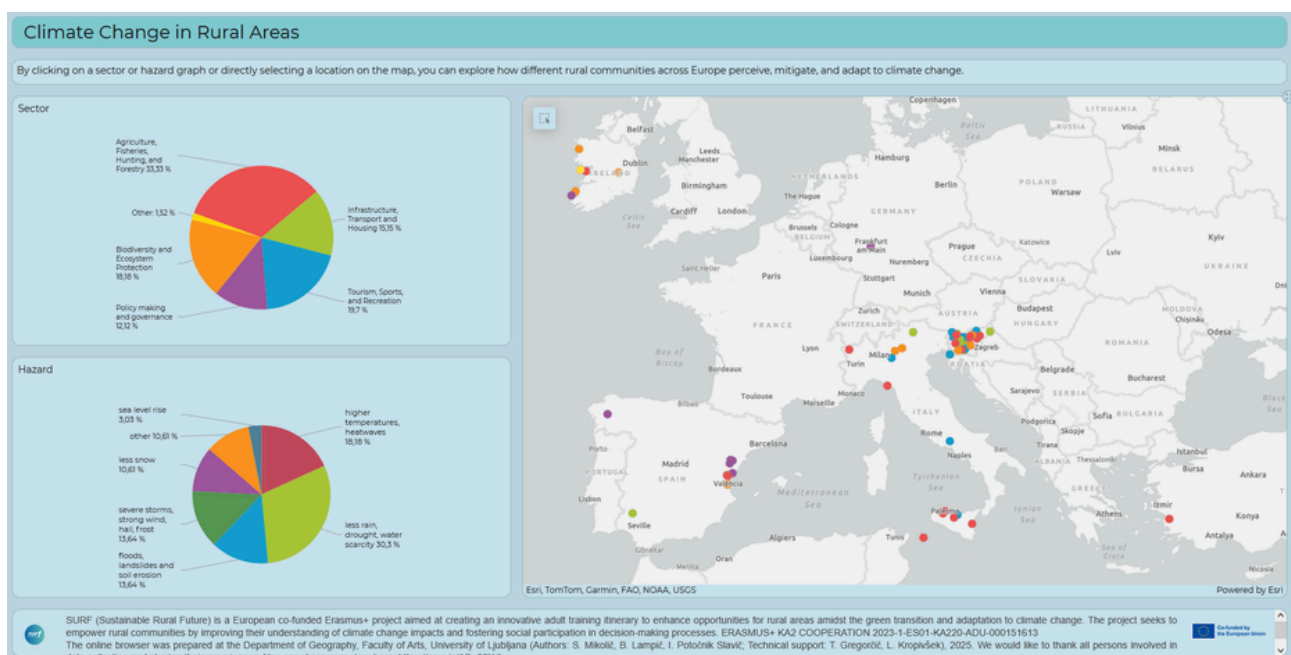
GOOD PRACTICES

The collected examples address:

- various rural economic activities (agriculture, forestry, fisheries, tourism, sports, infrastructure, etc.);
- adaptations to diverse hazards (altered precipitation, extreme temperatures, etc.);
- how different target groups (e.g. beekeepers, hunters, tourism providers) adapt their activities to new climate conditions; and
- governance at local, regional, and national levels and their approaches to climate change mitigation and adaptation.

These examples offer diverse responses to climate change, serving as information, inspiration, or tools for rural adaptation and are published in [Good Practices Guide](#).

GOOD PRACTICES INTERACTIVE MAP



An interactive tool, the [SURF Online Map](#), has been developed to complement the Guide and provide open access to more than sixty examples of how rural communities across Europe perceive, mitigate, and adapt to climate change.

These examples are classified using two filters: 1) the economic activity they refer to and the 2) climate hazard they address. Each example is presented on a single page, in both the local language and English.

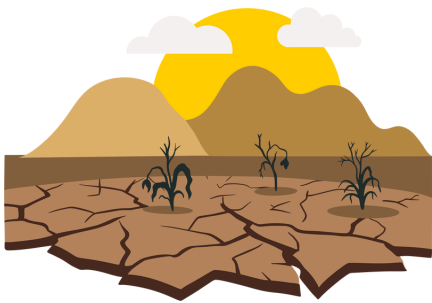
This digital platform facilitates the exploration of practical experiences, encouraging knowledge exchange and peer learning among territories facing similar challenges.

SIMILARITIES

Across the four pilot territories—despite clear contrasts in geography, morphology (landforms, elevation, soil, etc.) and climate histories—they are experiencing similar effects from the climate crisis because of underlying global processes.

COMMON IMPACTS IDENTIFIED

These shared pressures converge locally as a set of recurring impacts, most notably the prolonging of the duration and severity of droughts and the increased frequency and severity of floods, which are the two common risks identified across all four areas.



PROLONGED DROUGHTS

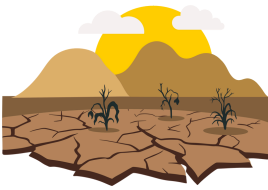
Consistently highlighted as a top risk across the Mediterranean and continental sites. Communities rate droughts on an average of 50, indicating high likelihood with severe to very severe consequences.



FLOODS AND HEAVY RAINS

The flood risk is rated on an average of 43. This score reflects a high probability of occurrence with significant to very severe consequences.

Specific reported **effects** across the communities include:



- Production decrease (leading to reduced income and food security)
- Desertification
- Livestock reduction
- Loss of biodiversity and depopulation of rural areas
- Problems with potable water quantity and increased need for irrigation
- Crop failures and uncultivated agricultural land



- Floods and infrastructure deterioration
- Damage to agriculture and food products
- Increased fragility of public and private infrastructure, and a rise in associated costs
- Social costs and territorial disasters
- Risks to human health and safety and soil degradation

CORE HAZARDS AND ASSOCIATED IMPACTS (NON-UNANIMOUS)

Other significant hazards were identified by specific communities, often appearing as common risks and highly rated by two or three groups.



Extreme weather events, often linked to changing patterns of seasons, were identified as common to three groups. Consequences include damage to crops and forests (e.g., windthrows, spread of pests), landslides, and a negative impact on infrastructure and buildings.



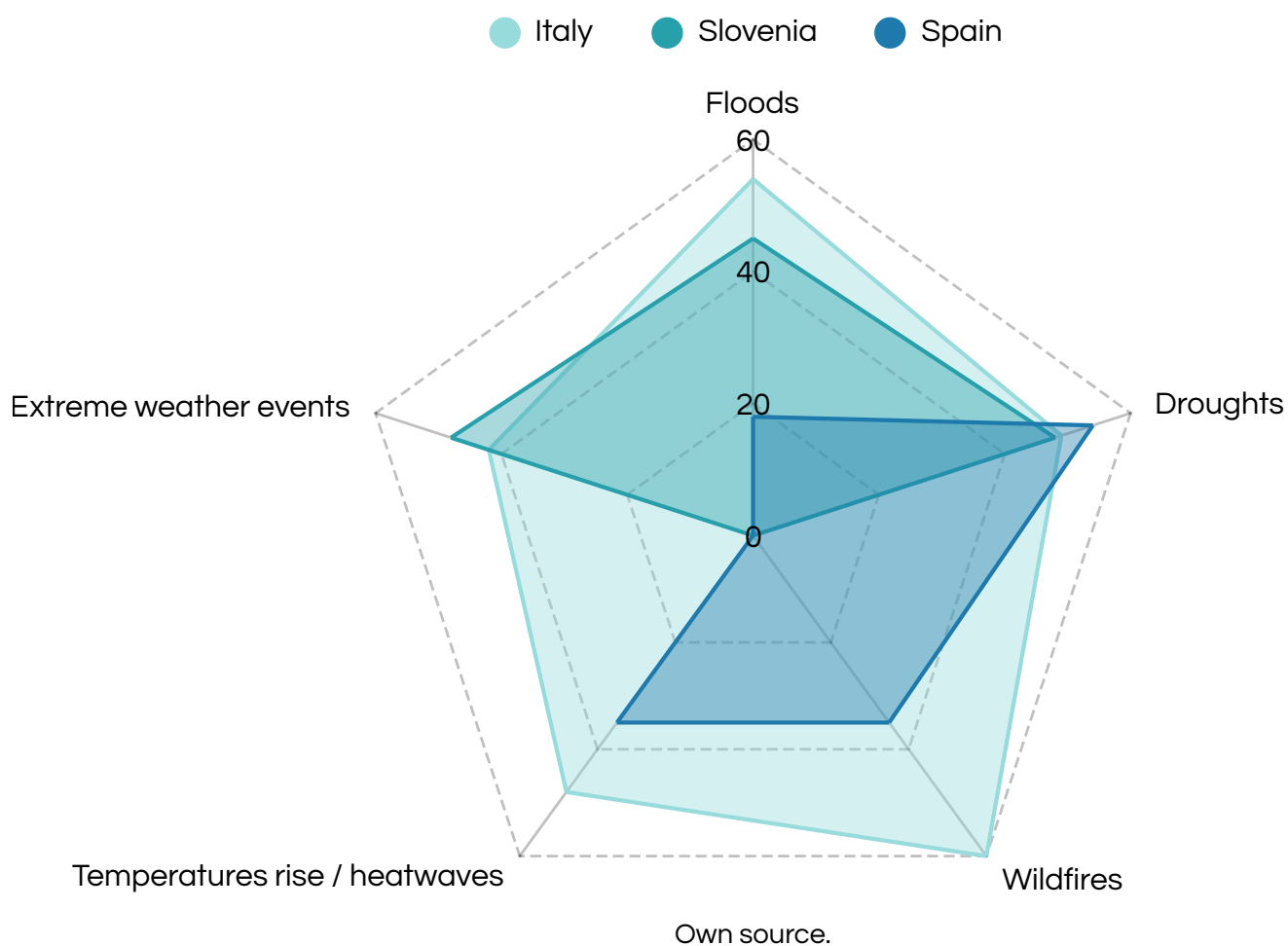
The risk of forest fires was highlighted as an extremely serious concern in specific pilot areas, such as Palermo, where it scored 60, and Castellón. Consequences noted include increase in extinction of native species, crop loss, soil infertility, and damage to infrastructure.



The increase in temperatures and heatwaves was identified as a concern in several areas. Consequences include production decrease, desertification, cost increase, and health problems for the population.

A radar chart can visualise the perceived probability × consequence for each hazard and its key impacts. Scores reflect local judgements from workshops and reports; higher values indicate greater likelihood and/or severity.

Hazard/Impacts identified per country



CASCADING AND SECONDARY EFFECTS

The climate pressures identified in the pilot territories generate significant cascading and secondary effects, often related to the primary hazards and impacts.

- **Soil Degradation and Erosion:** SURF activities results confirm that soil deterioration is a major consequence, including desertification and water erosion of soil, which leads to soil degradation and landslides. The combination of severe drought and intense rainfall contributes to this degradation.
- **Water Security and Quality:** The hazards cause a decrease in water resources and problems with potable water quantity. The result is reduced water quality (water security), often linked to negative changes in water bodies (such as algae and silt deposits in lakes).
- **Agri-food Volatility:** Climate impacts lead directly to production decrease, crop failures, and increased economic impact on agriculture. The net result is reduced food security.
- **Ecosystem Stress:** Environmental impacts include loss of biodiversity and degradation of soils and paths. Furthermore, the health of natural systems is threatened by the spread of pests (such as the European spruce bark beetle), diseases in agriculture, and the appearance of invasive species.
- **Socio-economic Impacts:** The hazards generate social costs, lead to the depopulation of rural areas, and result in the abandonment of farming. The deterioration of infrastructure and the general economic impact also place strain on local resources.

SHARED EXPOSURE

This results in shared exposure, where the communities experience similar **actors susceptible to damage** (such as farmers and the local population), **similar disruptions to natural resources** (like desertification, and loss of biodiversity and ecosystem functions), and **similar threats to human livelihoods** (including farming abandonment, depopulation, and food poverty due to food production decrease).

CROSS-CUTTING VULNERABILITIES OBSERVED IN ALL AREAS

The challenges reported confirm underlying systemic and social fragilities that magnify the physical impacts of climate change:

- **Fragmented Land and Water Governance:** The need for better coordination is implied by the emphasis on the necessity for improved neighbouring relations, coordination and agreements. Effective climate adaptation requires stronger interconnections between citizens, local administrations, schools, and local associations to facilitate co-creation and action.
- **Ageing and Depopulating Communities:** The pilot areas suffer from high levels of depopulation and an unfavourable age structure, which directly impacts the capacity of these communities to cope with and adapt to hazards.
- **Critical Infrastructure Gaps:** Hazards consistently cause increased fragility of public and private infrastructure, including roads, bridges, and water reticulates. The issue of critical infrastructure gaps is implicitly supported by the constant reporting of damage and the high costs required for maintenance and recovery.
- **Skills and Knowledge Needs:** A core finding is the ongoing necessity for education activities on climate changes and the need for further training and support. This requirement is crucial for developing practical skills in areas such as climate-resilient agriculture, risk planning, and community preparedness.

CONCLUSIONS

Across the four pilot territories, the same climate pressures surface despite clear differences in geography and land use. Prolonged droughts and floods/heavy rainfall consistently rank as top hazards, with extreme events and wildfire risk close behind. Shared risks reflect global warming signals playing out locally in similar ways.

Impacts cascade across systems. Soil degradation and erosion, water scarcity and quality decline, forest health issues and pest pressure, and disruptions to rural infrastructure all translate into socio-economic stress for small businesses, tourism, municipal budgets, and the community.

Where participation and coordination are strong, adaptation is already advancing. Culture, education and citizen involvement act as key enablers, building the social capital that allows technical measures to take root and endure.

SURF solutions are transferable with light local tailoring. The Climate Change Handbook helps communities improve their knowledge of climate change adaptation and determine risks to better prioritise adaptation strategies. The Good Practice Guide, interactive map and European Rural Network reduce duplication and accelerate peer learning across contexts. Participatory diagnostics helps to prioritise measures and to maintain buy-in across administrations, LAGs and civic groups. All project results—and how to sustain and use them beyond the project—are set out in the **SURF Sustainability Plan**.

CHALLENGES, INITIATIVES AND CONNECTIONS REPORT

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2025

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