EUROMONTANA

Booklet of good practices

for the sustainable development of mountain areas

2022

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This booklet is the result of the exchange of good practices carried out by Euromontana in 2021 with the aim of showcasing innovative initiatives for the sustainable development of mountain areas in Europe.

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Low-carbon dairy farm: reducing the climate impact of milk production in the mountains

« Ferme laitière bas carbone », literally Low Carbon Dairy Farm aims to promote agricultural practices and actions to reduce by 20% the carbon footprint of milk production by 2025. This French approach is led by the CNIEL (National Interprofessional Centre for the Dairy Economy), in partnership with the Livestock Institute, France Conseil Élevage and the Chambers of Agriculture.

Climate change mitigation in the dairy sector

Climate diagnosis and action plan

MORE INFO

The Low Carbon Dairy Farm consists of conducting an environmental and technico-economic diagnosis on each farm and identifying potential actions to improve its carbon footprint. The objective is to build a progression strategy in collaboration with the farmer, so that the action plan fits the realities of the farm and its economic and social context.

The first step proposed in this approach consists in raising awareness and understanding of the environmental impact of a dairy farm, thanks to a self-assessment tool enabling each farmer to estimate his carbon footprint by himself.

An individual visit to the farmer by a qualified advisor will then provide a more precise assessment of this footprint and identify possible actions. The CAP'2ER® tool (initially developed by the Livestock Institute as part of the Life Carbon Dairy project) measures the impact of livestock farming on the climate: the greenhouse gas emissions of livestock farming, the energy consumption, but also its positive contribution to biodiversity, its feeding capacity (number of people fed by livestock farming) and its carbon storage. There are two levels for this CAP'2ER® tool: level 1 collects 27 data to assess a production facility (milk or meat) in order to raise awareness and monitor it. Level 2 includes and collects 150 data with results for the whole farm, enabling the implementation of a real action plan to reduce emissions. (See the list of organisations able to carry out a CAP'2ER® diagnosis).

Sustainable benefits of the actions carried out on the farms

Following the diagnosis, actions are envisaged according to the reality and constraints of each farm. These actions, designed together with the farmer, may for example consist of revising the effluent management, reducing chemical inputs or improving the farm's energy consumption.

In Auvergne-Rhône-Alpes, the farm Croix Pomiers that groups 85 Montbéliardes cows, carries out actions to increase the food autonomy of livestock farming through by implementing rotational grazing, increasing the share of legumes, with certain impacts for the reduction of chemical inputs. Still in this region, the farm of Sully has managed to reduce fertiliser inputs by 33% and to increase its food autonomy by cultivating alfalfa and chicory. See testimonials.

The primary objective of the Low Carbon Dairy Farm approach is to support livestock farmers in reducing their impact on the climate. However, environmental benefits are not the only ones to arise from these actions: the valorisation of pasture or the reduction of inputs also have economic repercussions for the farm. According to the data collected as part of the approach, the 10% of farms with the lowest greenhouse gas emissions have on average a gross margin of €10 more per 1,000L of

milk produced. The socio-economic and environmental sustainability of the approach thus constitutes a real "win-win" solution for the farmer and the climate.

Today, more than 11,000 breeders are involved in this approach and 1,000 advisors are trained and qualified to implement the approach.

Credits Ferme laitière bas carbone

Resources

The initiative is based on the Life Carbon Dairy project (2013-2018) launched by the Livestock Institute in partnership with the CNIEL, France Conseil Elevage and the Chambers of Agriculture. This pilot project aimed at reducing greenhouse gas emissions by 20% in 3,900 dairy farms in six regions, raising awareness among farmers and training more than 100 advisors and breeders on greenhouse gas emissions and identifying practices implemented by "low carbon" farms.

The pilot project proved to be a success and was extended to the whole country: in 2015, the Low Carbon Dairy Farm approach was launched - awarded the same year by the Nicolas Hulot Foundation's "My Positive Impact" competition.

Today, within the framework of the Low Carbon Dairy Farm, the CNIEL and the CRIELs finance diagnostics with Regional Councils (Centre Val de Loire, Pays de la Loire, Auvergne-Rhône Alpes, Nouvelle Aquitaine). In addition, some of the dairy factories involved in the approach support the farmers they collect.

Adaptation to climate change in dairy production

Agricultural production and climate change are intrinsically connected and are both influenced by each other. In mountain areas, the effects of climate change on milk production have been studied by the CNIEL in the CLIMALAIT programme (2015-2019).

With the support of various partners such as the Livestock Institute, INRAe, the Chambers of Agriculture, Météo France, Arvalis and BTPL, the CLIMALAIT programme aimed to study the future evolution of the climate over the century and its impact on dairy farms. The programme helped to collectively identify tools for adapting to climate change in some twenty milk-producing areas throughout France.

Among the studies carried out, the one conducted in the Jura Plateaux demonstrated the clear impact of climate change on milk production. In this mid-mountain region, dairy farming is the main

agricultural activity, with in particular a high production of Protected Designation of Origin products. While these mid-mountain plateaux are usually characterised by cold temperatures and abundant precipitations, the study carried out already noted the increase in temperatures in the region, especially in summer. Coupled with a relative decrease in rainfall, these climatic phenomena contribute to the appearance of more frequent summer droughts and a reduction in summer grass production.

Based on this observation, the group of livestock farmers involved in the Jura study identified several ways of adapting to the effects of climate change: increasing hay stocks for drier years, growing cereals to make the farm more self-sufficient, growing alfalfa, which has proven to be a fodder resource better adapted to the changing climate, or raising more cows that are less productive and thus reducing inputs.

Some solutions promoted in the framework of CLIMALAIT as tools for adapting to climate change are also used in the framework of the 'Low Carbon Dairy Farm' approach as actions to reduce the climate impact of dairy production. Food autonomy and reduction of chemical inputs, among others, can therefore be levers for both adaptation and mitigation of climate change in mountain areas.

Innovative aspect

The Low Carbon Dairy Farm approach is based on solid knowledge of the emissions of various greenhouse gases, their sources, their impacts, and the possible actions to reduce these emissions. In addition, the initiative aims to propose concrete actions to each farmer, consistent with the constraints of the farm, including altitude and the lack of mechanisable land.


Credits: RE-CARE

Community-based restoration of mountain terraces

In the Troodos mountains in Cyprus, agriculture is often made possible by the presence of terraces. Yet, their condition is deteriorating due to land abandonment and the rise of temperatures in the region. Mountain communities have been empowered and involved in an initiative to restore the dry-stone terraces of the Ophiolite Complex of Troodos.

Erosion of mountain agricultural terraces

MORE INFO

In the Troodos mountains, rural communities created agriculture terraces over the decades to cultivate the surrounding land. Wine grapes, almonds and cereals like barley are the main terrace-grown crops. The Ophiolite Complex of Troodos covers 2,332 km^2 (40% within the Republic of Cyprus), hosts about 50,000 people and is composed of dry-stone terraces.

Over the past three decades, mountain communities' population has more than halved while the population in foothills and downstream areas has remained relatively constant. Hence, many of the mountain terraces are no longer cultivated and damages are caused by land abandonment – 20% of the land has been abandoned since 2000.Terraces' walls are not managed and can cause domino effects if they collapse. In addition to soil erosion, the area faced afforestation on dry lands, leading to increasing risks of forest fires. Such fires weaken soils, making them even more vulnerable to erosion, leading to a vicious circle of general degradation of agricultural land.


Wine grapes grown in terraces in Polystipos, June 2014. Credits RE-CARE

Involvement of mountain communities

As part of the EU-funded Horizon 2020 RE-CARE project (2013-2018), mountain communities of Polystypos, Alona and Platanistasa were engaged in the restoration of these dry-stone terraces. The project has opted for mixed governance and citizen participation to define and implement a restoration strategy. In total, 160 people were involved in the reflection and decision-making process, including: agriculture and forestry departments, Cyprus Agricultural Payment Organisation, local mountain communities (through community councils), landowners, local schools, and youth organisations.

Through workshops gathering relevant stakeholders and experts, mountain communities identified 15 solutions for the restoration of agricultural terraces. These solutions include "soft" measures, such as awareness raising activities, and more structural ones involving road construction or solving infrastructures issues.

A total of 6 terrace maintenance events were also organised between 2015 and 2017 in the Pitsilia region of the Troodos Mountains. These events gathered mountain communities, land experts, local authorities and helped to empower local people in the management of mountain terraces. The main groups targeted by these capacity-building actions were mountain farmers, landowners, and citizens.

Results of restoration activities

Within the project, an experiment was also carried out in a terraced vineyard in Alona (1300 meters above sea level) to monitor erosion from degrading and maintained terraces. Based on two-year measurements (December 2015 – November 2017), erosion from restored terraces was 3.8 times less than on collapsing terrace sections.

Experimental site. Credits RE-CARE

Terrace construction and maintenance is labour and cost intensive but is therefore effective in the long-term to prevent soil erosion. Moreover, it is essential for the preservation of mountain agriculture in the region and helps to improve yields, with farmers saying crop yields can be up to 20% higher in well-managed terraces.

As reaffirmed by local communities during the restoration process, agricultural terraces are part of the regional mountain landscape; maintaining them can thus also help to sustain mountain livelihoods, cultural heritage, and attractiveness.

Innovative aspect

Through mixed workshops and restoration activities, the RE-CARE project has made possible to empower mountain people, contributing to the capacity-building and technical training of communities with the support of the outside world. Such a governance model encouraged the involvement of communities in a territorial problem with environmental, social, and economic repercussions.


Credits: Educatie la Inaltime

Raising awareness on SDGs using drones in mountain schools

"Education Up High" is a project originating from mountain schools in Romania. By using drones, professors have the opportunity to teach in a different way and to associate words with images in order to raise awareness on the Sustainable Development Goals.

Education with drones in 3 mountain schools

"Educatie la Inaltime", literally "Education Up High" in English, is a project started in Romania in 2019 in the mountainous County of Hunedoara. The project aims at using the drones to teach differently. Through this technology, teachers can run a live and online lesson from the very place that is the subject of the lesson.

MORE INFO

During the first year of the project, in 2019 - 2020, pupils from three rural schools from the County of Hunedoara were for instance connected with Irina Constantinescu, Geography Teacher who delivered the class live from the mountainous county of Buzău, from the Ulmet's trovants (stones from Romania that form a geological phenomenon because they are considered to be alive and can grow and multiply). Pupils were also connected with Cristina Dudan, biology teacher, live broadcasting from the Făgăraș mountains at 1700 meters above sea level, where she introduced children to the issue of deforestation. Adirana Balaj, history teacher, also teached live from Adamclisi where the eponymous battle took place in 101 A.C. and where a memorial is built.


Credits: Educatie la Inaltime

For these live classes, professors also became co-creators and presenters of the lesson. They were assisted by media professionals, who were in charge of filming with drones. The drone technology is used to film from above and to include in the lesson images of landscapes or places mentioned by the teacher in voice-over.

In the second phase of the pilot project, pupils also learned to promote their region using technology and media. They attended filming and editing workshops and made short movies about their area, the values, traditions and heritage of their mountain communities.


Credits: Educatie la Inaltime

In class promotion of the SDGs

After the success of the pilot project, "Education Up High" was extended to the entire national territory of Romania for the school year 2020 – 2021, which also occurred in the COVID-19 context with many closed schools and an increased need for distance learning.

The core objective remains unchanged: bringing the Sustainable Development Goals (SDGs) to life through live lessons, transmitted by drone from different regions of Romania by local teachers.

Here is an overview of some of the lessons and how they introduced the SDGs:

- "Lesson 2: reducing inequality" was recorded from the County of Maramureș; it relation to SDG 10 (reduced inequalities), the class questioned children about the role of education in reducing socio-economic inequalities.
- "Lesson 3: life on land", live from the Bucegi massif in the Carpathians. In this live class, Irina Constantinescu, geography teacher, and Alexandru Colțoiu, Director of the Bucegi Natural Park raised awareness on SDG 15 (life on land). The lesson aimed to familiarise students with the interdependence of living organisms in a special ecosystem (forest), taking as an example the fauna and flora of the Bucegi massif, and to encourage children to strengthen their connexion with nature.
- "Lesson 5: sustainable communities" live from Făgăraș, in Transilvania, focused on the eponym SDG 11. With the intervention of several local stakeholders, the lesson demonstrated how natural and cultural heritage can be promoted by local communities as a model of sustainable development.

Credits: Educatie la Inaltime

The live lessons are streamed on both Zoom and YouTube, allowing students to ask questions to the teacher verbally or via chat. Each lesson is broadcast live, then recorded, edited, and made available online for free for use by any school. Lessons target pupils between 9 and 14 years old.

More lessons will be developed from September to December 2021. New professors will join the team and were selected upon their motivation for the project.

Although the project was extended nationally, it remains a useful tool for education in the mountains both to:

- Promote access to innovative education material, including in smaller schools located in mountainous areas;
- Raise awareness among all pupils, including in mountainous areas, on the Sustainable Development Goals and on the role of mountains in reaching them, through classes recorded from mountain massifs and communities.

Resources and governance

The pilot project "Education Up High" was launched by Marius Toader and Adrian Robe, television and documentary producers with careers spanning over 20 years, specialising in the creation of original content. The pilot project was carried out with the support of the Dacica Foundation, the Romanian Government's Department of Sustainable Development and the Carolina Creative Neighbourhood Association (a community of young people from Alba Iulia promoting the creation innovative programmes to improve teaching in Romanian schools, through non-formal methods and with the

help of technologies.) In 2019, the pilot project was awarded within the Romanian competition for innovation in education "RoSmart" organised by OMV Petrom, which distributes a total of 500.000 euros among all winning projects.

"Education Up High" is now also supported by Aspire Teachers, an association working to improve impact education in Romania and to exchange good practices among teachers. Their vision is « to bring an excellent teacher in front of every child in Romania ». The association has taken the lead over the project to upscale the initiative from the pilot phase in the Hunedoara County to the entire national territory. For the new school year, another session of "Education Up High" will run from September to November 2021. It will be supported by the Romanian Government's Department of Sustainable Development and implemented by Insemne (a newly created NGO by Marius Toader and Adrian Robe, the two media professionals who initiated the project) Other institutions have joined the list of partners, like the Montessori movement or the Transylvanian college.

Innovative aspect

The "Education Up High" project successfully brings technology at the service of education in mountainous areas. The diversity of topics and the pedagogical dimension can improve children's knowledge of the SDGs. The many lessons recorded from mountain areas can also promote the sustainable development of the mountains among future generations.


Credits: Rifflsee

Sunna Alm: a carbon-neutral mountain restaurant

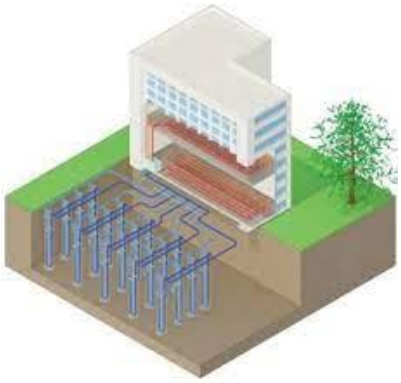
"Sunna Alm" is a mountain restaurant located in Pitztal, Austria. The restaurant is opened two thirds of the year and has opted for renewable energy to heat its building. Thanks to a combined used of solar and geothermal energies, it is the highest passive-energy restaurant of the Alpine region.

Using ground and solar energy in the mountains

The Sunna Alm restaurant was built in 2008 near the Rifflsee mountain station and is located at 2291 metres above sea level. Here, the annual average temperature is 1°C. Owners of the Sunna Alm restaurant need to maintain a constant and comfortable temperature of 20°C inside the restaurant during the 135 open days in winter and 100 in summer. Overall, the restaurant has a surface to be acclimatised of about 560 m².

MORE INFO

To reduce the restaurant's energy emissions and make it a carbon neutral building, since 2008 the restaurant uses renewable energies to heat the place. Seven deep drilling were conducted up to 120 metres-depth adjacent to the building.


Closed loop installation for tertiary & industrial buildings. Credits: geothermie-perspectives.fr, ADEME-BRGM

Borehole drilling is generally used for geothermal energy supply by using the heat from the ground. Yet, in this rocky and high area, underground temperatures are negative (-3°C), the efficiency of the geothermal wells is very low. Thus, to enhance the energy production, 34m² of solar panels were also installed on the top of the restaurant's roof. The excess heat provided by solar panels is stored in the field of borehole heat exchangers. This technique of Underground Thermal Energy Storage aims at storing excess heat in the ground in summer and retrieve it in winter.

The combination of geothermal and solar energy thus gives to the energy installation both a heating and a storage function. The installation therefore provides heating to the restaurant as well as hot water. These installations do not cover the restaurant's electricity needs, for lighting or kitchen equipment for example. In terms of electricity supply, the building is attached to the cable car of the mountain station; thus, its demand for electrical energy cannot be counted separately.


Sunna Alm cable car. Credits: Rifflsee


Sunna Alm restaurant. Credits: Pitzal

Results and transferability

The combination of solar and geothermal energy at the Sunna Alm restaurant makes the restaurant a 100% carbon neutral building in terms of heating energy. The primary energy consumption is reduced by 100%; likewise, 100% of energy-related carbon emissions are avoided. Given the annual 235 open days, the system enables a saving of 35.000 litres of fuel oil each year.

Thanks to the combined installation, the final energy efficiency rating of the building amounts 12 kWh/m². This figure demonstrates how energy efficient the Sunna Alm restaurant is, in comparison with the average rate in Austria of 190 kWh/m². The energy efforts are also noteworthy knowing that, in the European Union, service building are on average 60% more energy intensive than residential buildings (see H2020 ODYSEE-MURE policy brief).

The combined installation chosen by Sunna Alm is transferable to other infrastructures in the mountains – at least in the Alps, as demonstrated by the Interreg Alpine Space GRETA project (Near-surface Geothermal Resources in the Territory of the Alpine Space). Indeed, borehole heat exchangers (BHEs) are suitable both for independent housing and large buildings. Moreover, BHEs are not dependent on the presence of groundwater and can therefore be installed in any environment. However, drilling costs are high and make geothermal energy expensive. In the case of the Sunna Alm restaurant, installation costs and amortization strategy are unknown, and owners rather valorised their motivation for innovation and ecology. Annually, maintenance costs of these installations amount about 500 euros.

Innovative aspect

The Sunna Alm restaurant is an example of infrastructure which innovated on the way to carbon neutrality. The smart combination of geothermal and solar energies allows considerable savings in terms of carbon emissions and provides inspiration towards a more sustainable tourism in the mountains, even at high altitude.


Credits: Tularù

Tularù: investing in the energy transition of mountain farms

Tularù is an organic and diversified 60 ha farm located in Rieti, in the mountainous Region of Lazio (Italy). The farm is committed to sustainable development and the environmental strand of its action includes the use of renewable energies. The combination of solar, thermal and biomass resources cover most of the energy needs of the Tularù farm.

3 pillars of sustainability

Tularù is a multifunctional farm established since 2017 and counting 30 ha of woodlands and 30 ha of land dedicated to the production of ancient cereals, vegetables, fruit and wild fruit and breeding of cattle and chickens exclusively fed through grazing. Farmers also propose agritourism experiences and run an on-farm restaurant. Tularù is committed to the principles of sustainable development. To enhance the socio-economic sustainability of the farm, farmers contribute to structuring the local value chain of old grain varieties, reinvest into local projects and include local communities in social integration projects and leisure activities.

MORE INFO

The use of local varieties, the collection and use of rainwater and the practice of rotating grazing, increasing the carbon sequestration capacity of grasslands, are also promoted as steps towards environmental sustainability.

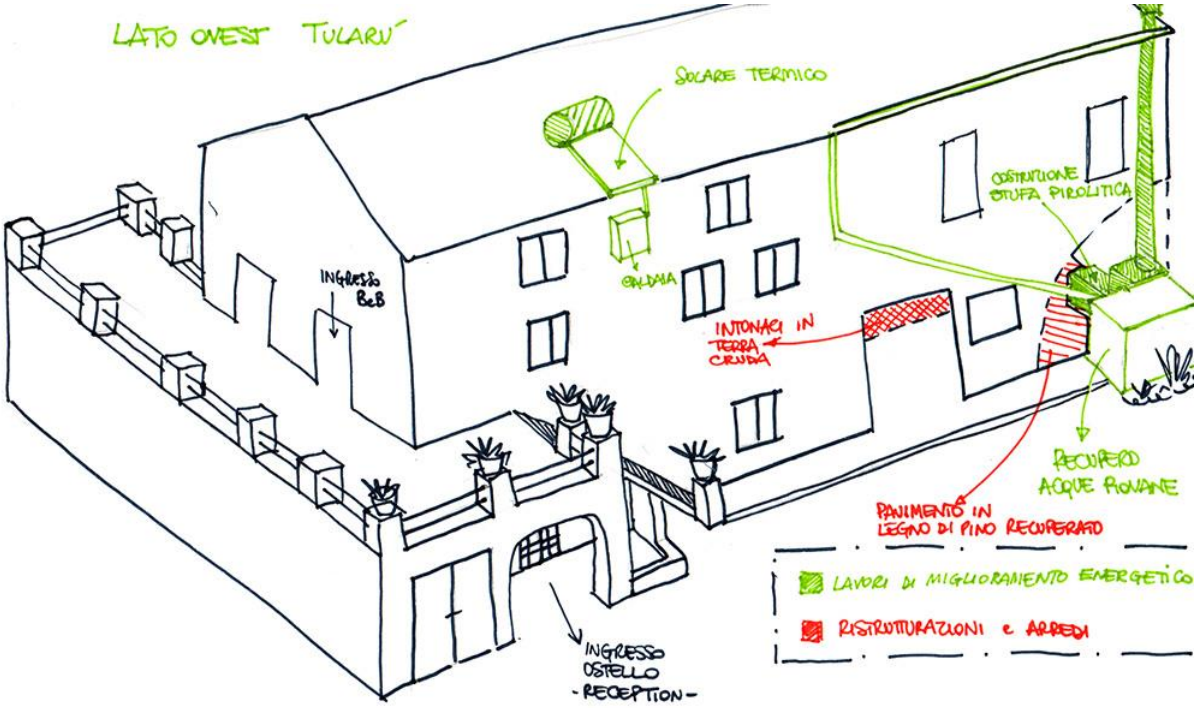

Credits: Tularù

On farm closed loop sustainable energies

To make further progress on environmental sustainability, farmers decided to opt for renewable energies to reduce their carbon emissions. All the system is in closed loop and allows the farm to do self-consumption and therefore to also reduce its energy expenses.

Hot water is produced through two renewable sources: solar panels and thermo-compost:

- Photovoltaic panels of 6 kw in energy exchange were installed on the farm's roof with east-west exposure to take advantage of the sunlight during all day.
- The farm also uses thermal composting techniques. Through a system of about 30m³, wood chips, pruning waste and cuttings from hedge and forest clearing are transformed into energy. Producing energy through compost is always a challenge because the humidity rate must always range between 60% and 75% for the waste to decompose properly – otherwise, excessive humidity affects bacteria. Therefore, balanced rainwater inputs and good draining base are essential. The energy produced by the thermal compost heats part of the farm's water. The compost is also used as natural fertiliser on crops to improve their growth and enrich the soil.

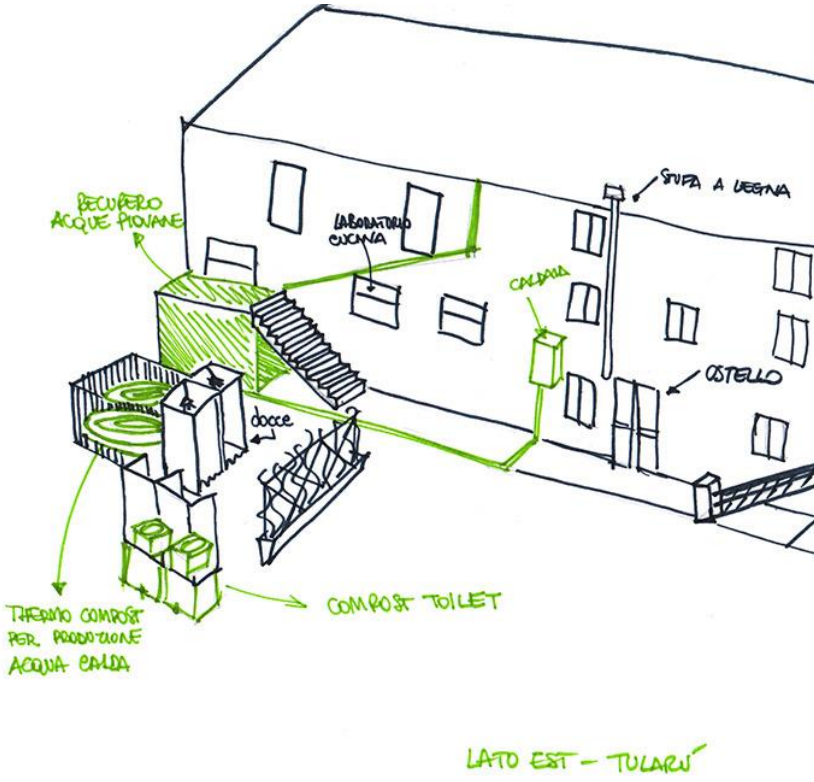


Credits: Tularù

To store the energy produced by these two sources, the farm was equipped with a 800 litter and a 600 litter boilers which stock domestic hot water, powered by photovoltaic panels. Boiler are supplied with rainwater.

Moreover, an inverted flame wood stove of 35 kw was installed to heat the place. Conventional wood stoves light the fire from the bottom to the up, generating smoke containing fine particles. On the contrary, inverted flame wood stoves enable to light the fire on the top of fire logs. In this way, the gas formed by the combustion burns completely instead of being disperse in the smoke.

The different energy installations can cover most of the farm's energy needs. The different systems take advantage of the various renewable resources of the mountain, such as solar and wood, and, in a logic of circularity, also make use of organic waste.



Credits: Tularù

Resources

The sustainable energy installations were funded by different resources. For the installation of solar panels, farmers received € 10,000 from the Rural Development Programme of the Lazio Region 2014-2020. The support was granted under the measure 6.1 of the region's Rural Development Programme, which aimed at supporting the business development of young farmers.

Regarding the thermal installation, € 18,000 were financed by "Conto Energia 2.0", an Italian scheme supporting energy efficiency and promoting the use of thermal energy. In addition, € 6,000 of own capital were also invested by farmers for the thermal system.

Apart from the investments in energy transition, Tularù receives additional support from Rural Development Programmes, such as payments for areas with natural constraints and payments for organic production.

Innovative aspect

Tularù demonstrates that farms have an important role to play in the transition towards sustainable energies and that mountains' natural resources offer many opportunities. Photovoltaic installations on existing buildings are a promising cost-effective and productive source of energy in the mountains but a balanced energy mixed, that includes waste and circularity, is key for mountain farms.


Credits : OPEN2PRESERVE

Maintaining open landscapes to preserve mountain biodiversity

Mountain grasslands in southern Europe are facing a loss of biodiversity due to landscape closure. Rural migration and land abandonment are leading to the progressive reforestation of these pastures and to an increase in the risk of fire, which results in the degradation of habitats and species specific to these regions. In northern Portugal, combined actions of targeted grazing and clearing are implemented to reduce these risks and preserve mountain biodiversity.

Landscape closure and biodiversity loss

MORE INFO

The progressive abandonment of agricultural land and pastures since the second half of the 20th century has led to a gradual reforestation in northern Portugal. The closure of the landscape leads to an increase in fire risk which endangers the species and habitats of these grasslands. Over the last 36 years, Portugal has been the only country in Southern Europe unable to significantly reduce the area of land affected by fire.

In the Bragança region, under grazing makes it impossible to keep the combustible cover low and to maintain open landscapes which are less vulnerable to fire. In the face of fire risk, in a region where many fire starts are caused by human inattention but also where the risk is increasing with climate change, the authorities want to better control the combustible biomass to preserve biodiversity.

Targeted grazing and clearing

In the municipality of Mirandela, located in Terra Quente Transmontana in the region of Bragança, a 4.3 ha plot is dedicated to an experiment to explore effective fuel management methods. On this plot, targeted grazing and mechanical clearing practices are combined in order to maintain open landscapes, reduce the risk of fire and thus decrease the loss of biodiversity that is associated with them.

The pilot site is divided into three plots, on which different practices are applied to compare their effectiveness in managing fuels and consequently reducing fire risk. The experiment is composed of:

- A grazed plot without mechanical cleaning of approximately 906 m²
- A 400m² plot where only mechanical clearing is practised
- A 41,940m² plot where targeted grazing and mechanical clearing are combined

On the pilot site, a control strip of 10x40 m² was left untouched in order to allow a comparison of the evolution of the vegetation and analyse the effectiveness of the experiment.

A flock of about 190 sheep grazes on and around the pilot site on two of the plots. The animals, raised for their meat, are from the local breed "Churra Galega Bragançana" which is particularly adapted to the territory. The maintenance of this breed in the region has been supported by the EAFRD during the period 2014-2020, under the section "Maintenance of indigenous endangered breeds" (the breed has 12,578 animals among 1242 breeders). The feed of this local breed is mainly based on grazing, for 9 to 10 hours a day, which can be supplemented by fodder if the grass becomes insufficient. For the experiment, the cattle are grazed on the pilot plot in spring and autumn until the forage resources of

the land are fully used. GPS tracking of the sheep is used to measure the number of hours and days they graze on the plot.

In addition to targeted grazing, mechanical clearing is performed on some parts of the site since May 2019. It was also planned to test controlled burning on the site, but meteorological conditions were not good enough. The use of fire to facilitate pasture renewal and biomass management is a traditional practice regulated in Portugal by Decree-Law No. 14/2019 of 21. This legal framework states that burning can only be carried out after submitting a request and receiving authorisation from the relevant municipality. The application is analysed taking into account the weather conditions and the operational management of the action (the decree-law requires the presence of an accredited technician or a team of firemen or foresters). As a result of the decree-law, an online platform for extensive burning has also been created under the management of the Institute of Nature Conservation and Forestry.

The Department of Environment and Natural Resources of the School of Agriculture of the Polytechnic Institute of Bragança is currently comparing and assessing the different techniques used on the experimental area. It appears that vegetation and shrubs have grown on all plots, but at different speeds. It would appear that the most effective method for limiting vegetation cover and fire risk would be a combination of grazing and mechanical clearing; these are preliminary conclusions that will be developed in a full report.

Resources and governance

The experimentation is carried out on plots owned or rented by farmers in the region and under the management of the Polytechnic Institute of Bragança IPB Portugal. The Portuguese pilot site was developed within the framework of the OPEN2PRESERVE project for a sustainable management model for the preservation of open spaces in the mountains. This project (2018-2021) is financed by the Interreg SUDOE programme, with a budget of €1,726,000.50 from the European Regional Development Fund.

Innovative aspect

Targeted grazing and clearing, like controlled burning, are traditional practices in mountain agriculture, as illustrated by the OREKA MENDIAN's booklet of good practices on mountain grasslands. However, they have sometimes been lost due to the lack of transfer of pastoral knowledge. In the face of the increased risk of fire in the mountains due to climate change, these practices are techniques to be replicated in order to reduce this risk by maintaining open landscapes to preserve mountain habitats and species.

Valorisation of agricultural waste through large-scale bioeconomy in Norway

It is frequent that only meat and dairy products are valued outputs from mountain farms. Nonetheless, by-products generated in producing meat and dairy products can be transformed into high-quality products, thereby creating an additional income for farms. The Norwegian company Norilia ensures that by-products are refined and reused.

The potential of circular and bioeconomy in mountain farming

MORE INFO

Since 2000, the Norwegian company Norilia focusses on ensuring the whole animal is used, thereby contributing to a more profitable and sustainable agriculture. Norilia is part of the Norwegian farmers' cooperative, Nortura, which has over 18,000 Norwegian farmers and handles much of the country's livestock production.

Receiving by-products from the Nortura cooperative, each year Norilia transforms around 150,000 tons of by-products – often from small Norwegian farms - into products like pet food, hides and wool. Through this, an added value is created to what else would be considered waste, contributing thereby to the bioeconomy and creating circularity in the Norwegian livestock sector. Reusing by-products such as wool create important circularity opportunities, knowing that a sheep annually produces between 2 and 5kg of wool, which can make up to 6 sweaters per animal each year.

As the company's mission is to use every part of the animal, research and innovation projects are carried out, aimed at creating sustainable and high-quality products that can be sold on the market. Moreover, skilled craftsmen are used for the transformation of products, such as wool.

Credits: Norilia

Credits: Sune Eriksen

Sustainability from farm to fashion

Credits: Norilia

Norilia handles nearly 80% of the annual Norwegian wool volume by working together with the Norwegian Association of Sheep and Goat Farmers (NSG). This wool comes from sheep that often graze on uncultivated semi-natural mountain grasslands. To give recognition to the sustainability and traceability of Norilia wool, it has been granted the Nordic Swan Ecolabel guaranteeing a transparent value chain and low use of chemicals in the areas where the sheep graze.

Norilia also opened in 2012 a hide plant at Skjeberg. In the transformation process, almost 99% of the salt used in salting gets recycled, making the process more sustainable.

The activity fosters the economic sustainability and diversification of mountain farms while also developing the potential of agricultural by-products for the circular and bioeconomy sectors, it was therefore promoted by OREKA MENDIAN as a replicable practice benefiting mountain pastoralism (see OREKA MENDIAN's booklet of good practices and report on the sustainable management of mountain grasslands).

Innovative aspect

By using these by-products, added value is created to make agriculture more profitable, while also increasing the sector's sustainability as less resources are wasted through this bio- and circular economy approach. While different initiatives exist in mountain areas to collect and reuse animal by-products, the national recognition of Norilia allowed to upscale circularity to the whole country.

Integrated data to anticipate forest fires in Mediterranean mountains

Fire is the most significant natural threat to forests and wooded areas in Mediterranean mountains. Their natural ecosystems, rich in shrubs, are especially vulnerable to fire and climate change fosters wildfire risks due to the rise of temperatures during summer. In the mountains of Troodos (Cyprus) and Grammos (Greece), different datasets on climate, flora and fire occurrence were combined to improve forest fires' management.

Forest fire risks in Mediterranean mountains

MORE INFO

Forest fires is a major risk in Mediterranean mountains, like in Cyprus and Greece. The average annual number of forest fires in the Mediterranean basin, particularly in southern Europe, is close to 50,000 - twice as many as during the 1970s. In 2019, Greece experienced 657 forest fires, including 5 large fires affecting more than 500 ha of land. In Cyprus, during the same year, 99 forest fires hit a total of 733 hectares – a lower number, for which the much smaller size of the country compared to Greece must be taken into account (see JRC's 2019 report on Forest Fires in Europe).

The plant ecosystem of the Mediterranean basin is rich in shrubs and coniferous forests and, thus, particularly susceptible to fire. In these regions, summers are becoming warmer, drier and longer due to climate change. In Cyprus, in May 2019, the average temperature recorded was already 2.0°C above normal. Climate projections predict an increase both of frequency and severity of forest fires in the Mediterranean basin in the future.

Disasters, such as forest fires, happen when a hazard meets vulnerability and exposure. In many cases, vulnerability is hampered by a lack of strategy for disaster-management, lack of coordinated actions between the different stakeholders and inadequate update of information and data.

Data analysis for fire prevention and management

The LIFE CALCHAS project therefore looked at key elements of disaster management, preparedness and risk reduction. This project was implemented in two pilot areas: the Troodos mountains, in Cyprus, and the Grammos massif, in Greece.

To strengthen forest fires' management, the CALCHAS project seeked at improving the knowledge and skills of civil protection professionals, policymakers and local communities. The overall objective was to improve the temporal and spatial management of resources, the evacuation management and the readiness of all stakeholders dealing with forest fire risks.

Installation of a meteorological station in the Trodoos mountains.
Credits: LIFE CALCHAS project

To achieve these goals, partners identified the areas most subjected to fire risk in the Troodos and Grammos mountains. They also identified the most flammable flora species and mapped their spatial distribution. In a second step and 20 meteorological stations were installed in these vulnerable areas.

The collected data was then used by a fire simulator tool developed within the project: the Integrated Forest Fire Analysis System (IFFAS). The tool combines climate data and topography information on the local vegetation density to identity when environmental conditions are favourable to a fire outbreak and thus to predict fire development and help to manage it.

In order to train stakeholders to the use of the fire simulator software, including civil protection services, fire brigades, and decision makers, 3 training sessions were organised in Cyprus and 2 in Greece.

Resources & governance

The tool developed within the project can be used as a support mechanism to trigger information, risk prevention and decision and makes it interesting to both policymakers and fire brigades.

Credits: LIFE CALCHAS project

The CALCHAS project was funded by the LIFE programme (total budget: 2,337,114 €, EU contribution: 1,158,803 €). The project was implemented from 2010 to 2013 and coordinated by the Agricultural University of Athens. To manage all activities related to typography analysis, stakeholders' engagement and implementation of technological devices, partners included both researchers in agronomics and technologies, representatives of local communities (such as the Union of Cyprus Communities) as well as technology and telecommunication companies.

Innovative aspect

Different tools exist to prevent forest fires in mountain areas, such as prescribed burning, targeted grazing (see OREKA MENDIAN's booklet of good practices) or vegetation clearing. The use of technology makes an important contribution to predicting and managing forest fires. Such systems are especially interesting in less accessible mountain areas. For other examples, you can have a look at our good practice on Cozzano (Corsica, France), where two weather stations also provide local fire brigades with information such as strength and direction of winds and rainfall accumulation.

Credits: FER-MENTI Leontine community cooperative

FER-MENTI Leontine: a community cooperative for the socio-economic regeneration of mountainous areas

Founded in 2019, FER-MENTI Leontine community cooperative is a social innovation in the Romagna Apennines (Italy) that seeks to foster a socio-economic regeneration in the municipality of San Leo. Activities for the revitalisation of the territory are defined and developed by citizens, and they pursue the long-term interest of the local mountain community.

The establishment of the community cooperative

MORE INFO

Credits: Comune di San Leo

The Valmarecchia territory in the Romagna's Appenines (Italy), where the Municipality of San Leo is located, is affected both by a strong depopulation and seasonal mass tourism (approximately 75,000 visits and about 2,800 inhabitants in 2016). Touristic incomes strongly vary according to the season and do not benefit all local businesses. These factors have led to the progressive impoverishment of the territory and the closing of several traditional businesses, including its central bakery: "Il forno di San Leo".

Sourced from a series of local participatory meetings – to reflect on territorial hurdles – organised by the "Confcooperative Ravenna-Rimini", the association "Figli del Mondo" and the start-up accelerator "Primo Miglio", the FER-MENTI Leontine community cooperative was born in 2019 with the objective to regenerate the social and economic life in the mountainous village of San Leo.

Benefits of the cooperative model for mountain communities

Since then, the FER-MENTI Leontine cooperative reopened the historic bakery of the village, created 5 new jobs, and received 200,000 Euros via: share capital (from the financing members), ordinary financial instruments, and financial instruments reserved to the cooperation domain. The cooperative now consists of 60 members, including several companies and associations from Valmarecchia.

Credits: FER-MENTI Leontine community cooperative

FER-MENTI Leontine has already won several prizes, including the ReStartApp, a business accelerator programme tailored to support entrepreneurial activities in the Italian mountains.

FER-MENTI Leontine promotes and manages personal services as well as productive and commercial activities which are beneficial to the long-term well-being of the entire mountain community. In the Municipality of San Leo, FER-MENTI Leontine oversees different activities from the reopening and management of the local bakery, the promotion of sustainable local tourism, but also the care of the common goods of the village, and the enhancement of zero-mileage products along with the home delivery of basic necessities, promoted during the COVID-19 times.

An example of social innovation

FER-MENTI Leontine relies on a model of social innovation called the community cooperative ("cooperative di comunità)" governance model where citizens are both producers and users of the products and services they support. Local citizens can actively decide to take part to the FER-MENTI Leontine's activities or suggest new ones based on the needs and obstacles faced by the community. Moreover, the community cooperative's model encourages adhesions, collaborations and partnerships from local actors ranging across citizens, enterprises, associations and institutions.

As reported by a feasibility study conducted by the Italian Ministry of Economic Development (2016), cooperative communities are not new in the Italian mountains and comparable forms also exist in other European countries, such as: the "Société Coopérative d'Intérêt Collectif" in France, the "Gesellschaft bürgerlichen Rechts" or "Gesellschaft mit beschränkter Haftung" in Germany and the "community enterprises" in the United Kingdom. However, according to the same study, this type of social innovation is quite new or inexistent in other European mountain areas.

Innovative aspect

Community cooperatives, a bottom-up and multi-stakeholder network, are particularly present in vulnerable and fragile areas. Their innovative aspect stands in the capacity to empower citizens in identifying their long-term needs and actively work for the amelioration of their own mountain community, developing a sense of social cohesion and innovative entrepreneurship.

Sankt Veit low carbon daily mobility strategy

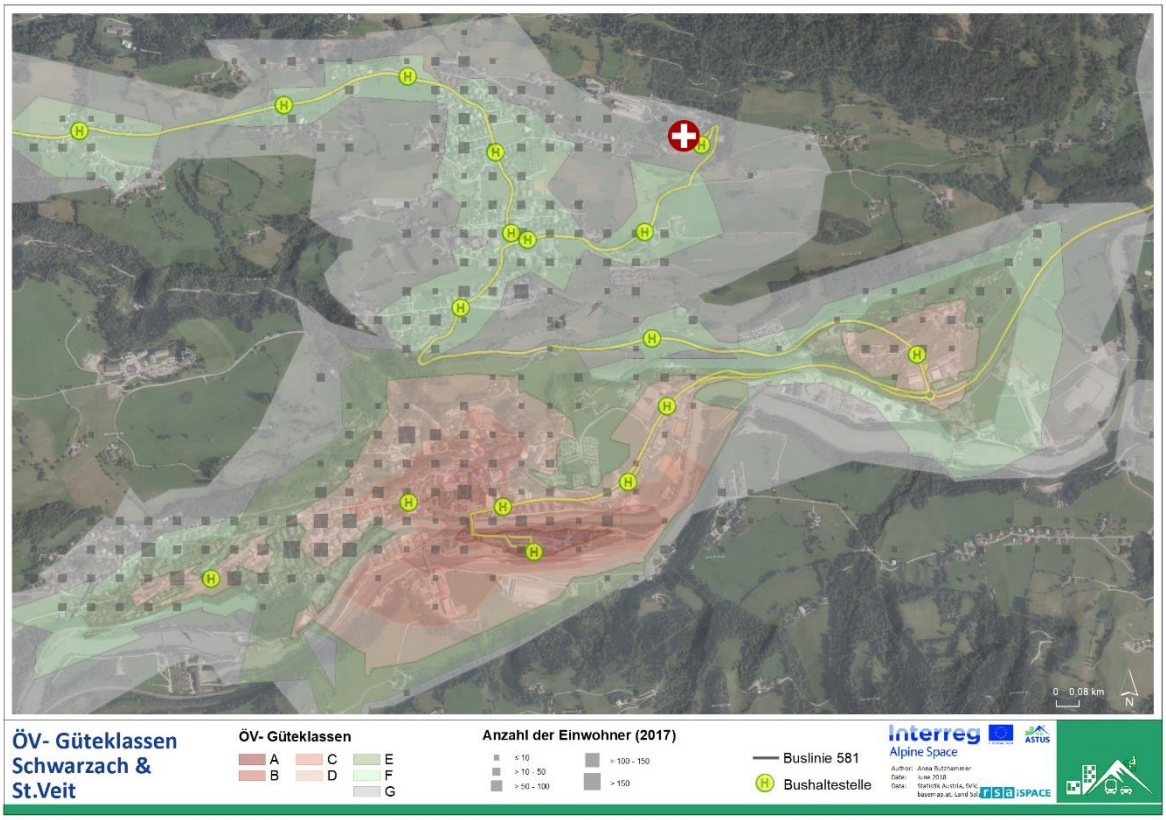
Sankt Veit im Pongau, Austria, is a village counting around 3,700 people. To decrease car dependency in the area and decongest roads, regional stakeholders designed and implemented a tailored made low-carbon transport strategy targeting the daily mobility of workers.

MORE INFO

Car dependency in daily mobility

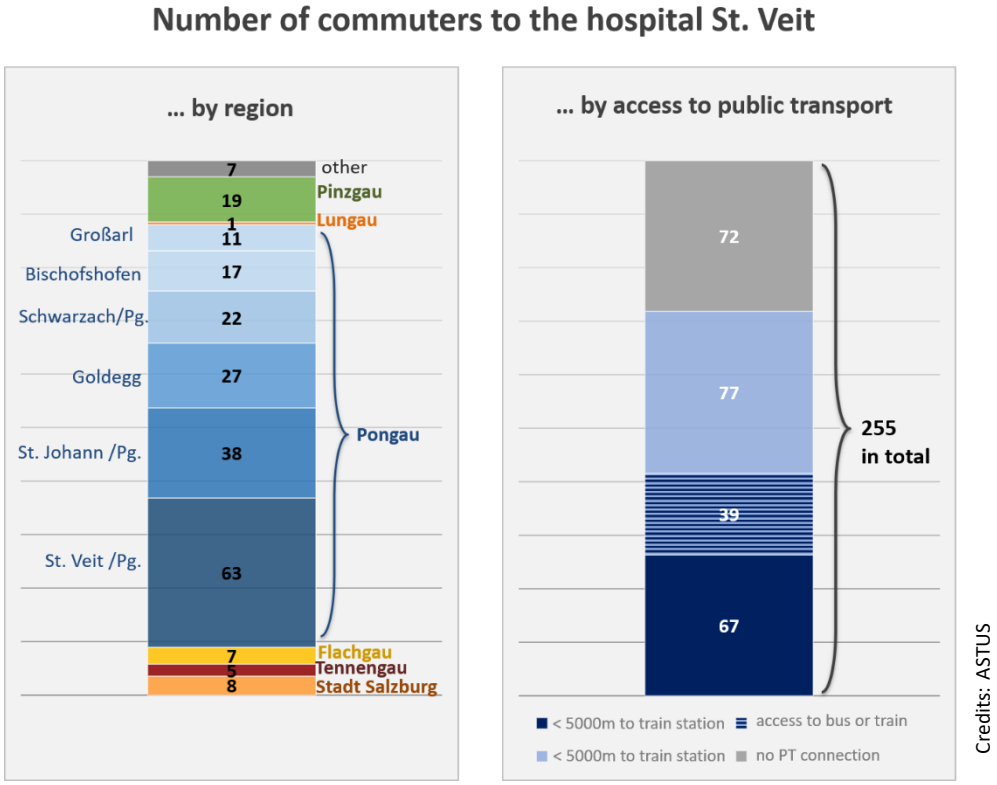
In the Region of Pongau most people have the habit to use their private car for daily mobility. In Sankt Veit, 25% of the 1,056 active people living in the municipality work in health and social services. The State Hospital Sankt Veit im Pongau is a major employer in the region of Pongau, with around 340 employees and a capacity of 170 beds.

Public transport offers exist in the area but are not always well connected. For instance, there is a train station in Sankt Veit (3km away from the hospital), with a high-quality offer of regional train lines. A bus line connects the station to the hospital in about 9 minutes, but the frequency of buses is poor. Moreover, due to the steepness of the slope (positive change in altitude of about 200m), active mobility such as biking to work, is not common. Consequently, employees, patients and visitors use their private car and contribute to the high daily traffic. For example, 90% of the hospital's employees use their car to get to work.



Credits: ASTUS

This map shows the quality of public transport services in the investigated area, presented in form of quality categories from A (very high) to G (very low). Additionally, the location of the hospital, bus stops and the distribution of inhabitants are visualized. At the same time, the below chart illustrate that most employees come from the region of Pongau and have access to public transport.



Credits: ASTUS

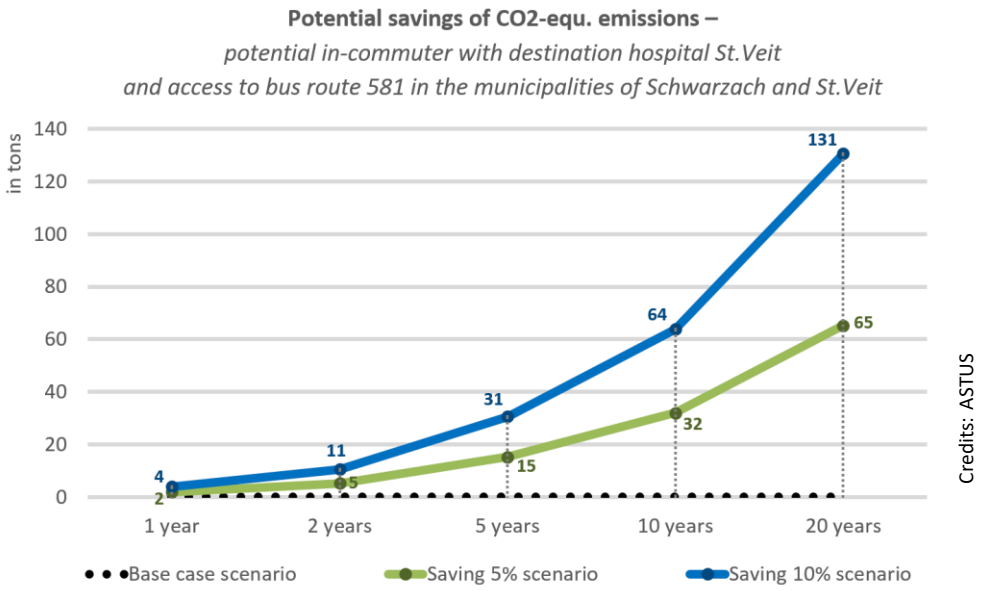
A tailor-made mobility strategy

In the framework of the Interreg Alpine Space ASTUS project (2016-2019), the RSA FG Researchstudio iSPACE together with the Pongau Regional Association, the Salzburg Transport Association and the Salzburg Institute for Regional Planning and Housing (SIR) studied the key elements of mobility in the area. They found out that most employees at Sankt Veit hospital are coming from the Pongau region and that most of them have access to a public transport station but still use their private car due to the defaults of the transport offer.

Therefore, to decrease car dependency and CO2 emissions, they developed a strategy targeting the daily commutes to work at the hospital. The strategy aims to encourage low carbon mobility on daily basis, therefore promoting sustainable yet affordable mobility offers. During several workshops with local and regional stakeholders, alternative scenarios have been developed. Based on the analysis of a daily commuter to the hospital a high potential along the bus line has been identified. Therefore, actions have been developed to improve the offer of public transport, in particular:

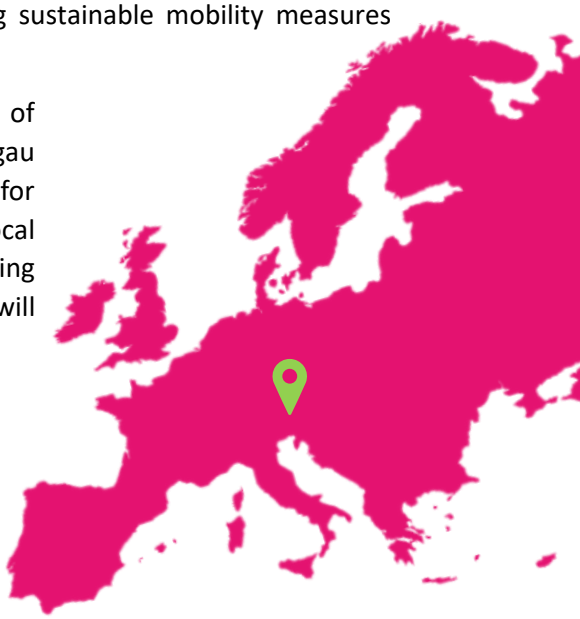
- increasing the frequency of bus rides between the hospital and central station
- improving the coordination of mobility offers with shift work
- implementing awareness raising measures and incentives such as attractive ticketing (for instance, involving the administration of the hospital in the promotion of the bus line towards employees and in the future parking management to increase the parking pricing once the public transport offer is satisfying).

It is foreseen that the action can benefit 340 employees of the hospital, 180 employees living and working near the bus line 581 and 1100 inhabitants. Depending on the uptake of the offer by daily commuters of Sankt Veit hospital, the savings in terms of CO2 emissions could be significant. By 2025, between 10 and 20 tons of CO2 emissions could be avoided, raising to 50 to 100 tons in 25 years. And the benefits also go to workers, who can save money by using public transport compared to their private car (maintenance, gas etc.)



Governance and resources

The strategy was developed following ASTUS methodology, which is based on the assumption that mobility solution cannot be one-fits-all but place-based. ASTUS proposes tools to analyse mobility issues at local level in order to identify the main challenges and target groups and gather the relevant stakeholders to ensure a good mobility governance. The project also developed a typology of Alpine territories, that other Alpine regions can use to look for inspiring sustainable mobility measures implemented.



The action plan implemented in Sankt Veit involves different levels of governance, from the municipality of Sankt Veit to the region of Pongau and the state of Salzburg. The increase of the bus interval was for instance implemented from 2020, with the support from local authorities from the region of Pongau. However, revising the ticketing pricing must be decided at the level of the state of Salzburg and will therefore be designed and implemented in the next few years.

The budget foreseen to increase the interval of bus rides to and from the hospital (also improving the coordination between bus timetables and work shifts) amounts 190.000€. It will be financed by local and regional authorities, indirectly national funding, and potentially through a co-financing by the hospital.

The mobility strategy extends to 2030, with additional accompanying measures to be implemented progressively, for example: improvement of infrastructure such as bus stops, renovation of pavements and cycle paths.

Innovative aspect

The mobility strategy implemented in Sankt Veit addresses the issues of daily mobility for permanent residents. Increasing the offer on a specific bus line is not innovative as such but by analysing the existing public transport offer and the main employment basin, stakeholders identified the weaknesses of the transport network and proposed tailor-made solutions to encourage more sustainable and affordable mobility on a daily basis.

Between Lleida and La Pobla: an on-demand train in the Pyrenees

In the High Pyrenees of Catalonia, an on-demand railway line connects 17 rural villages every day. The model of the service was reshaped by regional authorities to keep the line efficient and viable while maintaining the transport offer to the population and visitors. Efforts in terms of multimodality and modernity of equipment also helped to make the train line attractive to people.

MORE INFO

The train line between Lleida and La Pobla de Segur, in Spain, is an 89 km long line covering 17 villages in the High Pyrenees. Operating in a mountain area, the railway line faces the natural constraints and counts in total 41 tunnels and 31 bridges to connect these rural communities. Natural constraints, coupled with the demographic decline of some villages and the increased use of private cars, limit the viability of train connections in some mountain areas.

Although Lleida - La Pobla de Segur is a historic line in the region, opened in the 1920s, it was identified in the 1980s as unviable and therefore to be closed. In 2004, the region of Catalonia decided to acquire the train line to maintain the service.

Flexible and intermodal transport

To maintain the operation of the train line Lleida - La Pobla de Segur, some changes were introduced to better meet the needs of rural commuters while keeping the line viable on the long term.

The offer was adapted to the demand for transport. Therefore, timetables are based on the most popular time slots among local communities; the line does not operate at time of least demand or when villages are covered by buses.

Moreover, an effort was made to increase the multimodality of transports in the region. The train timetables have therefore been adapted to correspond to the connections with buses and with the mainline trains to Madrid and Barcelona.

Last but not least, to improve the flexibility and efficiency of the service, some stations are on-demand. In practice, this means that the line includes fixed stops and, in between, others for which passengers can request a stop. Passengers can push a button either in the train or in the station to alert the train driver. 11 of the 17 stations covered are on-demand and were selected based on the analysis of previous demand from users. This allows more rural stations to be covered and offers more people an alternative mode of transport, collective and more sustainable. This solution improves the quality of life of local communities and offers a last mile transport to visitors - as the route also passes through villages, sites and lakes that are popular among tourists.

Train line RL2. White stops are on demand.
Credits: TrensCat

Resources and governance

Since 2005, the infrastructure is owned by the regional train company Ferrocarrils de la Generalitat de Catalunya (FGC). In 2016, the company also took over the operation with the purchase of trains specifically for this line.

Since the acquisition of the line, the Catalan government bought 3 new trains for a total of € 15 million to replace old equipment. It also invested another € 15 million to improve the stations and the accessibility for people with disabilities and cyclists for instance. Such investments might of course impact the line's frequentation, which is constantly increasing (from 90.000 annual passengers in 2000 to 220.700 in 2018).

Credits : Jordi Verdugo

Innovative aspect

By applying the “on-demand” option to train transport, this initiative found a solution to keep rural train lines attractive and viable. In mountain areas, transport is the key to territorial attractiveness, especially if efforts are made to improve the speed of the service and the connection with other lines or transport. In the framework of the European Year of Rail, this is a good example for other regions of rail transport adapted to the needs of mountain communities and visitors.

‘Cuisinons notre région’: from farm to fork in mass catering services

‘Cuisinons notre région’ (literally ‘Let's cook our region') is an initiative launched in 2015 in Switzerland by the Canton of Valais. Led by the Cantonal Agricultural Service and its School of Agriculture, the initiative aims at promoting the use of local products in collective catering.

Mass catering, a challenge of sustainability

More than 6 million meals are taken in schools, institutions and companies’ canteens every year in the Canton of Valais (according to the latest study by the Federal Statistical Office in 2009). Although collective catering has declined in many countries since the COVID-19 outbreak - but not in Switzerland, where schools and companies’ canteens have remained open - its popularity has continued to grow since the 2000s.

MORE INFO

Mass catering therefore has a central place in the daily diet of workers and pupils and thus provides a place for education on sustainability and the promotion of local products and concepts of origin, traceability, and quality. However, although Switzerland is self-sufficient in food at 56%, it remains one of the countries with the lowest self-supply rate in the world.

Implementation of ‘Cuisinons notre région’

From the pilot project to its extension throughout the Canton

‘Cuisinons notre région' began in 2015 with a market study and a state of play of the catering industry. A pilot project was set up with 4 canteens in order to test indicators and define specifications. The aim was then to increase the number of partner establishments and to improve the offer of products, for example by replacing orange juice with fresh local fruit juices (apples, pears, grapes), to ensure the origin of frozen products or industrial jams, to switch to home-made desserts and to favour ingredients from organic farming.

The success of the initiative led the State Council to make compulsory the participation to 'Cuisinons notre région' for all collective catering establishments belonging to the Canton of Valais or benefiting from public subsidies from the Canton covering at least 50% of their budget (see decision of 24 June 2020). The concerned canteens have 12 months to comply and will have to present a detailed and transparent analysis of the products used in their kitchens in June 2021.

Support to chefs and producers

Year after year, the initiators of the 'Cuisinons notre région' initiative have developed actions and tools with the aim of supporting canteens and collective restauration establishment participating in the approach and of convincing new catering establishments. More than 387 letters have been sent to restaurant managers and chefs in the canton and 131 to targeted producers and suppliers in order to spread the initiative.

The Valais School of Agriculture has also drawn up various standard documents to facilitate the steps taken by organisations in joining the 'Cuisinons notre région' initiative.

- Sustainability specifications: For whom? For institutions wishing to become a partner. What for? To facilitate their commitment to promote regional products, to use the Beelong Indicator from time to time, and to implement socially and environmentally responsible practices in their kitchens.
- Specifications on traceability: For whom? For producers and suppliers. What for? To become a partner in the approach and commit to including regional products in their offer and to ensuring the traceability of all the foodstuffs on offer.
- A typical call for tenders: For whom? For buyers. What for? To provide them with a list of important criteria, to be communicated to suppliers so that they can propose offers that meet these sustainability requirements.

In addition, an annual meeting is organised with partner producers and suppliers, chefs from participating establishments and the associated local authorities (cantons and municipalities).

Communication campaigns have also been carried out and a graphic charter is available for partner organisations in order to promote the approach. A practice guide is also available to help understand how to use regional foods when opening a new mass catering place, depending on the target audience.

Resources and governance

The initiative is led by the Canton of Valais (agricultural service), under the coordination of Ludovic Delaloye, himself a certified federal chef. Via the Canton, the School of Agriculture and its students are also involved in the initiative. The project was also supported by the Foundation for the Sustainable Development of Mountain Regions, which worked on the communication and awareness-raising actions, graphic charter and practice guide.

Following the State Council's decision to make participation to ''Cuisinons notre région'' compulsory for public establishments, a budget of 1.6 million Swiss francs has been allocated for the period 2021-2023 - entirely financed by the Sustainable Development Programme of the Canton of Valais.

Putting sustainability on the plates of the catering industry

Since 2015, the Swiss initiative 'Cuisinons notre région' has been attempting to enable the catering industry to give priority to local, high-quality products and thus to reconcile the environmental, social and economic dimensions of sustainability.

Socio-economic impacts

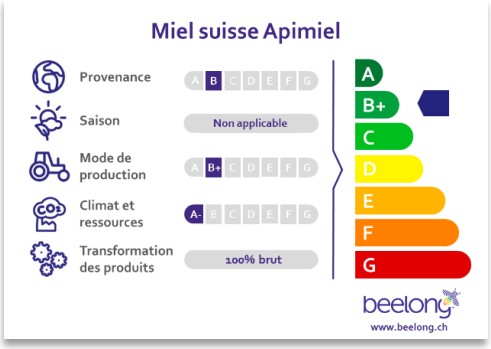
‘Cuisinons notre région' facilitates the purchase of regional and quality food products at a fair price for producers. To achieve this, the platform RegioFoodVS was created. Producers and suppliers commit themselves to promote their products on this website and to explain the social and/or environmental added value of the products. The canteens and mass catering establishments that are partners in the approach commit to purchase a large part of their products on this platform. Commercial exchanges are thus carried out within this new framework but always in compliance with the usual rules in terms of delivery and quality. Free training courses to learn how to use the platform are offered to encourage its use. Direct contact with the producer remains possible: if the foodstuffs meeting these criteria are available through direct sale or another supply channel, it is not prohibited.

Environmental approach

28% of the environmental impact of consumption in Switzerland is due to food, according to the Federal Office for the Environment. The initiative therefore helps to increase the environmental sustainability of meals. It promotes the use of mountain products from extensive agriculture and pastoralism. Moreover, by favouring local products, 'Cuisinons notre région' promotes short circuits and reduces not only the number of intermediaries but also the number of kilometres travelled by the products.

The approach of proximity is also in line with the Agenda 21 of the Canton of Valais - an action plan for sustainability. This programme aims in particular to promote, in order of priority, Valaisan, Swiss and, finally, European or even global production for specific products such as coffee. The purchase of products with a label, such as PDO, PGI, TSG, organic farming, Label Rouge, etc., is also encouraged.

In order to facilitate the understanding of sustainability among restaurateurs, 'Cuisinons notre région' also promotes the Beelong indicator. Developed by the Lausanne Hotel School, Beelong aims to be an 'ecological food indicator'. This scheme assesses 5 sustainability indicators: origin, season, production method, climate and resources, and product transport. For each indicator, a score between A and G is attributed to the product, and the average obtained thus enables everyone to understand the different dimensions of a product's environmental performance.



The Beelong indicator can be used to evaluate a food product, all the ingredients in a dish or the totality of a restaurant's purchases. Around forty collective restaurants in French-speaking Switzerland currently use this indicator. Although the 'Cuisinons notre région' initiative promotes the use of the Beelong indicator in the purchase of products, it is not an obligation.

Innovative aspect

'Cuisinons notre région' is a comprehensive approach to the transition to more sustainable food systems. Targeting mass catering is an innovative approach, which raises questions about everyday food and public procurement rules, in line with the political will to promote short circuits and regional producers.

Rural Taxi with Medical Purposes

In the Province of Castellón (Spain), the lack of transport offer challenges the quality of life of local communities and complicates the access to healthcare infrastructures for vulnerable groups. To facilitate the access to care services, the Provincial Government of Castellón set up in 2018 the 'Rural Taxi with Medical Purposes'.

Mobility, population density, healthcare: connected challenges

Castellón is a coastal and mountainous province where many rural municipalities face depopulation. Due to the low population density, classic public transport offers are not viable enough in these villages - which leads to the vicious circle of depopulation linked to the decline in the quality of life and a decrease in the attractiveness of the territory.

MORE INFO

The availability of transport offers is in particular important for those who are not in age or condition to drive a private vehicle, such as youth and older adults. For seniors, living at home in their village is sometimes an option only if they can also easily access healthcare services.

A Rural Taxi with Medical Purposes

To address these interconnected challenges, the Provincial Government of Castellón launched in 2018 an on-demand transport offer dedicated to vulnerable people who need to go to a medical appointment. This 'Rural Taxi with Medical Purposes' aims at facilitating the access to healthcare for older adults living in municipalities counting less than 5,000 inhabitants.

This door-to-door service is free of charge for users who do not have a private car, who are (even temporary) unable to drive or who do not have a driving licence. Local authorities subcontract this service to local taxi companies and act as interfaces between users and drivers. To use the service, people can make a request in the municipality they live in, justifying their need by providing their ID card, the doctor's note and a statement on their need for making use of the taxi for medical purposes.

Credits: Elmundo.es

Governance and resources

The 'Rural Taxi with Medical Purposes' was developed by the Provincial Government of Castellón as part of its repopulation strategy "REPOBLEM". This strategy aims at increasing the quality of life and the attractiveness of the area. Other measures undertaken within REPOBLEM are for instance the support to nursery schools, the development of municipal Wi-Fi, resting units for families taking care of a vulnerable person, and a mobile library service to ensure that every village has access to culture.

The initiative was allocated an initial budget of €300,000 at the provincial scale. Each municipality is then responsible for the management of the service on their territory and establishes the municipal annual budget allocated to the service.

Tírig was the first municipality of the Province to launch the service in September 2018, with a budget amounting € 1,075.02 for the period September to December 2018. While this new offer is beneficial to local communities, the budget remains limited, which is why the local authorities in charge of the service strictly reserve it for people who have no other mobility options. In the Province, 115 municipalities of less than 5,000 people are now offering this on-demand transport. In municipalities like Montán, where the 370 inhabitants live at 60km from the closest hospital, the taxi service is key to ensure the connectivity between the village and care services – in particular for older adults.

Credits: Diputación de Castellón

Innovative aspect

By developing an on-demand transport offer dedicated to people with restricted mobility but care needs, the Castellón Province increases the quality of life in the area, in particular for older adults who can more easily live at home if they want to. By identifying and prioritising a specific segment of the population – people who do not have access to private cars - local authorities also found a way to develop a viable transport offer.

Green Velo: a comprehensive active tourism offer in Eastern Poland

Green Velo is a 2000 km cycling path running through Eastern Poland. Designed and developed thanks to the collaboration of 5 regions, the path promotes cycling as an alternative mobility to discover the area, including mountain massifs. By providing a safe, marked, and equipped path and promoting the surrounding natural and cultural heritage, Green Velo is a unique and comprehensive active tourism offer.

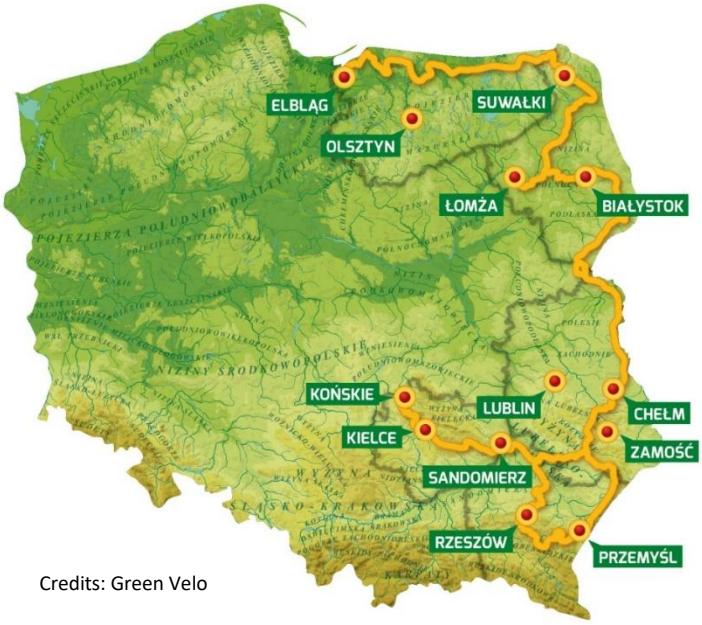
A complete and secure tourist, sporting, and cultural offer over 2000 km

MORE INFO

The Green Velo cycling trail is the longest marked cycle path in Poland. It is more than 2000 km long and crosses 5 regions. The trail runs mainly on asphalt public roads with low vehicle traffic intensity, through 5 regions of Eastern Poland: Warmińsko-Mazurskie (397 km of cycle path), Podlaskie (598 km), Lubelskie (414 km), Podkarpackie (459 km) and Świętokrzyskie (210 km). The path notably gets across the Świętokrzyskie Mountains and the Carpathian Plateau. The course of the trail was marked out in the years 2008-2009. The development of the path was carried out from 2013 and ended in 2015.

This Green Velo cycling path also includes 228 “Cyclist-Friendly Places” – safe areas where cyclists can rest. Some of these points have been further developed and equipped in order to meet the needs of cyclists, for example by recreating the so-called “Cyclist Service Points” which provides a similar service to that of service stations on motorways. All Cyclist Service Points are uniformly marked and equipped with sheds, benches, U-shaped bicycle racks, information boards and rubbish bins. Several of them are also equipped with portable toilets and water containers.

Despite the fact it runs through 5 different regions, the path was designed as a single route and is therefore promoted among tourists and visitors as such. To promote Green Velo and encourage its use by visitors, a website and a mobile app were also set up, thanks to a common communication budget established by the 5 regions. These tools aim at helping cyclists to plan their trip but also at promoting the unique heritage of Eastern Poland: natural, cultural, gastronomic places and events are reported. Natural parks, accommodations as well as health facilities are also mapped on the website.



Credits: Green Velo

Governance and resources

Credits: Green Velo

To design and maintain a constant development of the Green Velo trail, a cooperation agreement was signed between the Marshals' Offices of the 5 above-mentioned regions. Each region is thus committed to support and finance the development and promotion of the cycling path. In 2019, the budget allocated for joint promotional activities for instance amounted PLN 500.000 (about € 109.800). Communication activities to promote Green Velo also include presentations in tourism fairs, national and international events, in printed and online media.

The total cost of the project amounts PLN 274.000.000 (around € 60.143.000). It was co-financed at 85% by the European Regional Development Fund under the Operational Programme Development of Eastern Poland 2007-2013 (Priority Axis 5: V: Balanced development of tourist potential based on natural conditions, Activity V.2 Cycle routes).

Innovative aspect

Green Velo has been developed beyond the administrative regional borders thanks to the cooperation of 5 regions. The circuit is a complete tourist offer, combining the promotion of sport and natural and cultural heritage. Its high level of equipment and safety helps to really encourage tourists to travel by bicycle. By promoting surrounding infrastructures and attractions, the initiative also contributes to valorise local SMEs and business from mountainous regions.

Climate change adaptation: Spessart's all-year around tourism strategy

Spessart is a German range of low wooded mountains, in the states of Bavaria and Hesse in Germany. Each year, the region has about 1.35 million overnight stays and over 13-million-day visitors. In winter, skiing is the main tourism attraction but the number of days with important snow cover is significantly decreasing due to the impacts of climate change. A strategy was designed to adapt the tourism sector by developing a 4-seasons tourism model.

Climate change impacts on tourism in the Hesse region

MORE INFO

Climate change is acting faster in mountain areas compared to lowlands, across all Europe. The region of Hesse makes no exception: according to Hesse regional adaptation strategy, it already went through an increase of precipitation in autumn and spring and recorded a raise in temperatures of 1.3°C between 1951 and 2010 (while the increase at global level was 0.85°C). To investigate future changes, the Hesse region carried out climate simulations. Projections foresee an increase of the annual mean temperature of about 1.7°C by the middle of the century (2031-2060) in comparison to 1971-2000.

This strong increase of temperatures will affect the ecosystems of the region as well as mountain economy. Temperatures are expected to increase in particular during summer and winter, reducing de facto the snow cover. By the end of the 21st century, snow days in the Hesse region are expected to decrease by 20% to 40% - which will reduce the number of skiable days, decrease the attractiveness of the region in winter, and lower the economic viability of ski resort infrastructures. For cross-country skiing, the number of skiable days has already been reduced from 27 for the 2012-2013 season to 7 in 2018-2019. With 200,000 employments linked to the winter tourism sector in the region of Hesse, adapting the offer is crucial to maintain employment opportunities at local level.

Credits: TUS Frammersbach cross-country ski trail network

Moving towards a 4-seasons model …

To cope with the effects of climate change, the area of Spessart which is covered both by the regions of Hesse and Bavaria, decided to develop a 4-seasons tourism model.

Since 2016, Spessart Tourism and Marketing Company, the local tourism office, has changed the way it promotes the area to valorise the activities available during each season. The aim is to showcase the assets of the area, such as close natural spaces, strong cultural heritage and regional cultural identity of local communities and businesses. To ensure a successful transition by maintaining attractiveness, Spessart Tourism and Marketing Company intends to target new tourist profiles, like hikers, mountain bikers and tourists interested in well-being and cultural heritage.

To better reach out to these new profiles of tourists, the following actions were also carried out:

- Removal of one of the three ski lifts of Spessart resort, of no further use in the winter.
- Use of remaining ski lifts in winter if there is enough snow and during summer for mountain bikers and hikers.

- Creation of new mountain trails for biking and hiking.
- New communication of tourism stakeholders, focusing on all year-long activities and positioning the region as a place to experience nature and forest-based activities.



Credits: Spessart Tourismus und Marketing GmbH

… thanks to a consultative process

The decision to turn towards a 4-seasons tourism model was not a unilateral choice from Spessart Tourism and Marketing Company, it was made in collaboration with stakeholders from the tourism industry. The consultative process took into consideration the interests of local companies and potential cooperation partners, for instance hosts, providers of leisure facilities, municipalities, and businesses. Together, they agreed that reducing the dependence on winter sports and developing tourism all-year round was a promising strategy for the future of the territory.

Likewise, the choice to focus on new tourist profiles, like hikers, mountain bikers and tourists interested in well-being and cultural heritage, was not made randomly. A market research study revealed that Spessart had interesting geographical assets, in particular the proximity to large cities like Frankfurt, Würzburg Darmstadt and Mainz, which enables people to visit the area for the weekend. Workshops were organised with these potential visitors, and it resulted that these tourists would be families, culture or nature-oriented city breakers, active tourists and people interested in quality-oriented experiences.

Governance and resources

The transition towards a 4-seasons destination was led by Spessart's Tourism and Marketing Company and private and public tourism services providers. European and regional funds also supported stakeholders in their investments.

Spessart Tourism and Marketing Company is confident that the investments made will help to shift from a winter-oriented tourism to an all-year-long destination. Investments are also expected to diversify tourists' profiles and to welcome visitors all year round, in particular day tourists from the neighbouring regions.

Innovative aspect

The territory has taken advantage of the climate projections to develop an adaptation strategy for the tourism sector. The consultation by the tourist office is an inclusive method that allows all stakeholders who live from tourism to decide on future orientations to develop year-round activities. The use of ski lifts outside the winter season and tourism marketing towards neighbouring populations are also easily transferable actions to maintain attractiveness.


Credits Olivier Denat

The Rural Civic Service to involve youth in local development

The Rural Erasmus created by InSite aims to support project leaders in villages, to promote the vitality and creativity of rural areas and to enable young people aged 16 to 26 to get involved in the development of projects of general interest that strengthen social cohesion, promote heritage and improve the quality of life in the municipalities of regions Occitania, Corsica and Provence-Alpes-Côte-d'Azur.

Fostering the vitality of villages

MORE INFO

InSite is a French association, which vision is to recognise the challenges faced by rural areas, such as the lack of health and education infrastructures or of employment opportunities, but also to promote the great potential of these territories to build more dynamic, inclusive and resilient societies. Through its missions, InSite intends to promote the assets of these territories, in particular their natural and cultural heritage, local traditions and strong social cohesion.

At the same time, the association wants to create more connections, especially with newcomers and project leaders from all backgrounds (local representatives, associations, shopkeepers, farmers etc.) to encourage collective dynamics.

The association counts on the energy of young people to achieve this and created the "Rural Erasmus" in 2019. First launched in the Occitania region (France), the programme is now also available in two other mountainous regions: Corsica and Provence-Alpes-Côte-d'Azur.

Involving youth in local development with the Rural Erasmus

InSite's "Rural Erasmus" consists of young people spending 6 months in a village to participate in local projects on 4 topics: Solidarity and social cohesion:

- Solidarity and social cohesion:
- Culture and heritage
- Environment and sustainable development
- Local development

The missions proposed by InSite within the framework of the programme aim to improve the quality of life and the resilience of the territories and to involve youth in local projects.



Credits: Olivier Denat

The activities proposed by local authorities (municipalities or associations of municipalities) are diverse and do not require any particular skills, apart from enthusiasm and a taste for teamwork. In 2020, a total of 41 missions were carried out in 38 municipalities with 22 young people, for example to support the development of an eco-village in Corsica, to meet with older adults to discuss their needs and promote home-stay accommodation, to run a co-working area or to support local initiatives launched after the first lockdown.

New missions are available for the coming months, for instance to:

- Improve sustainable mobility in the Communauté de Communes Pays de Forcalquier-Montagne de Lure (Alps): the young people recruited will participate in the animation of workshops for pupils on the topic of mobility, in the mapping of the needs of inhabitants in terms of mobility and in the promotion of already existing sustainable mobility offers through participation to cultural and sports events.
- Enhance the heritage of a medieval village in Larzac (Occitania): by participating in promotional activities of the village, supporting the mayor's office in its application to obtain the "Most Beautiful Villages of France" label, and by designing new innovative activities.

The feedback from participants in the "Rural Erasmus" programme shows the usefulness of the initiative to acquire professional skills, such as the use of digital tools, public speaking, teamwork, coordination of different actors, but also the ability to listen to stakeholders and to adapt to the environment. Young people also reported a better knowledge of the rural environment and of territorial stakeholders.

Credits: Olivier Denat

Governance and resource

Young people who participate in the "Rural Erasmus" programme sign a Civic Service contract: a scheme that exists in France and in other European countries to support the professional insertion of young people while promoting missions of general interest. There are certain conditions to be eligible, such as being between 16 and 26 years old and not having done any Civic Service before, but it is a quite flexible scheme as no diploma is required and participants can keep a student or salaried activity in parallel. Although referred to as "rural Erasmus", this programme has a considerable advantage: it is not restricted to students and is not bound to a particular academic or vocational trajectory, thus reaching out to all young people. Young foreigners are also eligible, which facilitates more cultural exchanges.

Young people in Civic Service commit to carry out their mission for a minimum of 24 hours a week for a maximum of 6 months. They are supervised by a tutor during their mission and receive a monthly financial allowance of €580. This allowance comes mainly from the French State (which pays €473.04) and is completed by the host organisation (which pays €107.58). The Civic Service is therefore attractive for small villages with few resources. Furthermore, although the provision of accommodation is not usually compulsory for the host organisation, InSite has chosen to integrate the housing component into the offer, by asking municipalities to provide accommodation to young

people. Most villages provide municipal housing in the village, which also facilitates the integration of young people into community life. At the end of their Civic Service, they also receive a certificate attesting to their participation in the programme, which is an important asset for professional insertion.

In the management of the Civic Service, available throughout France and for multiple missions, InSite acts as a real interface between rural stakeholders with projects and young people who wish to support these initiatives, develop their professional and interpersonal skills while experiencing daily life in a rural mountainous area. The association is responsible for the recruitment of young people and the administrative procedures - another benefit for small municipalities with limited resources and time. During the mission, InSite also participates in the communication about the project and continues afterwards to promote the actions carried out locally.

Innovative aspect

Rural Erasmus programmes are multiplying in Europe with the objective of enhancing the skills of young people and promoting the advantages of life in rural and mountain areas among the younger generation. The originality of the missions proposed by InSite lies in the smart use of the Civic Service scheme for the profit not only of municipalities with few resources but also of all young people, not only students, who want to get involved in these territories. The initiative can be transferred to any type of specific contract for youth existing in other countries.

"Stay in the countryside - it pays off": showing young people the opportunities in Polish mountainous regions

Many young people leave mountain regions because they see few opportunities on the labour market and have no prospects for the future. In four Polish mountainous regions, a campaign was conducted to inform young people about the opportunities offered by rural development funds for youth employment.

Mountain youth out-migration

MORE INFO

In some mountain areas, maintaining territorial attractiveness among young people is challenging the vitality of regions. Although some young people choose to stay in the mountains for their quality of life and proximity to nature for example, others decide to study or work in the city and never return.

In Poland, some mountainous regions are confronted to the rural migration of the youth. In region Podkarpackie for example, the share of inhabitants below 25 years old has fallen from 30% to 26% only between 2014 and 2018[1]. At the same time, Poland is among the European countries where mountain areas are ageing faster than non-mountain areas (together with Slovakia, Portugal, or Spain)[2].

Rural development opportunities as chances for the youth

To encourage young people to stay and live-in rural areas, the « Stay in the countryside - it pays off » campaign was carried out in 2018 in the four mountainous regions of Małopolskie, Świętokrzyskie and Podkarpackie and Lubelskie. The overall aim of the initiative was to showcase the employment and entrepreneurship opportunities offered by rural areas, promote the socio-economic inclusion of young people in these regions and explain the available financial support from rural development funds.

To this end, 4 training workshops were organised in the 4 project regions. These local training events targeted a total of 280 young people below 35 years-old and sought at encouraging their social and civic participation to rural life and their professional integration in these regions. Workshops were therefore designed as places to exchange ideas and inspiring good practices from across the country to illustrate the variety of possibilities in rural areas.

A key element of the workshop also consisted in informing young people about the priorities and funding opportunities offered by the 2014-2020 Common Agricultural Policy (CAP). Apart from CAP support to young farmers, participants were also introduced to the financial support that the CAP can

[1] European Atlas of Demography

[2] Joint Research Centre, The demographic landscape of EU territories: Challenges and opportunities in diversely ageing regions, 2021.

provide to young entrepreneurs in rural areas, through its Pillar 2 objectives. By raising awareness on these funds, the initiative can boost youth entrepreneurship in these mountain areas.

Resources and governance

The initiative was carried out in 2018 by the Czestochowa Association for the Development of Small Businesses in collaboration with the Entrepreneurship Foundation, based in Czestochowa. These organisations also received support and funding from the Polish national rural network.

With the objective of increasing the social diversity of rural areas through informing on opportunities for economic development using European funds, this project was implemented under the priority 6 of the 2014-2020 Polish Rural Development Programme "enhancing social inclusion, reducing poverty and promoting economic development in rural areas".

Innovative aspect

The tools and European funding deployed in rural and mountainous areas are often little known by local communities. More communication and information efforts are therefore needed in our territories to promote these opportunities. By promoting the multi-functionality of rural areas and explaining the available opportunities, the initiative reached out to a variety of young people who can benefit from rural development support and contribute to rural revitalisation through innovation and entrepreneurship. Such an initiative is easily transferable and should be encouraged under the 2021-2027 period.

EUROMONTANA

Euromontana is the European multisectoral association for co-operation and development of mountain territories. It embraces regional and national mountain organisations throughout greater Europe, including regional development agencies, local authorities, agriculture organisations, environmental agencies, forestry organisations and research institutes.

Euromontana's mission is to promote living mountains, integrated and sustainable development and quality of life in mountain areas. In order to achieve this, Euromontana facilitates the exchange of information and experience among these areas by organising seminars and major conferences, by conducting and collaborating in studies, by developing, managing and participating in European projects and by working with the European institutions on mountain issues.

www.euromontana.org

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