

# ALPINE GREEN ECONOMY: SCREENING OPPORTUNITIES AND CHALLENGES FOR THE ITALIAN ALPS

## REPORT 3

### IMPLEMENTATION OF THE GREEN ECONOMY IN THE ITALIAN ALPS: CASE STUDIES OF GOVERNANCE AND FINANCIAL INSTRUMENTS

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Report developed within the framework of activities of the Memorandum of Understanding between the Italian Ministry for the Environment and the Permanent Secretariat of the Alpine Convention for the “Co-operation on the implementation of the Protocols to the Alpine Convention in the territory of the Republic of Italy”



MINISTERO DELL'AMBIENTE  
E DELLA TUTELA DEL TERRITORIO E DEL MARE



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## 1. Introduction

The project “Alpine Green Economy: Screening Opportunities and Challenges for the Italian Alps” is developed within the framework of activities of the Memorandum of Understanding between the Italian Ministry for the Environment and the Permanent Secretariat of the Alpine Convention for the “Co-operation on the implementation of the Protocols to the Alpine Convention in the territory of the Republic of Italy”. The Permanent Secretariat of the Alpine Convention was established by a decision taken at the 7th Alpine Conference in Merano in November 2002. The Permanent Secretariat supports the bodies established by the Alpine Convention. It offers a professional, logistic, administrative help and assists the countries in carrying out the actions, required by the Convention and its Protocols.

The project aims to identify concrete steps for implementing the “Green economy Action Programme” in the Italian Alpine region, coherently to the 6<sup>th</sup> Report on the State of the Alps “Greening the Economy in the Alps” and the latest advice of the Alpine Green Economy Board. The projects goals are: to identify specific solutions and a suitable procedure in order to deliver significant improvements in the green economic performance of some economic sectors in the Italian Alps; to identify suitable procedures that may ease and support processes of innovation and ensure sustainability in the economic context of the Italian Alps; to define a strategy for the replication of the approach developed in other Alpine contexts. The Table below summarizes the project Deliverables and the related Reports in which each Deliverable is included.

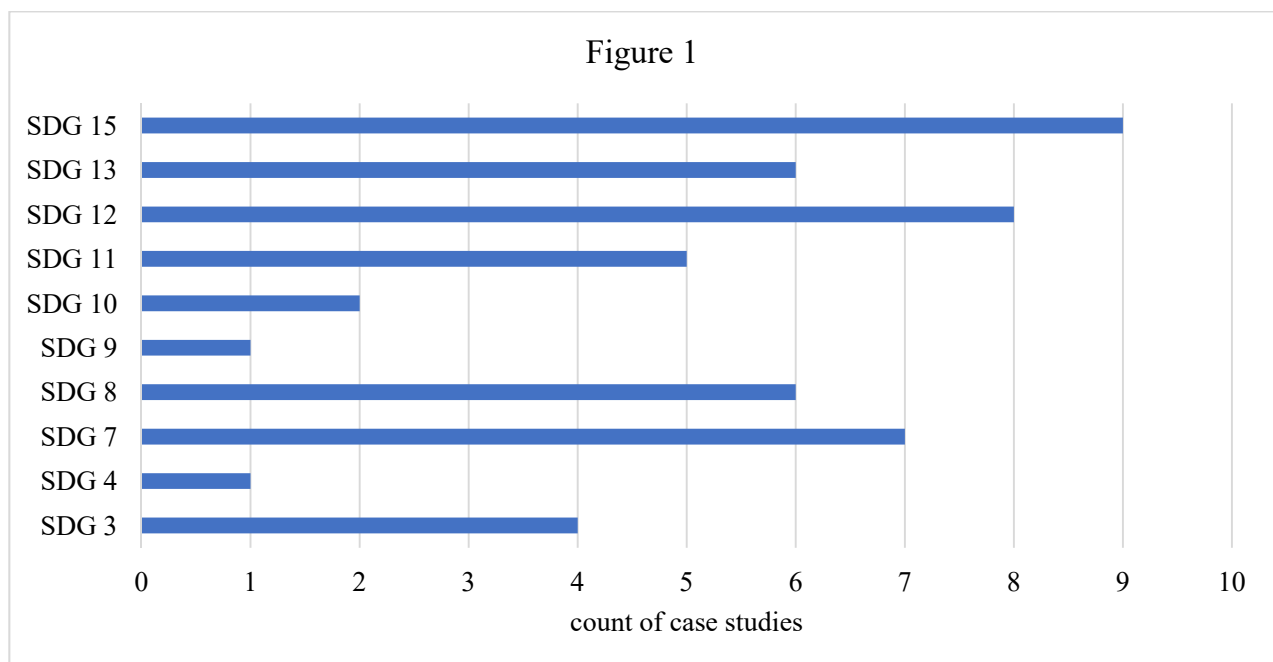
<b>Alpine Green Economy: Screening Opportunities and Challenges for the Italian Alps</b>	
<b>Deliverables</b>	<b>Final Reports</b>
Deliverable 1.1 “Policy frameworks for the Green Economy in mountain regions” Deliverable 1.2 “Multi-criteria analysis of key green economic sectors in the Italian Alps”	Report 1 “The green economy in the Italian Alps: key economic sectors and their potential development”
Deliverable 2.1 “Analysis of the key case-study regions for the Alpine green economy”	Report 2 “The green economy in the Italian Alps: framework for regional evaluation and implementation”
Deliverable 3.1 “Identification of regional projects in the key sectors and regions” Deliverable 3.2 “Innovative governance: cases of successful implementation, scalability and replicability” Deliverable 3.3 “Innovative financial instruments: cases of successful implementation, scalability and replicability”	Report 3 “Implementation of the Green Economy in the Italian Alps: case studies of governance and financial instruments”

## 2. Methodology

The identification of the regional projects in the key sectors and regions is based on two main sources. An online survey and the screening of the documents of the Alpine Convention, in particular of the sixth Report on the State of the Alps (PSAC, 2017), focusing on the Green Economy development in the Alps. The survey, developed for the evaluation of the relative potential of the alpine economic sectors for the development of the Green Economy in the alpine region (see Report One) has been distributed to a set of stakeholders and experts covering the following different working fields: European, National, Regional and Local institutions; NGOs; Parks; Academia; Labor Unions; Media and Culture; Alpine Convention Contact Points. A total of 114 respondents were contacted, and 21 surveys were completed and analyzed for the study. The respondents were asked to indicate and provide online material about the good practices for the development of the Green Economy in the Alps.

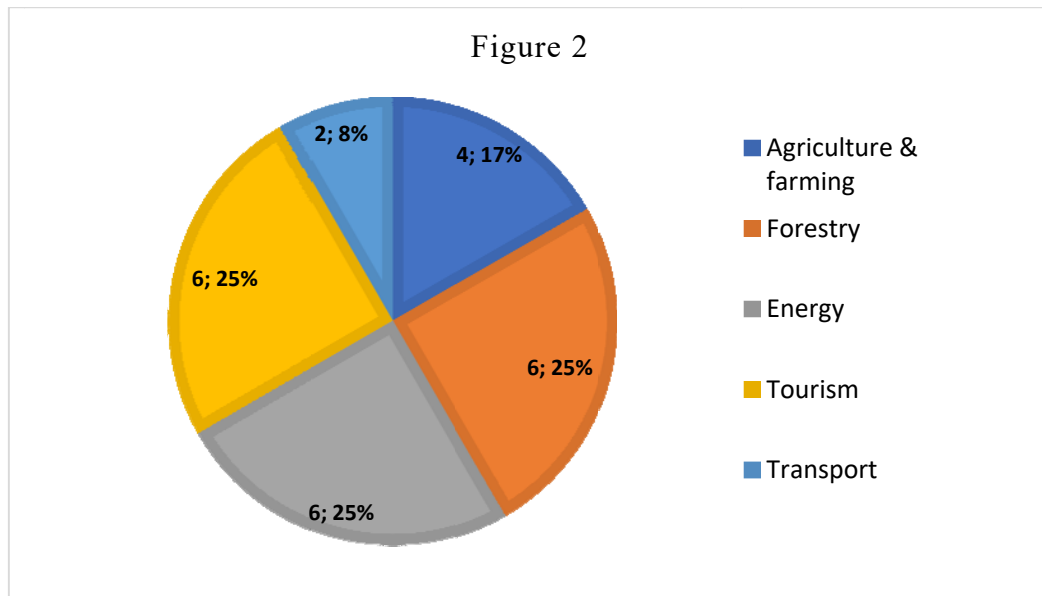
The good practices identified by the online respondents and by the sixth Report on the State of the Alps are analyzed by a description of the following relevant aspects: Alpine Green Economy sectors and criteria (see Report One and Two), as well as of the SDGs, which are related with the activities of the project; Spatial and temporal dimension; Environmental, social and economic impacts; Governance model; Financial model; Replicability and scalability.

Figure 1 shows the number of times the projects selected are considered relevant for each SDG.



The SDGs which are affected by the highest number of projects are Goal 15 “Life on Land” (9 cases) and Goal 12 “Responsible Consumption and Production” (8 cases). Other relevant SDGs are Goal 7 “Affordable and clean energy”, Goal 13 “Climate Action” and Goal 8 “Decent work and economic growth”.

Figure 2 shows the sectors related to the case studies identified. Most of the sectors are well represented by the selection, with an equal count (6) as for the Tourism, Energy and Forestry sectors. Fewer cases are related to the Agriculture and farming (4) and Transport (2) sectors.



### 3. Case studies

#### Case 1: LNG Valtellina Sustainable Logistics

##### The case

The LNG Valtellina Sustainable Logistics project was conceived by the Maganetti Group, logistic leader in the Province of Sondrio, in collaboration with Levissima (San Pellegrino Spa group). The initiative was created with the aim of promoting a sustainable freight transport service based on the use of liquefied natural gas as fuel as an alternative to diesel and petrol. The project aims to make the province of Sondrio an example of environmentally and economically sustainable logistics chain, demonstrating the possibility of developing a low-impact local economy. The LNG Valtellina fleet is powered exclusively by liquefied natural gas. The pollution related to vehicles use is much lower than that of a new-generation diesel vehicle (Maganetti, 2019).

The project activities are related to the following Alpine Green Economy sectors and sub-sectors (as defined in Report One).

Sector	Sub-sectors
<b>Energy</b>	Biomass and waste
<b>Transport</b>	Transport infrastructure management
	Freight transport

The project is related to the following dimensions and criteria of the Alpine Green Economy (as defined in Report Two):

Dimension	Criteria
<b>Economic</b>	Long term economic sustainability/stable contribution to economic development
	Competitiveness of local economic area
<b>Social</b>	Contribution to human health and well-being
<b>Environmental</b>	GHG mitigation
	Reduction of air pollutants emissions
	Resource efficiency use and circularity

The project contributes to the development of the following SDGs in the Alps:



##### Spatial and temporal dimension

The project's activities are carried out in the provinces of Sondrio, Como and Lecco. The LNG Valtellina Sustainable Logistics has created an infrastructure of charging stations currently located in Gera Lario and Tirano. The project started on April 2016 and is currently ongoing.

## Environmental, social and economic impacts

As of October 2019, the LNG Valtellina Sustainable Logistics project involved the use of 48 LNG vehicles, corresponding to more than 10 million km and 3 million kg liquid methane and 44 thousand kg of methane gas (Maganetti, 2019).

### *Environmental*

- In total, 2,000 tons of liquefied methane are produced each year, more than 100% of the fleet requirements of the LNG project Valtellina Sustainable Logistics, for a distance of 7 million km. Saved emissions amount to: CO<sub>2</sub> savings of 1.279.007 kg (-15%); Nox savings of 12.893 kg (-70%); Pm savings of 5.982 kg (-99%).
- The tractors pull ultralight semi-trailers that allow a greater load and, therefore, fewer vehicles on the road for the same volumes transported.
- The vehicles are fitted with Michelin tires which, following a special maintenance and reconstruction program, allow to save over 20 tons of tires in five years.
- For each vehicle acquired, 40 new trees are planted in the main municipalities of Valtellina. It is estimated that this will eliminate the environmental impact in terms of CO<sub>2</sub> which could not be reduced from the switch to the new methane vehicles.

**Social:** The LNG Valtellina filling station can be considered as a place contributing to the enhancement of the Green Economy in the Alps. The Gera Lario service station is a green hub for commercial vehicles, is the first natural gas station and is the first to be self-service 24h/24.

## Governance model

The project's management is carried out by Maganetti Group, which was founded and has been operating for decades in Valtellina and is to date the largest logistics operator in this area.

Several collaborations and partnerships have been established with Associations, Institutions and client companies. For instance, Maganetti and the agro-zootechnical Cooperative Speranza have signed a supply chain agreement for the production of liquid biomethane coming from animal manure and agricultural production residues, thanks also to the activity carried out by the CIB-Italian Biogas Consortium. In order to guarantee the scalability of the model, the structuring of the partnership network involving public and private subjects was one key element of the success of the project. The first 12 vehicles of the pilot phase were provided by Levissima, that inaugurated the project. At the end of 2017 the percentage of trucks fuelled by LNG is equal to one fourth of the entire fleet of the Group with 36 vehicles (San Pellegrino, 2019).

## Financial model

The global investment of the LNG Valtellina Sustainable Logistics project has so far been totally private, in the order of 4 million euros. The project generates the possibility of achieving economic savings, given the lower cost of liquefied natural gas compared to diesel or gasoline, compensating for the investment costs related to technological adaptation.

## Replicability and scalability

The potentials for replicability and scalability are high, due to the need for a transition to cleaner freight transport models both in the Alps and in Italy in general. The development of new infrastructure is in particular one of the key elements that can foster this aspect of the Green Economy.

## Case 2: Dolomiti Bellunesi National Park Fossil Free

### The case

The “Fossil Free” project of the Dolomiti Bellunesi National Park fosters the adoption of different clean technologies in order to make the various Park’s structures energy and resource autonomous.

Thanks to the "Fossil free" project the Park's infrastructures (shelters, bivouacs, huts, visitor centers, information points) have been equipped with energy supply systems that use: biomass (wood chips, pellets, firewood as is); vegetable gas oil (biodiesel) for heating, micro-cogeneration and alternative supply of diesel engines; solar thermal and photovoltaic energy; micro-hydroelectric energy. As of October 2019, a total of 11 photovoltaic plants, 4 biomass boilers, 2 solar thermal plants, 5 generators, 1 microhydroelectric plant were installed (Ente Parco Nazionale delle Dolomiti Bellunesi, 2019).

The project activities are related to the following Alpine Green Economy sectors and sub-sectors (see Report One).

Sector	Sub-sectors
<b>Forestry</b>	Managed forest: other activities
<b>Tourism</b>	Leisure activities
<b>Energy</b>	Biomass and waste
	Hydropower retrofitting and refurbishment
	Solar

The project is related to the following dimensions and criteria of the Alpine Green Economy (see Report Two):

Dimension	Criteria
<b>Economic</b>	Long term economic sustainability/stable contribution to economic development
<b>Social</b>	Contribution to human health and well-being
	Contribution to education level/schooling/ technical capacity
<b>Environmental</b>	GHG mitigation
	Reduction of air pollutants emissions
	Resource efficiency use and circularity
	Contribution to local resilience
	Supply of ecosystem services

The project contributes to the development of the following SDGs in the Alps:



### Spatial and temporal dimension

The Dolomiti Bellunesi National Park is a national park in the province of Belluno, Veneto. Dolomiti Bellunesi National Park has an area of 32 square kilometres (12 sq mi), between the Cison river and the Piave river, the Maè valley and the Agordo valley. The National Park includes 15 municipalities: Belluno, Cesiomaggiore, Feltre, Gosaldo, La Valle Agordina,



Longarone, Pedavena, Ponte nelle Alpi, Rivamonte, San Gregorio nelle Alpi, Santa Giustina, Sedico, Sospirolo, Sovramonte, and Val di Zoldo.

The “Fossil-free” project begun in the two-year period 1997-1998 and is currently ongoing.

### **Environmental, social and economic impacts**

The costs of the installations of the amount in total to 468.000 euro: Electrical production plants for a total amount of 150,000 euros; Dairies and heating or electricity production plants using the biodiesel and biomass generator techniques, for a total amount of 70,000 euros; Experimental plant with the micro-cogeneration technique for the production of energy, hot water and steam for an amount of 48,000 euros; Micro-idroelectric power stations for a total amount of 200,000 euros. The economic benefits from the installation derive from different sources: from the reduction in fuel and resource use and, secondly, from the additional the number of visits that derived from the complementary tourist activities conducted within the project. The potential for replacing fossil energy in a protected natural area as little as the Park is limited from a quantitative point of view. A relevant complementary programme promoted within the project was an incentive plan for the "solarisation" of the homes of families residing within the Park perimeter, through the use of biomass gasification boilers, solar thermal collectors, grid-connected photovoltaic roofs. The "solarisation" plan managed to eliminate the environmental impact and noise of conventional electric generators, whose use is particularly detrimental in areas of high ecological sensitivity. The project's communicative and pedagogical impact is high, as it allows visitors and hikers, both tourists and residents, as well as school classes, to visit the Park and experience concrete examples of the use of renewable energy sources. The activities carried involved the demonstration and promotional applications of solar thermal and photovoltaic energy and of forest biomass heating at low altitude, in particular in the areas of interface with tourist and visitor flows in visitor centers, guesthouses and hostels, museums, forest stations, the headquarters of the Park Authority itself. Furthermore, thanks to the substantial improvement of the living and working conditions in the mountain huts (“malghe”), the project contributed to reverse the process of abandoning of these repositories of precious historical-anthropological values.

### **Governance model**

The Dolomiti Bellunesi National Park has been in charge of the management of the program. The implementation phase of the project has also involved other public bodies such as the former State Company for state-owned forests, the Municipality of Pedavena (for the Casere dei Boschi pasture and the school citadel), the Municipality of Forno di Zoldo (for the Pramper pasture), the Municipality of Longarone (for the Pian de Fontana refuge), the Municipality of Belluno and the Agordina mountain community (for the visitor centers of the provincial capital and Valle Imperina). The Cai (Italian Alpine Club) also actively collaborated in the solarization of the park's shelters.

### **Financial model**

Different funding sources have contributed to the project. The funds of the Park Authority were coupled with funds from the Ministry of the Environment and Protection of the Territory and the Sea and with European funds. The European funds were linked to the Funding Programme Altener (Alternative Energies) and to the European Regional Development Fund. In total, the costs of the project amounted to 660 thousand euro (Ente Parco Nazionale delle Dolomiti Bellunesi, 2019).

### **Replicability and scalability**

The degree of transferability of the experience is high, as demonstrated by the fact that the

Ministry of Economic Development has financed, in recent years, a project to export this experience to the Pollino National Park, as part of an action act POR. Furthermore, the Adamello Brenta Nature Park in Trentino has started a “Fossil free park” project, demonstrating the ease with which the idea can be exported and applied to other realities.

### Case 3: VAIA storm “Action Plan” of the province of Trento

#### The case

Between 28th and 30rd October 2018 large areas of the eastern Alps were affected by winds that exceeded 200 km/h and caused damages to the forests in Lombardy, Veneto, Trentino-Alto Adige and Friuli Venezia-Giulia. The event, called by the meteorologists "storm Vaia", has caused the abatement of 6-8 million cubic meters of timber and is certainly the most important wind disturbance occurred recently in Italy (Motta et al., 2018). The case examined is the "Action plan for the management of the extraction operations and reconstitution of the woods damaged by bad weather at the end of October 2018" prepared by the Forestry and Wildlife Service and by the provincial government of Trento. Object of the Plan were both the short-term interventions implemented in the emergency phase and the long-term interventions expected in the coming years. The stated objective of the Plan is to protect the Trentino forest-wood supply chain, through a coordinated approach and a system capable of protecting and recovering the Trentino woodland.

The project activities are related to the following Alpine Green Economy sectors and sub-sectors (see Report One).

Sector	Sub-sectors
<b>Forestry</b>	Managed forest: other activities
<b>Tourism</b>	Leisure activities
<b>Energy</b>	Biomass and waste
	Hydropower retrofitting and refurbishment
	Solar

The project is related to the following dimensions and criteria of the Alpine Green Economy (see Report Two):

Dimension	Criteria
<b>Economic</b>	Long term economic sustainability/stable contribution to economic development
<b>Social</b>	Contribution to human health and well-being
	Contribution to education level/schooling/ technical capacity
<b>Environmental</b>	GHG mitigation
	Reduction of air pollutants emissions
	Resource efficiency use and circularity
	Contribution to local resilience
	Supply of ecosystem services

The project contributes to the development of the following SDGs in the Alps:



## Spatial and temporal dimension

The interventions provided for in the Plan will have a schedule of over 2 years, but for their realization was evaluated to take 3 to 4 years, with the exception of reforestation which will necessarily last longer. During the first year the main priority and the greatest commitment will concern the forest infrastructure sector (restoration and adaptation of the road system, construction of new roads under conditions of adequate security). The next year will be dedicated to strengthening the reconstitution of the woods and to the preparation of field activities, which will begin in 2020.

## Environmental, social and economic impacts

The cutting and recovery of the timber has been a key area managed by the “Action Plan”. The best quality timber, coming from crash zones more immediately accessible, was offered for sale in these first months, while the removal of timber from the most difficult and steep areas has been planned after these mountain sides have been successfully targeted by the security programs. Considering that the amount of lumber that needs to be removed exceeds the storage capacity, the Action Plan identifies a number of areas for medium and long period storage, foreseeing for this intervention a cost of about 2 million euros. The choice is relevant also because delaying the market entry of large amount of timber contains the sharp reduction in the price deriving from the initial over-supply, and simultaneously preserves the quality of the timber.

Reforestation must be scheduled according to ecological characteristics, to the intensity, typology, and amplitude of the damage, to the forest type, and to the potential presence of risk factors. Quantitative and qualitative analysis of the areas affected allowed to identify the interventions priorities starting from: reconstitution of the forests that perform a function of direct protection against rockfall, landslides and avalanches; management of river auctions; management of mountain basins. The affected hydrographic network, covering an area of about 800 hectares, will be restored by a set of intervention that take place on the basis of technical plan developed in cooperation with the Mountain Basin Service (Servizio Bacini). From the first phases of clearing the crashed material it is also necessary to take into account the bio-ecological functionality of the forest. Phytosanitary monitoring will be a key process to verify the trend of bark beetle populations (Provincia di Trento, 2019).

The interventions were programmed giving priority to the actions essential for guaranteeing the safety of the slopes in relation to the natural hazards such as detachment of avalanches, falling rocks and landslides. As the storm had heavily damaged a substantial part of the paths which constitute the network of Alpine tracks: partially or totally interrupted paths are around 370 for a total of 2150 kilometers. For their restoration a special work group was set up attended by the Province and all interested parties: a Pro Loco campaign was dedicated to inform tourists and hikers about the works of restoration, on unusable paths and on how to move safely in the woods (Provincia di Trento, 2019).

## Governance model

The “Action Plan” identifies in the municipalities the administrative level for implementation of

the Plan, as these are characterized by greater territorial homogeneity compared to individual properties. As for the private sector, many of the small local companies have worked in partnership with large foreign companies, mostly Austrian and German, equipped with skilled workers and specialized mechanical equipment. Free of charge special training courses were organized for the operators of forest facilities.

### Financial model

The “Action Plan” expected costs amount to roughly 21 million euro: restoration of road conditions for 11.6 million; new viability and infrastructure for 7.2 million; timber storage for 1.8 million, plant protection programs for 300.000 euro. These amount to less than 10% of the total estimated damage to public, private assets and economic activities, as well as for restoration and security management of the territory related to the emergency, which amount approximately to 300 million euros (Provincia di Trento, 2019). In order to compensate for such economic losses and to fund the interventions come from different sources: the Province has requested the activation of the EU Solidarity Fund, while the National Government has compensated the Province of Trento with 220 million euros.

### Replicability and scalability

The cooperation with the neighbouring areas affected by the storm and the identification of the best practices to be adopted both in the short-term and in the long-term by other Provinces can be considered a key element for the successful recover from the storm.

## Case 4: TERRA VIVA

### The case

The TERRAVIVA project investigates the environmental benefits deriving from the restoration of terraced landscapes and promotes a programme of monitoring based upon ex-ante (abandonment) and ex-post (cultivation phase) evaluation. The project is aimed at the environmental and economic recovery of the traditional terracing activities in Viganella, Valle Antrona and has carried out the restoration of a part of the terraced system of the territory through the involvement of the local community and stakeholders. The aim was to contrast the multiple risk factors that the current dynamic of abandonment is generating loss of environments and biodiversity; loss of local agronomic varieties; hydrogeological instability; increased risk of fires and tree crashes; loss of the identity link of local communities with the traditional rural landscape (SIMRA, 2018).

The project activities are related to the following Alpine Green Economy sectors and sub-sectors (see Report One).

Sector	Sub-sectors
Agriculture & farming	Agriculture
Forestry	Other activities
Tourism	Cultural activities

The project is related to the following dimensions and criteria of the Alpine Green Economy (see Report Two):

Dimension	Criteria
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<b>Economic</b>	Long term economic sustainability/stable contribution to economic development
	Competitiveness of local economic area
<b>Social</b>	Contribute to local culture identity
	Contribution to human health and well-being
	Social innovation
<b>Environmental</b>	Land and soil conservation
	Biodiversity conservation
	Supply of ecosystem services

The project contributes to the development of the following SDGs in the Alps:



### Spatial and temporal dimension

The project is located on the area of the Municipality of Borgomezzavalle (Viganella), an Italian town of 317 inhabitants in the province of Verbano-Cusio-Ossola in Piemonte. The area covers approximately 0.645 hectares and since 2009 has been part of the Alta Valle Antrona Park managed by the Ossola Protected Areas (APO).

### Environmental, social and economic impacts

**Economic:** the key economic impact is related to the start-up of a short supply chain process for the marketing of products made by local micro firms. The supply chain is composed by buying groups, agricultural markets, sales and refreshment points and gastronomic events. Furthermore, TERRAVIVA has tackled the widespread problem of the fragmentation of properties. The long-term sustainability of the area is a very relevant aspect in an area, the Municipality of Borgomezzavalle, from which landowners have emigrated. The area was once cultivated by the local population but that has been neglected since the early 1960s. Today, as many landowners have emigrated from the valley, the terraced slopes remain abandoned, and, in many cases, people are not aware of the localization of their properties.

**Environmental:** The project fostered a complex system of transformation of steep slopes for the creation of cultivable areas through the conservation of the soil resource, the use and management of water resources. The current process of abandonment leads the forest to quickly recover terraced crops, trivializing the landscape and putting the species linked to open terraced environments into serious crisis, up to compromising the biodiversity of these slopes. The dry-stone terraced systems guarantee multiple functions: availability of cultivable plots in otherwise unusable slopes; protection of soil from erosion (containment of the soil avoiding downstream slides and landslides); water balance regulation; increase in biodiversity; recover ancient agronomic varieties and related practices; reduce the risk of fire and tree crash. The activities also focused on monitoring the evolution of the naturalistic potential of the area to develop and spread a system of good practices that combines the needs of biodiversity protection with agronomic ones.

**Social:** The terraces were a fundamental structural, productive, landscape and identity element in

the Ossola area. These systems include a complex set of traditional technique resulting from constructive, hydraulic and agricultural knowledge applied in perfect understanding of the hydrogeological and climatic characteristics, capable of appropriately utilizing environmental resources and preventing risks. It is worth emphasizing also the identity and aesthetics that characterizes the territories in which these infrastructures insist: the recovery of the cultural identity linked to the terraces was a key element for the preservation of the "cultural landscape". The project also involved the creation of an experimental didactic laboratory in the scholastic institutes of the Antrona Valley, through the setting up of an area for agronomic experiments aimed at improving environmental effects and conducting field educational activities on recovery, cultivation and biodiversity assessment works.

### **Governance model**

TERRAVIVA is a not-for-profit association of landowners. The partnership with local public authorities was a key element of the strategy aimed at bringing together small, abandoned and fragmented properties and make them available for farmers and other stakeholders. Civil society is engaged directly by taking good care of the territory, fostering a collective approach which relies on recognition of mutual rights and duties. The governance model has been developed based on a participatory approach using public-private partnerships. In this way, citizens and landowners could feel that the local authorities were engaged in the initiative rather than being external observers or promoters. This has led to a widely perceived legitimacy of the process.

### **Financial model**

The TERRAVIVA association makes the land available at no cost to farmers in need of arable land. It transfers lots of land to local farmers, who are not requested to pay rent. Instead, they are required to comply with principles of agroecology and, by cultivating neglected land, help restore biodiversity and the landscape whilst restoring the value of fragmented properties. The first lots of land have been transferred to two local farmers via a public call for access to land. The method of recovery and cultural valorisation have proved capable of generating profitability, while improving the environmental potential of the area.

### **Replicability and scalability**

The Association has extended beyond the Municipality of Borgomezzavalle and involved other landowners throughout the valley. The experience launched by TERRAVIVA is attracting the interest of a growing number of residents and public officers and administrators. The partners are pursuing the development of the initiative, especially in the topics of social farming and sustainable tourism/agritourism.

## **Case 5: CasaClima Agency of Bolzano**

### **The case**

The CasaClima Agency is an instrumental body of the Autonomous Province of Bolzano. It was founded to carry out the mandatory energy certification of buildings in South Tyrol. Taking into account the remaining national territory, where CasaClima is used as a voluntary quality protocol has delivered more than 9000 nameplates. The Agency offers a wide training offer for all the actors in the building sector. Organizes and promotes multiple initiatives to raise awareness of citizens in the fields of energy efficiency, sustainability, construction quality and climate

protection (Casa Clima, 2019).

The project activities are related to the following Alpine Green Economy sectors and sub-sectors (see Report One).

Sector	Sub-sectors
Energy	Solar/Wind
	Energy efficiency
Tourism	Accommodation services

The project is related to the following dimensions and criteria of the Alpine Green Economy (see Report Two):

Dimension	Criteria
Economic	Workforce
Economic	Value added
Social	Contribution to human health and well-being
	Contribution to education level/schooling/ technical capacity
Environmental	GHG mitigation
	Reduction of air pollutants emissions
	Resource efficiency use and circularity

The project contributes to the development of the following SDGs in the Alps:



## Spatial and temporal dimension

The Agency, active since 2002, offers on-site energy audits to homeowners and apartments, financed by the Province of Bolzano. The Agency is also responsible for ComuneClima and KlimaFactory programs. The ComuneClima program was created in 2015 and its goal is to increase energy efficiency and reduce gas emissions greenhouse in the South Tyrolean municipalities. The KlimaFactory program, instead, was launched in spring 2017 and aims to intervene on the energy saving potential of companies.

## Environmental, social and economic impacts

Environmental: as for the energy certificate, the main requirements concern: the efficiency of the building envelop; the overall efficiency, which expresses the global assessment of the quality of the building and the plant choices, expressed in primary energy requirements and CO2 emissions; the environmental sustainability, expressed through respect for the CasaClima Nature protocol. The CasaClima Nature protocol has been developed to complement the CasaClima certification and is aimed at reducing resource use, limiting the environmental impact and ensuring the well-being of people. Criteria such as waste management, the use of efficient lamps and appliances, the use of local products, sustainable mobility and logistics, monitoring of resource consumption or measures to increase quality of life are assessed. Based on the CasaClima Nature protocol, the Agency has developed an entire family of quality seals, which take into account the specificities

and needs of different areas of application. Sustainability protocols have been developed with the aim of creating a system of specific indicators for some types of non-residential destination structures such as hotel and accommodation facilities, wine cellars, schools and office buildings. The structure of the different protocols is similar and requires a complete verification of the evaluation criteria starting from the design phase to the implementation phase up to the management phase.

**Economic:** A particularly relevant set of economic impacts is related to the sectoral programs developed by CasaClima: ClimaHotel and CasaClima Welcome programs provide hoteliers and accommodation owners with practical guidelines to guide the design and management of these facilities in a sustainable manner. The CasaClima Work & Life quality seal is a sustainability certification developed for the specific needs of the service sector. The certification verifies and evaluates sustainability criteria both in relation to energy efficiency and the intelligent use of resources. CasaClima School is aimed at newly built or renovated school buildings, compatible with an idea of sustainability in which both ecological and social and economic aspects are considered. CasaClima Wine is a quality certification developed to promote sustainable wine cellars. Alongside the energy efficiency and sustainability requirements of the building, particular attention is paid to a production process with low environmental impact and able to limit the use of resources. The CasaClima Wine certified wineries use, among other aspects considered, recyclable and light packaging and are attentive to sustainable waste management.

### **Governance model**

The CasaClima Agency, as a third party is not involved in the design and construction of the property, and protects the interests of those who rent or buy a home. To enhance the property, at the end of a certification process based on project office controls, on-site inspections and verification of the final documentation, in addition to the CasaClima certificate, the ClimateHouse plate is also delivered as a symbol of construction quality. The energy certificate is a document issued only by the Agency CasaClima or its Partner Agencies. It provides clear and transparent information on the energy and ecological behavior of the building.

### **Financial model**

The on-site energy audits to households apartments offered by the Agency are financed by the Province of Bolzano. The fee for issuing the certificate to be paid to the Agency is € 870.00 + € 0.87 / m<sup>2</sup> over 500 m<sup>2</sup> net floor area (VAT included). The Province provides financial incentives covering from 30% to 70% of the costs, depending on the stringency of the CasaClima standard reached. Furthermore, the builders can take advantage of the energy bonus, through which additional building volume is granted for new buildings if these are built according to the more restrictive energy standard (CasaClima A Nature).

### **Replicability and scalability**

The technical capacity developed by the Agency makes replicability of the model a relatively complex process. The potentials of scalability are high as underscored by the recent creation of new sectoral specific forms of certification.



## Case 6: MilkyWay: eco-innovative milk

### The case

The project aims at promoting a new environmentally friendly breakthrough solution contributing to the reduction of the environmental impact deriving from one of the most polluting industries, dairy production. The new solution is based on real-time classification of milk (without any type of manipulation). This project is based on a technology patented by the company Afimilk and allows to recognize the milk's quality and to separate the milk itself on the basis of the curdling attitude or other parameters decided by end-users. The system allows to separate the milk with higher presence of components needed for the transformation in cheese granting the same quantity of cheese using less quantity of milk; moreover, in the remaining part of milk, having less proteins and fats can be used as milk for direct consumption (Eco-Innovation, 2018).

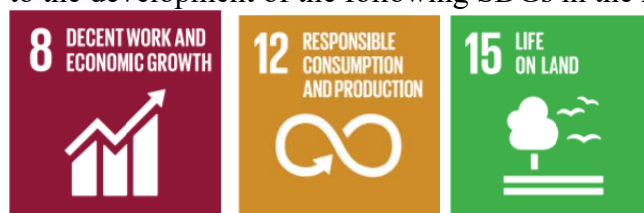
The project activities are related to the following Alpine Green Economy sectors and sub-sectors (see Report One).

Sector	Sub-sectors
Agriculture & farming	Livestock farming

The project is related to the following dimensions and criteria of the Alpine Green Economy (see Report Two):

Dimension	Criteria
Economic	Value added
	Competitiveness of local economic area
Social	Contribution to education level/schooling/ technical capacity
	Land and soil conservation
Environmental	Resource efficiency use and circularity
	Supply of ecosystem services

The project contributes to the development of the following SDGs in the Alps:



### Spatial and temporal dimension

The project begun in 2016 and is currently ongoing. The area in which this technology has been introduced is the Province of Brescia (Gambara), in the Central Alps, where the systems have been installed. In particular, milk producers are located in the Valle Camonica. The Valle Camonica includes the Park of Alto Sebino, the Park of Lake Moro, the Nature Reserve of the Sant'Antonio valleys and the Natural Reserve of the Rock Engravings of Ceto, Cimbergo and Paspardo. MILA Producers cooperative with milk transformation systems are instead located in the Province of Bolzano.

### Environmental, social and economic impacts

**Economic:** The expected economic benefits are the reduction of milk processed in farms, thus the same production rate with fewer resources employed and reduction in the costs of maintenance and cleaning, water and energy consumption, manure disposal/recycling. The optimized milk supply chain will provide a higher value to milk processors and premium prices to farmers. More in detail, the main economic advantages derive from the efficiency in the use of the resources, and in particular from: the reduced amount of milk employed in the dairy production process; the production of high quality and high value cheese with enhanced nutrient properties; the improvement of dairy production and yields (up to 15%), generating important savings in operational costs for dairy farming than are generating cascade benefits along the entire milk supply chain, in particular from the higher value products used by to milk processors and by the premium prices paid to farmers.

**Environmental:** the expected environmental benefits are (Eco-Innovation, 2018): a reduction in the emissions compared to the business-as-usual production processes of 9,3% as for GHG and of 11,5% as for methane emissions. Furthermore, a reduction in the manure production of -10% reducing the pressure on disposal and recycling. As for the resource savings, expected reduction in energy consumption amount to 10,5% while in water consumption to 11,2%, compared to business-as-usual.

### **Governance model**

The project is managed by a consortium composed of 7 partners covering the whole production chain related to the milk transformation, from the producer to the dairy factory. A farming company (Della Bona) has made available his property for the pilot installation of the system and for checking the results related to the feeding. CISSVA Producers, a cooperative, oversees the milk transformation system conducted in two associated farm companies. Afimilk is the producer of the electronic system for milking, providing technology and technical assistance.

### **Financial model**

The project has been financed by the European Union for a total of 800.000 euro over an overall budget of 1.673.905 euro. The remaining sum has been covered by co-financing (private or partners' funds).

### **Replicability and scalability**

The commercialization of this system concerns the european market, through strategic partnerships with technicians and maintenance workers which are already on the market. In particular, the countries in which an agreement with local staff has already been defined are: Italy, Bulgaria, Denmark, Greece, Macedonia, Czech Republic, Romania, Hungary.

## **Case 7: Economy for the Common Good in Val Venosta**

### **The case**

The Common Good Region Val Venosta started at the beginning of 2013 with the aim to contribute to a more sustainable shape of regional economic cycles. Four municipalities of the district community Val Venosta (Lasa, Malles, Laces and Silandro) established their first

common good balance sheet within the ‘Economy for the Common Good’ initiative. This is accompanied by two additional projects: the planned introduction of a regional currency to strengthen regional economic cycles and the development of a prosperity indicator for the Val Venosta region. The latter measures the well-being in the valley according to a set of innovative criteria. A number of regional companies have established the common good balance sheet and the concept has become popular also among business, municipalities, citizens and schools.

The project activities are not related to any Alpine Green Economy sectors and sub-sectors as they have a cross sectional impact. The project is related to the following dimensions and criteria of the Alpine Green Economy (see Report Two):

Dimension	Criteria
Economic	Workforce
	Value added
	Long term economic sustainability/stable contribution to economic development
	Competitiveness of local economic area
Social	Contribute to local culture identity
	Social innovations

The project contributes to the development of the following SDGs in the Alps:



### Spatial and temporal dimension

The South Tyrolean municipalities of Laas, Mals, Latsch and Schlanders together formed the “*Gemeinwohrlregion Vinschgau* or “Vinschgau region of the common good”, in January 2014. Furthermore, in December 2014 the South Tyrol *Landtag*, the regional assembly, adopted a set of measures to further anchor the ‘common good’ principles in the region. In 2013 in Val Venosta about 10 companies in different sectors that has implemented the budget of the common good, while in South Tyrol around 35 companies adopted the concept.

### Environmental, social and economic impacts

The economic, social and environmental impacts are wide ranging and vary greatly depending on the specific measures to be adopted and by the actors adopting them. Therefore, a direct quantification of the impacts is not possible. Nevertheless, the broad set of advantages is the following: reinforcement of local and regional circuits and peripheral regions; mutual solidarity and dialogue on the values between the community of citizens and the companies; creation of local provisions in the theme of education and creation of awareness; new definition of success and measurement of collective satisfaction; network with other regions and municipalities. The adoption of a regional currency, which has value only in Val Venosta strengthens the relationship between the producer and the consumer. The aim is to strengthen the circuits of regional consumption, the preservation of high-value areas, the increase in the quality of life in the surrounding areas.

## **Governance model**

The governance model adopted involves the cooperation of a wide set of different actors: municipalities and companies (artisans, farmers, hoteliers, traders and industrialists) carry out the balance sheet of the “common good”. The model is based on the cooperation across value-chains, on the strengthening of regional circuits and on the enhancement of the dialogue.

The indicator of municipal well-being was developed by the municipalities in collaboration with the EURAC. The dialogue with the citizens has been constant throughout the project, so that these issues could spread to other areas where the concept of the common good could be adopted.

In a second step the plan envisaged to network with other regions of the common good in the Alpine areas. The common good budget has been realized by a team within each municipality.

Within a

process with moderator the indicators were illustrated in detail and then processed in each municipality. For detailed information on each respective criterion, see Terra Institute (2013; 2014).

## **Financial model**

The municipalities relied on their own funds to promote the activities of the “common good” budget. A very innovative financial model was developed with the creation of the regional currency for the Val Venosta. The currency was a complementary payment method based on the euro and in the form of a voucher. The adoption of the vouchers was supported by a cooperative of companies in the Val Venosta.

## **Replicability and scalability**

Albeit being an ambitious program, the development of indicators and a local currency based on the “common good” is a set of measures on the agenda in other parts of the Alpine area. A national association to promote the economics of the common good was founded in Switzerland in 2014. The municipality of Übelbach in Styria, Austria, unanimously decided to draw up a balance of the common good, with other Styrian municipalities showing interest in the model. Salzburg too has ambitions to become a region dedicated to this aim.

## **Case 8: Public Transport System in Paneveggio Pale di San Martino Nature Park**

### **The case**

The project is related to the creation of a shuttle network starting from villages and visitor centers to the Paneveggio Pale di San Martino Park. A set of parking places located in the periphery of the Park’s areas have been coupled to the shuttle network. The system is based on three different itineraries, activated in summer, fully integrated with local public transport network. The costs for the activation of the network are fully covered by the revenues from parking places.

Starting from 2014, the system is integrated by the offer of traditional and e-bike renting at the park visitor centres. The Park realized three bike renting point (12 e-MTB and 8 traditional MTB) and give the opportunity to visitors pick up bikes for a half or a whole day (PSAC, 2017).

The project activities are related to the following Alpine Green Economy sectors and sub-sectors (as defined in Report One).

Sector	Sub-sectors
<b>Transport</b>	Transport infrastructure management
<b>Tourism</b>	Sport activities
	Leisure activities

The project is related to the following dimensions and criteria of the Alpine Green Economy (as defined in Report Two):

Dimension	Criteria
<b>Social</b>	Contribution to human health and well-being
<b>Environmental</b>	GHG mitigation
	Reduction of air pollutants emissions
	Resource efficiency use and circularity

The project contributes to the development of the following SDGs in the Alps:



### Spatial and temporal dimension

The project started in 2003 with the organization of a system of public transport by bus to reach the most important areas of the Park, such as Val Canali, Paneveggio Forest, Val Venegia.

### Environmental, social and economic impacts

During summer the areas surrounding the Park, being very important touristic locations, are faced by huge private transport generating pollution and traffic problems. The main environmental benefits are the reduction of traffic and of pollution caused by road transport thanks to the use of public transport (shuttle). The main economic benefits are the revenues for the Park from Parking places management. About 15.000 people per year use the shuttle bus instead of private car. Visitor's use of bikes increases possibilities to visit Park areas in a more sustainable way (PSAC, 2017).

### Governance model

The Park is responsible for the financing and management of the projects, developed in cooperation with the regional transport authority Trentino Trasporti S.p.A. The project's target groups are tourists, local residents, private associations (civil society and NGOs).

### Financial model

The network is completely self-financing by means of revenues from parking places management. The realization of bike sharing points was supported by EU RDEF funding.

### Replicability and scalability

The actions are easily transferable to other protected areas.

## Case 9: YOUrALPS

### The case

The YOUrALPS project allowed to create a new "alpine school model" to involve the young people through innovative teaching methods. During the project 13 partners from 6 Alpine countries developed a charter of values and a model of an Alpine school together with YOUrALPS, an international network for environmental education focused on the mountain. The project pursued the objective of structuring and organizing the specific sector of mountain education by incorporating the values and traditional knowledge of mountains and the Alps into the study program. Both the teachers and the students were involved in the program (Alpine Space, 2019).

The project activities are not related to any Alpine Green Economy sectors and sub-sectors as they have a cross sectional impact. The project is related to the following dimensions and criteria of the Alpine Green Economy (see Report Two):

Dimension	Criteria
Economic	Workforce
Social	Contribute to local culture identity
	Social innovations
	Contribution to education level/schooling/ technical capacity

The project contributes to the development of the following SDGs in the Alps:



### Spatial and temporal dimension

The YOUrALPS project started in 2016 and ended in October 2019 in the Valtellina area. The Alpine school was developed with the support of the Parco delle Orobie Valtellina.

### Enviornmental, social and economic impacts

The experimental implementation of the model of the Alpine school has allowed a recovery of the heritage of local and historical knowledge and is working to define a real "alpine training course". The Alberti Higher Education Institute in Bormio, in collaboration with the Stelvio National Park, involved second and third year students (aged 15 to 17) whose curricula will be partially modified to promote greater awareness of the environment. The secondary school for agriculture and breeding CFP Clusone has experimented sports and environmental activities in the Parco delle Orobie Valtellina, developing activities for the study of wildlife (in particular wolves), and organizing, following the new pedagogical approach, training days for on-site experimentation, analysis and planning.

## Governance model

The Alpine school model provides an international methodological approach based on a charter of values and shared pedagogical tools defined for the different educational levels, together with "recommendations" to support decision makers in transferring and applying the model. Schools can adopt a wide range of activities depending on their priorities, in particular both based on educational and local conditions, within the set of pedagogical tools defined.

## Financial model

The YOUrALPS project, co-financed by the European Regional Development Fund through the Interreg Alpine Space program. Out of the total budget of 2 million euro, ERDF funds amounted to 1.6 million euro.

## Replicability and scalability

There is a strong potential for the replicability and scalability of an educational approach based on the interconnection between territorial didactic systems, combining the school education with the transmission of technical and cultural knowledge typical of the Alpine region. As an example, since 2007 the comprehensive Damiani Morbegno Institute has launched the interdisciplinary project "ALPS MEMORY" stimulating reflections on the knowledge of the territory.

## Case 10: e-MTB sharing of Gran Paradiso

### The case

The project is based on the sharing service of e-MTB for excursions on the trails of the Gran Paradiso National Park. The electric motor that the bicycles are equipped with allows the users to overcome the harder parts of the trail. Mountain bikes have an autonomy that varies from 40 km uphill to more than 100 km on the plain, weigh less than 20 kg and are equipped with hydraulic disc brakes and suspension forks. The loan of bicycles is free and is reserved for the owners of the Foundation Grand Paradis Pass (Grand Paradis, 2019).

The project activities are related to the following Alpine Green Economy sectors and sub-sectors (see Report One).

Sector	Sub-sectors
Forestry	Other activities
Tourism	Sport activities
	Leisure activities

The project is related to the following dimensions and criteria of the Alpine Green Economy (see Report Two):

Dimension	Criteria
Social	Contribution to human health and well-being
Environmental	Biodiversity conservation
	Supply of ecosystem services

The project contributes to the development of the following SDGs in the Alps:



### **Spatial and temporal dimension**

The e-MTBs are located in the Visitor Centers of the Gran Paradiso National Park in Cogne, Valsavarenche and Rhêmes-Notre-Dame and at the information point of Maison Pellissier in Rhêmes-Saint-Georges.

### **Environmental, social and economic impacts**

Economic benefits derive from the creation of additional visits and from the local purchases that such visits generate during their stay in the Gran Paradiso National Park.

Social benefits derive from the sharing of an environmentally friendly technology that users could potentially adopt also in their daily life. Furthermore, the creation of unconventional services that allow for a greater number of people to visit the National Park and thus enjoying the recreational value offered by the site.

### **Governance model**

Fondation Grand Paradis brings together and represents the various stakeholders of the three valleys, the Valle d'Aosta Autonomous Region, the Gran Paradiso National Park Authority, the Municipalities and the Mountain Community, with a view to creating a naturalistic and cultural offer integrated into the territory.

### **Financial model**

The applicant, upon receiving the above vehicle, pays a deposit of 50.00 euros. The highest share of this amount, 40 euros, are given back at the end of the activity if all the obligations set forth in have been met. A smaller part of the fee equal to 10 euro is given to the user conditionally on the presentation of tax receipts showing that the user has made purchases for an amount equal to at least 10 euro in the area of the Fondation Grand Paradis.

The action was implemented and funded under the I.T.E.R. (Imaginez an Effective and Responsible Transport), led by the Transportation Department of the Autonomous Region of Valle d'Aosta and co-financed by the European Regional Development Fund within the framework of the Italy-France cross-border cooperation program ALCOTRA 2007-2013.

### **Replicability and scalability**

The areas which joined the I.T.E.R. project together with the Gran Paradiso Mountain Community, that is the Vallée d'Aulps, the Vallée d'Abodance and the Haut Chablais in France, could develop similar projects making use of the technical experience learned from the Italian case.

More in general, projects aiming to make tourist trips in the mountain valleys more sustainable



are a relevant opportunity for the entire Alpine area.

## Case 11: GESTALP NATURAL LABORATORY

### The case

A portion of the Province of Cuneo, corresponding to the upper Varaita Valley, has organized a natural laboratory, where local bodies and operators (consortia, farmers, forest owners and operators) have adopted different sustainable business models aimed at exploiting the renewable natural resources of the western Italian Alps and fostering the development of local communities. The project focuses on two supply chains, "typical wood" and "typical meat", and on the phases of collection and storage of raw materials, on processing and marketing of the products (Gestalp, 2019).

The project activities are related to the following Alpine Green Economy sectors and sub-sectors (see Report One).

Sector	Sub-sectors
Energy	Biomass and waste
Agriculture & farming	Livestock farming
Forestry	Silviculture

The project is related to the following dimensions and criteria of the Alpine Green Economy (see Report Two):

Dimension	Criteria
Economic	Workforce
	Value added
	Long term economic sustainability/stable contribution to economic development
	Competitiveness of local economic area
Social	Contribute to local culture identity
Environmental	Land and soil conservation
	Resource efficiency use and circularity

The project contributes to the development of the following SDGs in the Alps:



### Spatial and temporal dimension

The GestAlp Production Center is located in Località Ponte Cross in the Municipality of Frassinò, at an altitude of 780 meters above sea level. The projects began in 2003 and is currently ongoing.

## **Environmental, social and economic impacts**

The “typical meat” supply chain enhances livestock farming with low environmental impact (permanent farms that practice the local mountain pasture). Key ecological and naturalistic Key Performance Indicators (KPIs) are defined in collaboration with the Valle Varaita Alpine District. The key processes (production of raw materials, the meat processing for the preparation of typical products and the product marketing are linked to a precise geographical location) are sustainable from an environmental point of view as they are in balance with the productivity of pastures and woods, are sustainable from a social point of view, because the presence of mountain farmers is a guarantee of socio-economic and demographic balance for local communities; have high value added as the meat of the animals in the natural mountain pasture acquire exclusive characters, certified by the analyses.

The “typical wood” supply chain fosters the management of the timber whose ownership is currently too fractionated to allow individual sustainable practices. With the adoption of the Forest Plan and the establishment of the ForVar association, a management unit was set up which covers about 4,500 hectares of forest. Planning for interventions over twenty years, the project guarantees respect for natural renewal cycles, but also provides an opportunity for socio-economic development. The source from which the primary resource “wood” is obtained in the GestAlp supply chain is the silvicultural activity practiced in the woods of the Upper Varaita Valley thanks to the planning provided by the GestAlp Corporate Forest Plan, approved by the Piedmont Region with the D.G.R. n. 60-6263 of 2 August 2013. The woods of the Varaita Valley, as happened in the majority of the Piedmontese Valleys, were no longer used in the last thirty years for economic purposes. The decades-long failure to cultivate / maintain forests means that, on the one hand, there is not a significant availability of plants suitable for supplying timber and, on the other, that external market for these types of products are have been consolidating in the years. In this context, the start-up of local silviculture provides the opportunity to restart the production of quality timber and restart a local market.

## **Governance model**

GestAlp is a cooperative agricultural company which brings together not individual organizations of collective representation for the purpose of providing the raw materials to the value chain. The project was developed in the Varaita Valley as part of the collaboration between local authorities and the university (Research Center on Wildlife Management - Foundation of the University of Turin - CeRiGeFaS), decentralized to Sampeyre since 2003. The operational Manifesto of the program is expressed in the Convention for the operation of the GestAlp Valle Varaita Natural Laboratory, which was signed by bodies which compose the association. The agreement involves: CeRiGeFaS, the Municipalities of Sampeyre, Frassinò and Pontechianale, the FORVAR Association of Forest Owners Alta Valle Varaita, the ALVAR High Valley Varaita Valley Breeders Association, the Valle Varaita Alpine area and Idralp, a company established for the sustainable water management in the Natural Laboratory. The coordination of the project is entrusted to CeRiGeFaS - Foundation of the University of Turin.

## **Financial model**

The local timber and meat supply chains aims to be financially sustainable: the first findings indicate that there is interest on the part of local construction or craft companies in the products of the local supply chain, if selected and available with continuity.

## Replicability and scalability

The program of activities, illustrated in appropriate feasibility studies, is multifunctional and shared (also with the Authorities of direction and supervision) and can assume value of model of social and economic development repeatable also in other Valleys.

## Case 12: Small district heating plant in Grumes

### The case

In the 2000s the administration of Grumes municipality, in the province of Trento, started a program to develop the village's tourism, agriculture, environment and to enhance the local economy also thanks to citizen participation. A woodchip district heating plant was built in 2006 initially only for public buildings, after a citizen's poll showed that 45% of the population was interested such project. The central heating project, which initially concerned only the buildings owned by the municipality, was later extended to several families in the country that joined the project (PSAC, 2017). The woodchip heating is part of an active policy of the municipality to revive the small village through the activation measures for residents and home owners (some of them emigrated from the village in previous years) in tourism, local culture and tradition, agriculture, handicraft.

In 2002 the Belvedere Association (counting currently 150 members) was born for the management of a large part of the private forest heritage, in order to increase its environmental and economic value, to recover traditional habitats important for biodiversity and to carry out interventions for provisioning works and defence of extreme weather events. The need to close the wood supply chain and the availability of raw materials on site have led the Municipality to design and build a centralized district heating plant fed with the wood waste shredded (PSAC, 2017).

The project activities are related to the following Alpine Green Economy sectors and sub-sectors (see Report One).

Sector	Sub-sectors
Forestry	Managed forest: other activities
Energy	Biomass and waste

The project is related to the following dimensions and criteria of the Alpine Green Economy (see Report Two):

Dimension	Criteria
Economic	Long term economic sustainability/stable contribution to economic development
Social	Contribution to human health and well-being
	Contribution to education level/schooling/ technical capacity
Environmental	GHG mitigation
	Reduction of air pollutants emissions
	Resource efficiency use and circularity
	Contribution to local resilience
	Supply of ecosystem services

The project contributes to the development of the following SDGs in the Alps:



## Spatial and temporal dimension

Grumes is a small municipality of 460 inhabitants in a detached location of the Province of Trento. The project started in 2006 and is currently ongoing.

## Environmental, social and economic impacts

The power plant is an important technological innovation that has positive implications both on the side of the wood supply chain and the enhancement of local productions, and in relation the energy independence from traditional energy sources. The woodchips plant was built 2006 with a power of 450KW. Later a gas unit (500 KW) was added for peak demand and emergency. At the beginning only public buildings were connected: town hall, a service center (with theatre and gym), church and rectory, a building with 4 flats owned by the municipality and a municipality hostel. In 2013 private buildings (20 buildings with 30 units) could be connected, optimizing heat production and distribution. Heat production is more than 95% from woodchips. The wood is locally supplied, from the local forests and from a carpentry located in the municipality. The economic and social benefits are the following: creation of green jobs/transforming jobs to green jobs, support to personal income, awareness of consumers, incentives for consumer's behavioural change, fostering of green skills in education (PSAC, 2017).

## Governance model

The plant is managed by the municipality. The engagement of the public in the decision process was a key element of the governance model. Furthermore, the local silviculture association (Belvedere Association), is the key supplier of the wood to the plant, coming from thinning and forest measures, and from residues by a local carpentry. This approach has contributed to the economic sustainability of the association and at the same time has strengthened the local wood value chain.

## Financial model

The funding scheme is mixed, coming from both public and private sources.

## Replicability and scalability

The actions are easily transferable to other municipalities, particularly the ones in which forest management is among the key economic activities.

## Case 13: VIVA sustainable wine

### The case

The purpose of the project is to improve the performance of sustainability in vineyards and wine production through the analysis of four indicators, namely Air, Water, Territory and Vineyard. The indicators have been developed taking into account main international rules and standards. The application of the indicators is validated every two years by an independent third-party certification body. The pilot phase involved a number of major Italian wineries, which were selected based on their geographical location and the products they produce. Some are located in the Alps or in their vicinity (Gancia, Venica and Venica) and the program is open to all Italian wineries. The pilot phase of the project was completed in 2014 and led to the definition of technical specifications for sustainable wine production, that now serve as a reference for companies who want to achieve the validation foreseen by the project (PSAC, 2017).

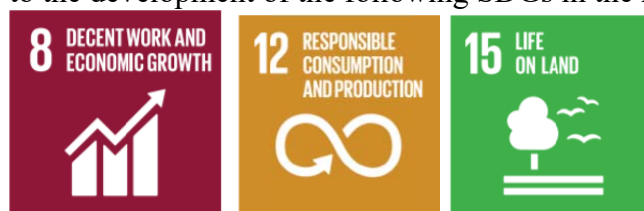
The project activities are related to the following Alpine Green Economy sectors and sub-sectors (see Report One).

Sector	Sub-sectors
Agriculture & farming	Agriculture

The project is related to the following dimensions and criteria of the Alpine Green Economy (see Report Two):

Dimension	Criteria
Economic	Value added
	Competitiveness of local economic area
Environmental	Resource efficiency use and circularity
	Land and soil conservation
	Supply of ecosystem services

The project contributes to the development of the following SDGs in the Alps:



### Spatial and temporal dimension

From June 2014 onwards, all national wineries can join the VIVA "Sustainable Wine" project.

### Environmental, social and economic impacts

The solution introduces new indicators in the winery sector. It provides a product and company certification scheme. The goals of VIVA "Sustainable Wine" are (PSAC, 2017):

- to develop a methodology for calculating and assessing the sustainability of the wineries and their products, from field to consumer, including the measuring of the environmental quality in vineyard and wine production;
- to define technical specifications, based on the developed methodology, for the analysis and the certification of the four indicators (Air, Water, Territory and Vineyard),

- periodically updated according to European and International legislation in the sector;
- to improve sustainability performance in vineyards and in wine production, also through the collaboration with the Italian Wine Union (UIV);
  - to train company technicians and consultants on the application of VIVA indicators in order to help the assessment and improvement of their sustainability performance over time;
  - to provide easy-to-use tools for the analysis of Water, Territory and Vineyard related indicators;
  - to collaborate and discuss with sector associations and stakeholders to promote project results, both at national and international level.

### **Governance model**

The Italian Ministry for the Environment will provide institutional collaboration, by monitoring and coordinating the indicators' analysis and the evaluation of technical choices to improve their sustainability performances. In the case of a "product analysis", the Ministry for the Environment releases a VIVA "product label", which can be applied directly on the product. In the case of a "company analysis", the Ministry for the Environment releases a VIVA "company label", which can be used on the company website or on company information materials. This kind of label cannot be applied directly to individual products. The VIVA label has a QR code through which is possible to connect to the dedicated website ([www.viticolturasostenibile.org](http://www.viticolturasostenibile.org)) which explains the project and its objectives, giving the possibility to verify the sustainability parameters of the chosen wine. The results of the analysis should be validated by an independent third-part certification body. The Italian Ministry for the Environment will issue the VIVA label within 30 days from the presentation of the validation document and the company analysis report.

### **Financial model**

Wineries should perform the sustainability analysis at their own expenses, following the technical specification provided by the Italian Ministry for the Environment, Land and Sea.

### **Replicability and scalability**

The actions are easily transferable to other wineries.

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