Report of the Alpine Forests Working Group of the Alpine Convention on Alpine Forests and the Green Economy

1. Introduction

The mandate of the Working Group on Mountain Forests of the Alpine Convention for the period 2017-2019 envisages an acknowledgement of the role that forestry, the wood/forest-supply chain and forests *per se* as natural assets could be playing in the framework of a transition of the Alpine region to a green economy.

This report addresses the issue by gathering a few examples of "good practices" consistent to the distinctive key-sectors of a green economy, based on the available research and categories developed for the "Sixth Report on the state of the Alps – Greening the economy in the Alpine region" (2016), and few other publications focused on mountain forests (Euromontana 2017; UNECE 2013).

In the frame of the Alpine Convention, a definition of "green economy" has been proposed in line with the UN, all-encompassing designation of such a type of economic system. Such an approach has clearly entered the Sixth Report on the State of the Alps (RSA6) (2016) which qualifies an Alpine green economy totally in line with the UN approach, i.e. *"[…] as one that results in improved human well-being and social equity, while significantly reducing environmental risks and ecological scarcities. In its simplest expression, a green economy can be thought of as one which is low carbon, resource efficient and socially inclusive. Practically speaking, a green economy is one whose growth in income and employment is driven by public and private investments that reduce carbon emissions and pollution, enhance energy and resource efficiency, and prevent the loss of biodiversity and ecosystem services".*

Each sector contributes to some extent to the economic health of the region. Understanding its "economic scope" allows to deeply root the sector – and the corresponding "good practices" – in the dimensions that shape the concept of "green economy". At any rate, the complexity and reach of the concept make the potential set of practices gathered particularly wide.

Assuming that the Alps (and mountains, more in general) tend to show a relative homogeneity in the economic sectors they typically host, a "green economy" includes many of them, and the transition that is expected to be met through a societal and economic transformation of the region should involve also forests – considered at large. Additionally the forest sector is a good example for a sector that has aimed for including "green topics" in its management strategies for a long time. A "close-to-nature-management" that is the guideline for the forest sector in many alpine countries is one of the outcomes of this aim.

In order to keep our approach simple enough, we will recall here only a few significant international sources showing a link to the long-term commitment of the Alpine Convention and its Mountain Forests Protocol to promote a sustainable economic use of Alpine forests. They basically include the already mentioned RSA6, the Euromontana (2017) Report, the Rovaniemi Action Plan for the Forest Sector in a Green Economy (UNECE 2010).

In particular, we use *four* key sectors of a "Green Economy" to frame this report, originally developed for RSA6:

1. *energy-efficient and low-carbon economy*
2. *resource-efficient economy*
3. *ecosystem services and natural capital-based economy*
4. *economy supporting quality of life and well-being.*

Additionally, a further sector will be considered as deserving a specific attention (though it actually can enter the sub-sector of resource-efficiency), i.e. the *circular economy* as defined by Euromontana (2017). Table 1 shows the resulting classification of categories used to organise the good practices discussed in the report as well as the good practices for each category.

Categories	**Good practices**
Energy-efficient and low-carbon economy	- Greenhouse gas balance of the Austrian timber chain (Austria)
Resource-efficient economy	- Short rotation forestry on marginal land (Germany)
Circular economy	- Forest's Contracts: an instrument of development and participatory management (Italy) - EU Strategy for the Alpine region sub-group «alpine wood» (Italy, Slovenia, France, Germany, Switzerland)
Ecosystem services and natural capital based economy	- Garden Village Bled (Slovenia)
Economy supporting quality of life and well-being	- EU Strategy for the Alpine region sub-group «alpine wood» (Italy, Slovenia, France, Germany, Switzerland) - Garden Village Bled (Slovenia)

Table 1. Classification of good practices by category from RSA6 (2016) and Euromontana (2017)

In general, an Alpine Green Economy aims at greening the entire economy, not a particular sector (RSA 6). There was a wide agreement among the experts involved in drafting RSA6, on the need for achieving such a goal of both technological and social innovations. Additionally, a transition would need "a re-allocation of capital and investment between sectors, a change in the demand for certain goods and services, and, accordingly, a change in prices and thus the profitability of existing investments" (UBA Germany 2015a).

Within the context of the Alpine Convention, the decision to address forests and forestry as topics worth investigating and supporting in a possible transition towards a green economy derives from the prevailing expectations concerning the capacities of this sector to address, and possibly solve a few major issues that fall under the abovementioned definition. Particularly, forests are expected to play some role across more than a single of the four sectors under investigation within RSA6.

The role of forests in a green economy is potentially widespread, and includes all the four key-sectors to be found in RSA6:

1. *energy-efficiency and low-carbon economy (e.g. through the management of CO2 emissions that can find a significant support in forests, under clear circumstances and conditions);*
2. *the efficiency in the use of resources and the implications for a circular economy (at the basis of forestry, forest management and the wood/forest supply chain);*
3. *natural capital conservation and the related ecosystem services (typically linked to forests, including water management, protection from natural hazards, protection of rare species and their habitats, etc.);*

4. *the contribution of the forestry sector to the creation of green jobs (improving quality of life for mountain people).*

In general, often forests show the capacity to simultaneously contribute to several of the sectors of an Alpine green economy: forests hold a potential in shaping mountain landscapes, attract tourists, improve human health, support jobs creation, incentivize natural capital conservation and generation of revenues (e.g. from forestry, tourism and other side-activities).

The Rovaniemi Action Plan for the Forest Sector in a Green Economy (2013)[1] includes a vision as well as a strategy aimed to support the transition of the forest sector towards a green economy for its region of interest. The actions envisaged by the voluntary plan are all in support to the aligned regional and national activities and considers Europe as a "laboratory" which could lead the way towards the green economy worldwide. Considered areas of activity in the Action Plan include climate change mitigation, workforce and occupational safety, payments for forest ecosystem services, evidence-based decision making and progress monitoring. In 2018, a mid-term review process took place on the whole Action Plan.
The five pillars of the Plan are recalled in Table 2.

Pillar A. Sustainable production and consumption of forest products	Patterns of production, consumption and trade of forest products are truly sustainable
Pillar B. The low carbon forest sector	The forest sector makes the best possible contribution to mitigation (sequestration, storage and substitution) of, and adaptation to, climate change
Pillar C. Decent green jobs in the forest sector	The workforce is able to implement sustainable forest management, and the forest sector contributes to achieving the social goals of the green economy by providing decent jobs
Pillar D. Long term provision of Forest Ecosystem Services	Forest functions are identified and valued and payments for ecosystem services (PES) are established, encouraging sustainable production and consumption patterns
Pillar E. Policy development and monitoring of the forest sector in relation to a green economy	Policies and institutions relevant to the forest sector promote sustainable forest management; policy making is evidence-based, policy instruments are effective, efficient and equitable and monitoring is adequate in order to mainstream the green economy in forest sector policies.

Table 2. The five pillars and goals of the Rovaniemi Action Plan (2013)

For each area of activity, the Plan proposes actions to be performed by defined actors (from governments to the private sector and the civil society), who might contribute to achieving its goals.
A particular interest can be found especially in the emphasis the Plan puts on sustainable production and consumption patterns for forest products and the potential of the sector to provide opportunities for green jobs, considered as a social goal. The Plan calls for ambitious and realistic strategies for decent green jobs in the forest sector. In particular, it sets as objectives under its Pillar C the following ones: development of appropriate skills in the workforce at all levels to carry out sustainable forest management, reduction of illnesses and injuries experienced by the forestry workforce, review of the work methods used for harvesting and silviculture aimed to assure the implementation of the best practices, and other goals[2].

[1] Approved in December 2013 in the joint session of the ECE Committee on Forests and Forest Industry (COFFI) and the FAO European Forestry Commission (EFC).
2 See: http://www.unece.org/fileadmin/DAM/timber/Green_Economy/Rovaniemi_Action_Plan/Pillar_C_-_Possible_Actions.pdf

The special emphasis on the social and occupational dimension of forestry found in the Action Plan stresses the potential of the transition to a green economy on creating new jobs in this sector consistently with the above-mentioned potential of an Alpine green economy to support well-being and quality of life in RSA6.

According to Euromontana (2017) the forestry sector lies in the *biological cycle* of a circular economy (i.e. involving materials that can be decomposed by living organisms) and makes use of natural resources such as water, soils, nutrients, and biodiversity underpinning the functioning of ecosystems and land. A circular economy in the forestry sector aims at recovering those resources, increasing the efficiency in their use, reducing waste and reducing their extraction, mainly through decreased demand.

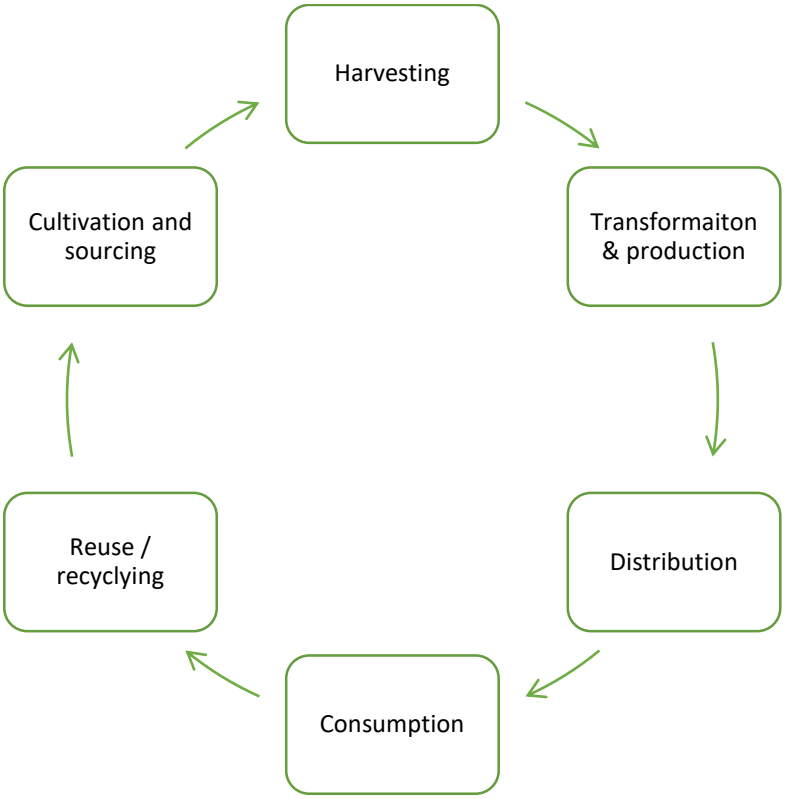

Figure 1. The circular forest supply chain according to Euromontana (2017)

According to an interesting case of application of the circular economy framework to the forestry sector (EIP-AGRI 2015, 6; Ellen MacArthur Foundation 2015), the main goals of a circular economy applied to forestry are:

1. The preservation and enhancement of natural capital by balancing renewable resource flows;
2. Optimizing (not maximizing) natural resource yields by circulating products, components and materials;
3. Fostering effectiveness by revealing and designing out wastes and detrimental practices;
4. Encouraging interaction between people, understanding our resources and making the most of our unavoidable wastes.

The most visible challenge for a circular economy is to balance the use of renewable resources, by taking into consideration the alternative uses for a limited stock – that can be renewed only in the long-run. In order to achieve this comprehensive result, instruments as partnerships and collaboration, financing, innovation, education, reuse and recycling, policy, and markets are likely to be supportive (EIP-AGRI 2015).

For the purpose of this report, we use the model applied by Euromontana (2017) when addressing the circularity of the wood supply-chain that consists of cultivation and sourcing, harvesting, transformation and production, distribution, consumption, and reuse/recycling. A circular forest supply chain does not stop with primary products (Figure 1).

Appropriate techniques, procedures and market instruments are required to support the use of waste (and products at the end of their life span) from the traditional production chain within the same production process or in other supply chains. Moreover, methods to enhance the multi-functionality of forests (e.g. production of non-wood forest products, such as berries, mushrooms, and herbs; and delivery of ecosystem services in the domains of water, protection from natural hazards, etc.) can support a sound establishment of a circular model in the forestry sector (Euromontana 2017).

2. Criteria and methods for the collection of good practices on forests and green economy

The collection of "good practices" that we present in the pages that follow derives from more sources.

The main document from which these "good practices" have been extracted is the Annex to RSA6 (2016). Its preparation was coordinated by the German Presidency of the ad hoc expert group and by the Permanent Secretariat of the Alpine Convention. The Report was formally approved by the Alpine Ministers gathered at the Alpine Conference in Grassau (DE), in 2016. The "Good Practices collection" attached to RSA6 is the result of a fruitful collaboration among the Presidency and its experts, the ad hoc expert group, the Permanent Secretariat of the Alpine Convention, and the other Working Groups and Platforms of the Alpine Convention. The Working Group on Alpine Forests has appreciated and welcomed the "good practices" dealing with forest management, forest product and management included in RSA6 and the Annex.

Another pivotal source for this collection is the Euromontana Report "Innovation and Circular Economy in the Mountain Forest Supply Chain: How to close the loop?" (2017), gathering experiences in support to transitioning towards a circular economy approach in the forestry sector, in mountain territories across Europe. A few cases dealing with Alpine forests have been considered of special interest for the purpose of the Euromontana Report: coherently, the Mountain Forests Working Group of the Alpine Convention included a few of them in this publication, based on the suggestion of its members.

The "good practices" are divided into thematic chapters covering a defined topic, based on the concepts recalled in the introduction and the categories used in the classification of Table 1. Certainly, some "good practices" locate somewhere in-between the categories of Table 1. When this is the case, we highlight the uncertainty of the positioning or the multiple purposes of the "good practices" in the text. At any rate, we declare the category under which the practice has been included.
We present the headline-categories selected for the following chapters in short in the introductory paragraph of each chapter.

The resulting collection aims to present a small selection of examples of actions, methods and instruments thoroughly applied or simply tested in Alpine territories. The selected good practices show a significant consistency to the interpretation of a "green economy" used in the framework of the Alpine Convention, particularly according to RSA6, and are in line with other international sources. Even though the collection is far from being complete, the chapters that follow include "good practices" from several Alpine countries, unevenly distributed across the categories of Table 1. A more diffused application of the methods, instruments and actions envisaged in the practices may support the transition to a green economy in the forestry sector across the Alps.

Greenhouse gas balance of the Austrian timber chain (Austria, 2013 – 2015)

Classified under the category of *Energy-efficient and low-carbon economy*, the practice under investigation considers that the **multiple use of wood** along the value-added chain provides both **economic and ecologic advantages** and includes active long-lasting measures for climate-change mitigation.

The practice shows for the first time in Austria how a multiple (or cascade) utilization of wood may shape under different scenarios based on alternative economic strategies for sustainable use of Austrian forests that foresee possible developments until the year 2100. For this purpose, some projects were carried out by different institutions[3] which assessed separately (but ensuring a cooperation and sharing of their measurements) the change in CO2 storage in trees and forest soils for the whole *Forest-Wood-Chain* (FWC). The scenarios show that the timber utilization along the FWC for product development is on the long run more favorable for the greenhouse gas (GHG) balance than the immediate utilization of wood for energy generation. A long lifetime of timber products can even reinforce these effects.

Efficient and sustainable forest management (SFM) allows for a proper use of wood as raw material, which is renewable but not available in an indefinite quantity. SFM allows to store almost the same amount of CO2 in forests than under other management approaches. However, multiple uses of wood associated to SFM can also lead to a reduction of GHG emissions from energy-intensive substitutes. In terms of GHG reduction, the benefits deriving from using wood as a raw material have to be interpreted in conjunction to the effect on GHGs of SFM: the sustainability of reserves, efficient forest management and utilization of wood as a renewable raw material are factors, which also are to be taken into consideration.

Concerning the economic impact of the practice, cascade or multiple use of wood allows to achieve efficient use of wood for energy and raw material production, with the lowest possible use of biomass. A common example refers to circular economy: the recovery of durable paper products in the timber industry, where, in turn, recycling is carried out several times. The remnants from the production of building or other materials are used as sources of energy, by playing an important role as substitutes for non-renewable raw materials (e.g. steel or crude oil). The assessment of these substitution effects which can be achieved by using wood products and byproduct is a priority in the project under investigation.

Concerning the environmental impact of the practice, on the long run, forest management and forest utilization have a markedly positive impact on the GHG balance and on climate change mitigation. With a moderate increase in stock reserves (about 50% than the increase in the last few decades in Austrian forests) additional positive effects on the overall GHG balance can be achieved over a few decades. A prerequisite for achieving this goal is that the production of sawn-wood for cascade-use is not too much restricted. If less sawn-wood is available, more energy-intensive raw

[3] Federal Forest Research Centre (Bundesforschungszentrum für Wald BFW), Vienna University of Natural Resources and Life Sciences (Universität für Bodenkultur BOKU) and Federal Environment Agency (Umweltbundesamt)

materials have to be used – with a negative effect on the overall GHG balance. With no utilization of wood, a balance would be achieved on the long run by which about 50% more carbon would be stored than it is currently the case (BAU). However, according to the analyses performed, such a view purely focused on forests is too much shortsighted, because on the long run the timber utilization and the permanent use of wood has an even stronger effect on GHG balance.

Timber participates in shaping production and distribution processes that play an important role in the Austrian value-added chain. Involved economic activities range from the timber and sawmill to the furniture and paper production industries. Huge quantities of GHG emissions are saved due to the use of wood and wood products, even though as much wood is removed from Austrian forests as it is growing there (the GHG balance is thus zero). According to the performed calculations, it is possible to save about the same quantity of GHG emissions generated over a period of 20 years in Austria by using wood and wood products until the year 2100. The resulting amounts of GHG emissions saved may be different in other countries, but the general conclusions and calculations from this case could be transferred to other Alpine countries.

Further information: http://bfw.ac.at/rz/bfwcms.web?dok=9986

Short rotation forestry on marginal land (Germany)[4]

Classified under the category *Resource-efficient economy*, the practice under investigation considers short-term forestry (STF) as an effective means to support a regional economy where fuel from local renewable energy sources (RES) is supplied according to sustainability principles.

STF foresees the planting of fast growing trees (e.g. poplar trees and willows) which can be harvested in a few years' time (4) and supply adequate and reliable quantities of wood fuel in a simple manner.

The first STF systems in Achental have beenwere installed in May 2011, near Übersee.

In order to increase resource-efficiency, an area of marginal agricultural land where – due to poor soil quality and hardly accessible location – classical farming is difficult and costly has been used for planting forests[5].Wood chips from local harvests are used by the "Biomassehof Achental" and the heating plant in Grassau. STF plantation covers 3 ha and is farmed by the landowner.

Concerning the economic impact of the practice, notwithstanding STF forests are localized in spare lands, the efficiency of the practice relies on short transport route for woodchip delivery, the choice of appropriate tree species and refined land management techniques.

Concerning the environmental impact of the practice, CO2 absorbed by the plantations during their early life, compensate CO2 emissions from burning woodchips as a fuel: the resulting balance is thus CO2-neutral. Moreover, using wood chips ensure savings of 11 tons of CO2 per ha, compared to fossil fuels (33 tons). Notwithstanding the potential adverse impact of CO2 and other emissions from burning woodchips in non-environmentally friendly stoves, the delivery of the harvest to the Biomassehof Achental plant ensures the deployment of innovative low emissions technologies. Environmental impacts are also reduced by avoiding to foster competition in land use for energy *vs.* food production in the region, where priority has to be given to nature and nutrition over alternative uses ("Nature and nutrition first") and all the areas where STF is practiced are not suitable for food production. The choice to build the main energy plant near A8 highway avoided the impact of the facility on the regional landscape.

The practice shows a significant adaptability to the Achental region where marginal land to be used for STF is available, appropriate tree species can be grown and local biofuel demand is ensured by regional customers (mainly: farms with biomass plant).

STF can be already found in many other locations in Germany, on marginal land. This approach to energy management could be easily transferred to other regions by significantly contributing to the renewable energy transition, without compromising food security and nature.

[4] Permanent Secretariat of the Alpine Convention (2016a*).*

[5] 25,000 saplings from an adjusted poplar tree species have been used to this end.

Garden Village Bled (Slovenia, 2014 - concluded)

The practice under investigation, to be categorized both under *Ecological services and natural capital based economy* and *Economy supporting quality of life and well-being*, considers that the use of local products is an essential success factor for the development of **sustainable green tourism** and the promotion of **sustainable consumer behaviors**. The Garden Village Bled is a green resort located **in the middle of the forests and built with local Slovenian wood**. Local products, nature, peace and calm, education, and a wellness program are the success factors for this experience.

Local stakeholders contributed to the realization and promotion of the project. The Bled Municipality had to develop a new spatial plan for the purposes of this innovative project, even though not all the desirable innovative green and self-sustaining solutions have been possible to implement in practice. In particular, the provision of all necessary building and operating products from only local-Slovenian suppliers has been very difficult to achieve.

C**oncerning the economic impact of the practice**, the involvement of local construction companies has been essential for building innovative accommodations with local material and by using traditional techniques – in particular the wooden tree houses and tents. Young people, adventurous and outdoorsy are employed to share their knowledge with the guests, contributing to green jobs creation. Creative workshops are organized aimed to show and inform guests about nature and natural materials, gardening, waste recycling, energy saving and healthy lifestyles.

The practice stands out for its **low environmental impact** achieved through an ecofriendly approach applied to almost all activities in the resort: transport by electric cars, use of solar panels and geothermal heat pump for heating, raw material production aimed to self-sustain the restaurant's demand for food, decrease of waste, and provision of amenities to the guests, surrounded with garden products. Moreover, the Garden Village is a natural habitat for animals mostly birds, fish, forest animals and small garden animals.

People worldwide are coming back to the nature in search of reconnection and life lessons. The village of Bled is today one of the most famous green tourist destinations, and the practice has been awarded as an innovative, green and creative project in Slovenia.

Further information: http://gardenvillagebled.com/

Forest's Contracts: an instrument for development and participatory management (Italy, 2004-2016)

Categorized under *Circular economy*, the practice under investigation shows that **participatory processes and shared tools** can help achieve **sustainable management and development** in the forests and pastures territories in Lombardy Region[6].

The Forest's Contract is an operational tool identified by the Charter of the Forests of Lombardy[7], which lays out guidelines for a model of development and asset management of regional forests, based on the principles of partnership with and participation of local communities. The Contract is an agreement between public and private entities for the development of the territory of forests and the surrounding areas in Lombardy. It is signed thus by the Regional administration and by local public and private stakeholders holding an interest in regional forest management, products, services etc. being interested in building a permanent place of confrontation, elaboration, promotion and implementation of actions aimed at local development.

The Forest's Contract is a voluntary tool[8] allowing the implementation of the actions that follow:

- Participative management for the promotion and implementation of actions aimed at a coherent development of a territorial unit;

- Governance for local development based on the consultation and the application of the subsidiarity principle to different levels of government;

- Sharing and coherent management of development policies, aimed to strengthen networks between partners and stakeholders.

- Integration, for a wider area than a single forest, among policies in the field of environment, territorial management, and spatial planning.

The participation in the management processes enables developing projects and actions on a large scale, which are more effective in attracting resources and have a greater chance of success. The Forest's Contract establishes a system of actors being able to self-organize, self-designing and self-managing their own development. The contract as an instrument is expected to make the process of development more effective and efficient in the interested areas. This shared new vision of development promotes synergies and solidarity between partners and, in so doing, rebuild links and networks along all parts of the supply chain and at all levels.

The practice promoted a **sustainable planning,** based on a vision of Lombardy forests as part of a whole territorial environmental system, and a **sustainable management** by achieving forest

[6] Lombardy Region owns 20 forests covering 23.000 ha, FSC and PEFC certified.
[7] It is the "Charter of the Forests of Lombardy - for the sustainable management and sustainable development of forests and pastures of Lombardy", signed between Lombardy Region and the Regional Entity for Services to Agriculture and Forestry (ERSAF) with 16 commitments for the shared management of the Region's forests.
[8] The agreement doesn't produce any legal obligations, but it relies on existing forms of negotiated planning, required by national and regional laws, and on the provisions of the Regional Law on Agriculture and Forestry

management certification in 2009 (PEFC and FSC) and improving production from pastures. It also advanced green values and developed the forests not only for their resources to be exploited, but also as landscapes and sites of diverse activities.

Eight Forest's Contracts have been signed up to 2017[9], covering 20.000 ha of regional forests and 90.000 ha of other territory, and involving almost 80 partners. The Contracts have mobilized 8 million Euros for project development. Participatory management of forest areas is still scarce, even in countries with an advanced economy. At the same time it is a desirable practice for politics and demanded by civil society. Participatory processes are still not widespread in Italy and in Lombardy: therefore, the experience gained through the management and implementation of Forest's Contracts is an important point of reference.

Further information: www.ersaf.lombardia.it

[9] Three further Forest Contracts have been defined in 2017.

EU Strategy for the Alpine Region (EUSALP) sub-group «alpine wood»

a –EUSALP Macroregional project for encouraging the use of alpine wood as a raw material (Italy, Slovenia, France, Germany, Switzerland; 2016 – ongoing)[10]

Categorized under *Circular economy* as well as under *Economy supporting quality of life and well-being*, the practice considers the contribution provided by transnational and integrated management of forest services and resources to the generation of value-added in the forest supply chain of the Alpine macroregion.

The practice has been developed under the EU Strategy for the Alpine Region (EUSALP), particularly under its *economic pillar* seeking to valorize Alpine resources by designing transnational and integrated models of products, services and investments. The timber industry is one of the key sectors for EUSALP.

However, forest exploitation in the Alpine region is not properly valued, especially in the construction sector. There are large disparities in terms of wood valorization and new approaches that remain scattered and separate. Moreover, current public policies do not sufficiently integrate the existing initiatives primarily driven by economic actors. The different segments of the economic chain do not cooperate, to the detriment of the whole sector. Nevertheless, numerous experiments (technical properties, architectural solutions, quality standards, etc.) have begun in the Alps in order to encourage the use of wood as a raw material.

Concerning the **economic impact**, the practice aims at coordinating Alpine actors in the forestry sector and creating a network of Alpine wood construction projects with demonstrative value (from both a technical and economic point of view). Following models such as the French project "Bois des Alpes", the project will bring together existing initiatives with common goals to better exploit forest materials through **sustainable use of wood with an approach to green economy**. The intent to increase the use of wood is tied to larger global issues as **environmental benefits of carbon storage in wood**.

This macroregional project aims to go beyond the framework of a typical EU project and coordinate public policies of territorial entities of an entire massif (the Alps) around a single objective. Through comparison of quality standards for alpine wood, based on confirmed characteristics of alpine species, the project aims to evaluate the possibility of introducing a single quality standard for alpine wood.

Due to its current nature of proposal, the project does not provide (until now) any form of implementation.

[10] The project operates with an initial funding for 3 years in the frame of the project AlpGov (Alpine Space Program), which is implementing the EUSALP Strategy. Other sources of funding will be identified at national, regional, and European level in the future.

b – Triple Wood (France, Germany, Italy, Slovenia, Switzerland; 2018 – ongoing)[11]

The Action Plan of EUSALP highlights the need to better use alpine specific resources in a more integrated manner. Products from the agriculture and sustainable forestry sector throughout the whole value chain (incl. wooden buildings), low emissions and energy efficiency are addressed. Several regional factors prompted the project development, including: the availability of huge wood supplies in the Alps; the potential of forests to participate in CO2 capture and storage; the situation with forest ownership and lack of proper forest management in many regions; promising innovation in facilities and machinery for wood processing; new construction and forest management techniques; and the potential of a regional network to increase the use of local and regional timber. The principal aim of the project is is to triple the use of wood in the EUSALP region in the near future, and to show how sustainable and high-quality buildings can be built by using wood.

The project involves three EUSALP AGs (AG 2, AG 6 and AG 3), applies a multi-level stakeholder approach, and shows potential economic, environmental and social impacts.

Under the **economic point of view**, the "*Triple Wood*" project significantly contributes to the combined objectives declared above, by fostering new relationships among different actors through value chains in alpine areas. By horizontally connecting the businesses involved in the wood value chain in Alpine regions, through new communication platforms and professional training events, *Triple Wood* aims at strengthening the regional wood business community.

Concerning the **environmental impact** associated to the practice, it applies to sustainable forest management and supports the use of new technologies and innovation in the timber sector and value chain. By building wooden houses, CO2 emissions can be cut (through CO2 storage) and higher energy efficiency attained.

For **social impacts**, two aspects deserve to be mentioned. First, more trust in timber construction both in rural and urban areas (where compact buildings are especially appreciated) can significantly widen the social acceptance and market for wooden buildings. This requires starting education programs for architects and engineers on updated techniques and opportunities from the use of wood in the construction sector – to be provided by knowledgeable institutions in Germany, Switzerland and Italy. Second, an increased use of wood may support green jobs' creation in rural areas, and open up new development paths for deprived and depopulated regions. By tightening the professional network between producers, entrepreneurs, architects and engineers, and public decision makers, technology transfer will take place much faster and increase skills and jobs. Public decision makers are expected to undertake comprehensive policies in support to the whole sector. Public events (e.g. exhibitions across the region) help show the people how living in wooden houses can be comfortable, climate-friendly, and attract private funding.

Many initiatives foreseen by the project aim at easing the dialogue and exchange of stakeholders: the timber construction industry can be involved in transnational working groups, and so can other stakeholders by saving money and time through sharing experiences. The participatory process is expected to be beneficial to, and foster the relationship among metropolitan, peri-mountain and mountain areas.

An exchange with consistent projects already running in the Alps and other ones developed in other programs' areas (e.g. Danube Transnational Program project FORESDA) can be supported, aiming at stimulating synergies and fostering the dissemination of available results in both directions, reaching a broader public, and supporting mutual learning.

[11] The project operates with an Alpine Region Preparatory Action Fund (ARPAF) for 2 years implementing the EUSALP Strategy.

Further information: https://www.alpine-region.eu/projects/triple-wood-triple-wood-sustainable-wood-building-culture-alpine-region

c- CIRCULALPS Project _ Circular and Bioeconomy in the Alpine wood supply chain

In the framework of EUSALP AG 6, a project focused on sustainable forest management and a coherent supply-chain has started in January 2018. Chaired by the Salzburg University of Applied Sciences, *CirculAlps* aims at promoting circular & bioeconomies in the Alpine timber sector. Starting from the assumption that both those approaches represent strategic perspectives (as highlighted by EUSALP AG6 & AG2 work plans), the project is expected to analyse the potential developments of wood supply chains in the Alps and their economic impact on the related sectors. Moreover, a widespread implementation of strategies for bio-based innovation & circular economy in wood supply chain has been recently identified as key for mountain regions by institutions such as Euromontana, the Alpine Convention and the Agricultural European Innovation Partnership.

Concerning the **economic impact**, it is worth mentioning that the timber value chain can benefit from innovative approaches based on the principles of circular and bioeconomy (e.g. management of discarded wood by adding further stages to wood life before biomass & using waste products as raw materials, such as bark as insulation material). Interestingly, a few good practices can be found both inside and outside the EUSALP region (e.g. regional cooperative of craft companies *Werkraum Bregenzerwald* in Austria; the *EcoSpruce* company exploring innovative uses for spruce needles in support of new value chains), but are still scarce, occasional, and have not been analysed in depth.

Starting from this promising, but still partially unexplored situation, this project focuses on three main actions:

- *analyzing the state of art and best practices from the forest and timber sector across the Alps,*
- *assessing the potential for initiating innovative circular and bio economy value chains in the EUSALP region, and*
- *identifying and highlighting the enabling conditions, whose transferability is also to be better studied and the transferring factors.*

Findings from the research conducted in this framework by partners with a specific expertise on wood value chain, bio-based innovation and circular economy in the forestry sector, will be collected and presented in a feasibility study.

The **social impact** of the practice is expected to be mainly in the wide participation that the project is expected to promote around some of its planned final products. Particularly, the project will

develop a “work plan” and a few recommendations by using participatory methods – i.e. by involving a large number of regional stakeholders from the forest and timber sector.

By the end of 2019 the study is expected to provide a sound investigation on, and a concrete proposal of a toolbox that may help support forestry entrepreneurs to actively implement the new value chain, by suggesting concrete actions and providing them with ad hoc tools and information bases. The project is expected to help set a solid basis for a widespread application of circular and bio economy models in the forestry sector across the whole EUSALP region.

3. References and policy documents

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