VALUE CHAINS IN ALPINE REGIONS AND SELECTED SECTORS OF AGRICULTURE AND FORESTRY

Mountain Agriculture and

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ACRONYMS

AC: Alpine Convention
FOAG: Federal Office for Agriculture, Switzerland
PDO: Protected Designation of Origin
PGI: Protected Geographic Indication

INTRODUCTION

The essential role of value chain in mountain regions is to add value to a generally "poor" agricultural and/or forestry raw material, so to enhance it and allow it to be better exploited, affecting consumption areas potentially much larger than that of origin.
The question we should be asking is: what kind of value? – as there are several (economic, monetary, social, territorial), and all are relevant. The answer is not so trivial, because the activity of a supply chain, especially if in a mountain area, takes on many meanings, going beyond the economic significance. The purpose of this report is to highlight the role of value chains connected to the agricultural and forestry sector, highlighting which actions, policies, good practices can help in supporting and strengthening value chains in the mountain/Alpine economy. Alpine territory is understood, in this report, as defined for the Alpine Convention (AC) perimeter, which clearly also includes non-mountain territories.
The past economic theories considered the market for agricultural products one of the closest models to perfect competition as agricultural products were for a long time considered simple commodities. Now we know very well that even the basic agricultural materials (milk, meat, cereals, fruit and vegetables) are not homogeneous at all in their characteristics, but they are strongly affected by the environment where they were produced. The nature of the soil, the microclimate, the plant varieties and the animal breeds used, the production techniques and yields, the interactions between the production models with the ecosystems (natural/wild animals and plants), are all factors that influence notably chemical and organoleptic characteristics of the raw materials produced. These differences, already appreciable during the direct consumption at the fresh state, are accentuated because of the transformation and processing activities. The techniques used (industrial/conventional or traditional) complete the process of economic enhancement, but also plays an important role for the organoleptic enrichment of raw materials. In particular, if the transformation is carried out following non-industrial and conventional processes, but with artisanship and traditional processes, developed over the centuries, often not rigidly standardized and using particular inputs and materials, the organoleptic enhancement process of the starting raw materials expresses itself at its best.
The value chains of mountain products from agriculture fully respond to this interpretive model: they increase the value (monetary and other) of raw materials that are already intrinsically different in characteristics and value, as they cannot be compared with agricultural products from more intensive production areas and models. Actually, this is the philosophy behind Protected Designation of Origin (PDO) products: their geographical brand substantially attest the uniqueness of these productions and their irreproducibility in other agricultural contexts.
In the forestry sector, the multifunctional character of the forest ecosystem and the approach of sustainable forest management have traditionally led to the development of locally diverse value chains, often with a cascading use of wood: from roundwood and wood for construction to wood craft to the use of small assortments and residues for firewood and energy. Nowadays, however, we are seeing frequently that the wood harvested in mountain regions is transported away, transferring a significant part of the added value far from the place of origin.

Nevertheless, the role played by the value chains in mountain areas is larger and more articulated. In addition to representing stable employment and a source of income, certainly important in areas that often do not have many other economic alternatives, the supply chains help to strengthen the links between producers, united by organizational, production and commercial problems, and allow to transmit knowledge (also stratified over time) to the younger generations, as well as valid employment opportunities. A role that we could define as socio-cultural as it allows for the strengthening of intra and inter-generational social cohesion. Furthermore, value chains in the Alps have an identity role for the mountain territories, where the cultural identity is strengthened thanks to the activities carried out within the value chains, and which, also for this reason, must be preserved and strengthened. Finally, value chains are beneficial for other aspects of “quality of live” and of the environment: sustainability, landscape maintenance and protection, animal welfare, climate regulation.

1 TIES OF ALPINE VALUE CHAINS WITH THE MOUNTAIN ENVIRONMENT

Alpine territories are characterized by the presence of farmers and forestry operators who are not limited to the production of raw materials. Through complex processing and marketing phases, they create a local economy based on food and timber products fundamental for these communities and for their sustainable development.

One of the most important assets for the Alpine supply chains is represented by the linkage established with the territories of origin, reflected also in the enhancement of organoleptic quality (Belletti et al., 2017). An effective food or timber value chain represents a production system that receives a series of influences from the environment where it operates, but, at the same time, exerting its own influence on the environment. The positive feedback ties established are multidimensional, as they are connected to all the components of the environment: land, water, biodiversity, rural landscape, but also to local economies, local resources, history, know-how and traditions of the social communities. The ensemble of these links represents the main responsible for the identity and quality of alpine products and gives strength to the supply chains, also in term of sustainability (Tebby et al., 2010).

The agri-food chains in the Alpine areas are very numerous, and the quality of their products is very often emphasized by the geographical indications PDO/PGI (Protected Geographic Indication) and their brands. These geographical indications are referred to different type of products: fresh food (meat, fruit and vegetables, cereals, milk) or processed products (cheeses, meat products, wines, spirits, bakery products, dairy products, fruit/vegetables conserves) from local raw materials (milk, meat, grape, cereals, fruit, vegetables). Their organoleptic characteristics are strongly affected by the territories of origin because of two main factors: the characteristics of the agricultural raw materials; and the characteristics given by the adopted transformation processes, which in turn are conditioned by the places (microclimate, materials and premises used for processing and aging) and their traditions.

Table 1 shows the indications of geographical or protected origin recognised at the end of 2021 in the Alpine Convention Countries (entire countries) for food products, except wines and spirits.

Tab. 1 – Food PDOs and PGIs (excluding wines and spirits) in the Countries of the Alpine Convention

	Food PDOs registered by EU, 2021					
	Austria	*France*	*Germany*	*Italy*	*Slovenia*	*Switzerland***
Cheeses	7	46	6	53	4	11
Fruit, vegetables and cereals	4	23	2	38		2
Fresh meat		11	3	1		
Meat products		5		21	1	
Oils and fats		13		42	2	1
Others*		12	1	17	3	4
Overall PDOs	11	111	12	173	10	18
	Food PGIs registered by EU, 2021					
Cheeses		9	3	2		
Fruit, vegetables and cereals	2	38	20	80	1	
Fresh meat		67	2	5		
Meat products	2	14	18	22	8	14
Oils and fats	1		1	7	1	
Others*		21	36	24	3	
Overall PGIs	5	149	80	140	13	14

*: fresh fish, molluscs, etc.; other products of animal origin (eggs, honey, etc.); vinegar; beers; pasta; bread, pastry, cakes, biscuits, etc.; chocolate; spices; salt; essential oils.

Source: European Commission, GIview, Geographical Indications across the EU and beyond
https://ec.europa.eu/info/food-farming-fisheries/food-safety-and-quality/certification/quality-labels/quality-products-registers
https://www.tmdn.org/giview/gi/search
**Switzerland: https://www.aop-igp.ch/

The wide heterogeneity of food products with a geographical or protected indication is an indicator of the different typology and high quality of food directly linked to farming and agriculture. Among these products, many of them (mostly cheeses and meat products, in some cases fresh meat and wines) originate precisely from the Alpine territories. This fact gives rise to important local value chains in terms of value at the farms' production, of value connected to the final consumption, and of jobs and incomes directly and indirectly generated along their different phases.

Looking at the specific numbers of the Alpine Countries, the French Alpine area includes 17 geographical indications of cheeses (11 PDO and 6 PGI) and some PGIs related to fresh meat (such as "Lamb of Sisteron" and other four for poultry). The Italian Alpine regions stand out for the PDOs related to cheeses (19) and indications for meat products (5, including the 2 PGI of "Valtellina Bresaola" e "Tirolo Speck"). The geographical indications for cheeses from Switzerland, Austria and Slovenia are almost entirely attributable to the Alpine area, while only a part of German PDO cheeses (4) fall within these territories; but it must be said that many other German cheeses (such as Harzer, Rauchkäse, Romadur) are important for the local alpine economies, although without a recognised geographical indication.

A brand based on a geographical indication for an Alpine product undoubtedly represents a strong lever for the whole value chain, allowing to obtain a wider and more robust product visibility, connecting mountains and the cities and giving the possibility to expand the area of distribution and consumption, also through exports. The Compté cheese in the Jura Massif, the Beaufort in Savoie, the Gruyere and the Tête de Moine in Bern canton, Ennstaler Steirerkas in Styria, Vorarlberger Alpkäse and Tiroler Bergkäse in the Austrian Alps, the Castelmagno for Cuneo Province and the Fontina in Aosta Valley are just a few examples of very important Alpine supply chains strongly rooted with their territory and communities, also recognised at international level.

However, it should be noted that brands different from geographical indications (such as regional and sub-regional brands provided from the regions of Auvergne, Rhône-Alpes and Valposchiavo) also can be successful to underline the local origin of the food or of the raw materials used, the production processes inspired to traditions, the ties of these products with local communities and their historical origins. All this represents a benefit that is certainly missing in an industrial product. It is therefore necessary to stress these important values, go on working on them and transmit them to the final consumers.

2 EFFECTS OF VALUE CHAINS ON THE ALPINE COMMUNITIES AND TERRITORIES

The impacts produced by the agriculture and forestry value chains in the different territories involved are various and always very positive. Effects are always important, even if the effects are not always and easily monetized.

A first effect, related to the economic and monetizable added value produced by the supply chain, obviously affects all the operators involved, whose labour and invested capital can be adequately remunerated if the supply chain works well and the bargaining powers between the different phases are well balanced. To maintain an adequate presence of operators in mountain areas (farmers, breeders, shepherds, foresters, craftmen, local processors), it is necessary that a significant part of the added value remains in the same mountain territories, working together with processors and points of sale, limiting the sometimes strong bargaining power of the industrial processors or distribution operators (wholesalers and downstream large distribution). This also makes it possible to pass to the younger generations production techniques and know-how developed in history, encouraging at the same time the introduction of technical innovations to improve processes, so permitting a better social inclusion and a generational turnover among farmers, processors and craftsmen. A specific paragraph will be devoted to possible strategies for retaining a significant part of the overall added value for the benefit of the agricultural phase, which shall actively contribute to certain sustainability criteria that are recently high on the political agenda due to urgent needs (biodiversity, circular economy, carbon farming, etc.).

One example for such a strategy is given by a German campaign, targeting the use of wood of regional origin for improved climate protection and resource conservation. This campaign pursues the regionalization of value chains. It calls for close cooperation between the operators in the forestry and timber industry in Bavaria: forest owners, sawmills and timber construction companies, architects, planners and decision-makers in cities and municipalities. The campaign "We build on domestic wood" in South-Eastern upper Bavaria draws attention to the ecological and economic importance of wood use from local origin. Thereby, the focus is on the idea of short distances: wood from the region should preferably be used in the region, aswood is a valuable raw material and can better exploit its climate protection potential if used regionally. In the coming years, it is urgently necessary, also for climate change mitigation, to increase the use of wood for building and to promote the regional use of the raw material. In addition, the timber construction initiative ensures the long-term consolidation of reliable regional supply chains and domestic value creation. In summary, the goals of the initiative are: active climate and resource protection, saving CO_2 emissions, strengthen the domestic economy, drawing attention to the importance of active and sustainable forest management as well as promoting construction with the renewable and climate-friendly raw material wood.

Other examples are coming from Austria. In one cases, the weak demand for mountain pine products (used traditionally for interiors) led to establishing a network (www.zirbe.at) comprising 114 suppliers, manufacturers and processors. The mountain-pine value chain supports a sustainable, nature-based product, which has positive effects on human, business and environment (win-win-win). It supports rural areas and short distances (anchored regionally) and is made by (traditional) crafts including designers, architects and carpenters. A second example is the Build-in-Wood Community[1] that shows a new way of networking, knowledge sharing and exchanging experiences for everyone working with wood in the construction industry. This Community is international and a result of the European Horizon 2020 project Build-in-Wood, where 21 partners are working together to develop new solutions for building with wood and to remove the barriers that exist today when it comes to wood construction. The Community is a place where everyone can both contribute their own knowledge and learn from each other as network and knowledge transfer are vital to growing business. There are examples in other Alpine countries, such as “Wood from Alps” https://www.boisdesalpes.net/ in the French Alps

Other positive effects caused by the presence of value chains in the Alpine areas concern the environmental ecosystem functions connected to agriculture and forestry sectors. Through the presence of farmers, breeders, foresters on lands, value chains indirectly allow a proper management of the rural space (landscape), of biodiversity (plants, birds, insects, small reptiles) and natural environment (ecological balances). Traditional agricultural practices in the mountains are based on low-input processes and continuous recycling of by-products (manure, stubble, crop residues, dried leaves, buttermilk), extensive farming and pastoral practices are common and widespread, while forest resources are traditionally managed in a sustainable way, providing material for building and for farming and ranging (e.g fences, stables, mountain shelters) and biomass for heating and, in the last two decades, also for electricity through local-level small sized biomass plants. Differently, operational projects for an economically viable reuse of wool and leather from mountain livestock are still lacking although this can be a possible example of circular economy in mountain areas.

Finally, the presence of mountain agricultural and forestry activities in connection with the local value chains is a positive factor on fire control and on management, increase and protection of ecosystems carbon storage, contributing to mitigation of climate change. In addition, activity of farmers and foresters allows to maintain stability of the slopes, which in many regions are often terraced. Terraces are widespread in all Italian alpine regions, in Switzerland, Slovenia and in some French alpine areas (in particular Savoie) (Bagnod et al., 2020; AA.VV. Various Authors, 2020; Tolusso et al., 2022). Restoration and maintenance of dry stone-walls provide different benefits. First, they play an ecological (shelter for small animal and plant species) and an agronomic role (reduction of soil erosion, increase in productive agricultural areas and greater stability of the slopes). They also have a remarkable landscape value (particularly in Aosta Valley, Lombardy and Province of Trento), and a cultural heritage value. The latter has allowed these handmade infrastructures, that are widespread in different areas of the world. to be recognized by UNESCO (in 2018) as a transnational cultural heritage.

Transhumance was also included in 2019 by UNESCO in the Intangible Cultural Heritage List, again following a transnational candidacy. UNESCO has recognized two types of transhumance:

[1] https://community.build-in-wood.eu

that typical of the flat areas (horizontal) and the vertical one, typical of mountain areas. This recognition highlights the cultural importance of a tradition that has helped to define the relationships between communities, animals and ecosystems, giving rise to rituals, celebrations and social practices that follow the cyclical nature of the seasons and, also, to shape the landscape in mountain regions.

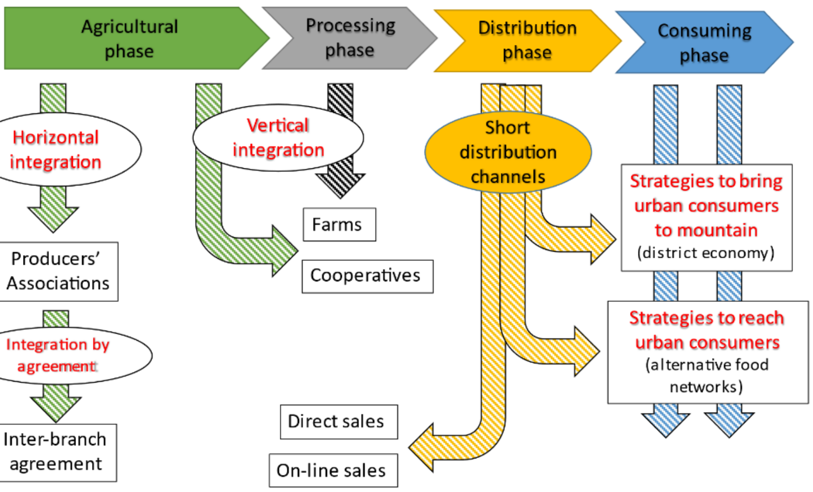
3 POSSIBLE STRATEGIES TO RETAIN THE ADDED VALUE OF ALPINE VALUE CHAINS AT THE LOCAL/SUB-REGIONAL LEVEL: HORIZONTAL AND VERTICAL INTEGRATION

As mentioned above, economic, social, environmental reasons show that the added value of value chains linked to mountain products must benefit local operators, especially farmers and foresters. The possible strategies, already implemented in many Alpine contexts, are different and complementary, but all are based on the principle to incorporate into the agricultural and forestry phases of some other stages of the value chain, in particular the processing and the distribution phase, in order to retain the relative share of added value (Brugnoli, 2011; Furesi et al., 2020).

In operational terms this means also giving contractual strength and organization to the agricultural and forestry phase, notoriously made up of small farms and small operators (who sometimes operate also part-time), through important horizontal and vertical integration processes. The structuring as a producer organization will also make it possible to join operational programs/sectoral interventions open to the livestock sectors in the long term. Alpine agricultural professionals would like an initiative in this direction for the already highly structured and high quality dairy sectors, in order to implement actions towards environmental measures, support for local protein sources, product research and development and promotion.

Other possible strategies recently implemented also in Alpine areas concern the shortening of the distances between producers and consumers. Among the limits to be considered and overcome in order to retain more added value in the mountain regions, we highlight the problem of the renewal of generations which will be crucial in the years to come and providing support as common service for maintenance of structures (slaughterhouses, manufacturing workshops).

The synthesis of these strategies is described by Graphic 1 and developed in this chapter and in the following one. Apart from what reported in the body of the report, examples of best practices, that were presented in a dedicated workshop, are provided in annexes.



Graf. 1 - Possible actions to retain mountain chains value added at farming phase

3.1 Horizontal integration

Horizontal integration is achieved through the establishment of Producer Associations, organizations that associate each other small farmers producing the same agricultural product (Petriccione and Solazzo, 2012). These bodies allow the agricultural phase to acquire a greater contractual power towards the other stages of the value chain, so that farmers are not in the condition to suffer for a too low selling price for their own raw materials. It is an important organisational approach particularly in two different situations:

a) when the technical processing of the raw materials requires high investments, special licences and/or sophisticated technologies to manage the agriculture, forestry or processing phase;

b) when a wholesaler or a large (even final) distributor seeks a particularly large volume of product, not within the reach of the individual farmer. Sometimes it may be necessary to plan crop production for obtaining it.

In these situations, between the farmer and the processor/distributor, an agreement is normally established, in which specific terms are defined for the delivery and the collection of the raw material, including of course its purchase price. If Producers' Associations are able to effectively control and plan the overall raw material supply (even at local level, because the quality characteristics are of particular interest), they may be part of an inter-branch agreement, representing the contractual counterparty of industrial processors or wholesalers or large distributors, and allowing small farmers to acquire bargaining power that they individually cannot have.

Moreover, the Associations may liaise to provide members with legislative updates and support services of various types (technical and legislative update courses, commercial support, etc.). Although this form of integration may have its limits, it often the main possibility when the agricultural raw material cannot be transformed or distributed directly by the farmers.

The strategic importance of these bodies is stressed, especially if processors need significant volumes of agricultural products with certain characteristics (fresh fruit and vegetables, perhaps organic, medicinal and aromatic plants, etc), or if a large distribution chain is interested in sourcing fresh products (e.g. small fruits, chestnuts, mushrooms). It could also become important when farmers need to introduce technological innovations (such as smart farming techniques) from high-tech service providers.

In Germany, Austria and Switzerland an example for forestry sector is given by private forest owners, that form “Forstbetriebsgemeinschaften” or “forest owners associations” in order to enhance the sales conditions of timber. For what concerns Germany, professional foresters are offering their service to forest owners of a specific region. In these areas, functioning forestry value chains enhance the value of rural areas as a whole. Above all, horizontal integration makes it possible for a large number of small forest owners to use and maintain their forests. Without a professional service (e.g. through forest owners associations) it is impossible for most of them to pursue forest work adequately. On the one hand, forest owners gain an economic benefit, which has a positive effect on the regional economy. On the other hand, the forest ecosystem is not neglected but adequately and professionally maintained and stabilized, which also benefits the regional natural balance. This is not only leading to all the already mentioned benefits of horizontal integration, but also helps private owners taking care of their properties and creating a climate-resilient ecosystem. Therefore, also services like consulting, organising of harvest/planting projects and educational offers are provided for the members

3.2 Vertical integration

Vertical integration can be achieved through three possible ways:

a) an inter-branch agreement between farmers/forest owners and a processor (integration by agreement);

b) the direct management of the processing and marketing phases of the final product by the individual farmer/forest owner;

c) a cooperative, which is responsible for the processing and marketing of the final product on behalf of its members;

d) the delegation of the processing phase to a third party (using raw material obtained by the farm or forest itself), and marketing the final product by the farm or forest owners/association (with its own label).

The inter-branch agreement has already been mentioned above. This is the least effective form of vertical integration, since the initiator, farmer or forest owner, especially if not represented by a Producers' Association, remains the least powerful actor in the agreement, with very few freedom degrees at disposal to improve effectively the productive activity. Often, varieties and ecotypes to employ are predefined (for example, this type of integration exists in the case of liqueur or natural cosmetics), as well as the management of the cultivation phases, the harvest period, the delivery volumes and methods, the minimum of quality characteristics required in the raw materials, with the possibility of binding the final price to the quality of the delivered products. Of course, the contract constrains the parties to the agreed price (the agreement is signed before the harvest, and often lasts more than one harvest), regardless the evolution of the price on the market. In this respect, there are sectors such as meat products and UHT milk which may present difficulties in governing such agreements.

The other forms of vertical integration allow participants to become more competitive and are certainly very efficient tools to direct the most part of the added value of the value chain to the agricultural or forestry primary sector, or at least to allow the Alpine product to maintain an imagine strictly linked to its territory of origin. The methods indicated as b) and c) are undoubtedly the most common in Alpine areas (many examples observed in the dairy sector and for meat products in France, Switzerland, Italy, Austria), depending on the type of processing required and the entrepreneurial skills of farmers. In some special cases (production of jams and natural cosmetics), option d) was also detected.

It should be underlined that while the direct management of the transformation phase requires skills, capital, and energy by farmers and forest owners, although it is potentially able to give good reward to individual entrepreneurs, mountain agricultural cooperatives play an almost irreplaceable role, not only in technical and economic value chain terms, but also as social and territorial conservation. They allow small farms often managed part time or run by people no longer young, to maintain their own farming activity, still having access to the processing and marketing phases and added values. For this reason, it is essential to support their activities in the mountain areas. However, proper attention has to be given to maintain the governance of the cooperatives in the hands of farmers and forest owners, to avoid loose part of the value connected to products, to benefit downstream operators. This is sometimes the case in the meat products and in UHT milk sectors, where the processing part of the value chain often needs more relevant investments that other value chains.

According to the vertical integration idea, in the Allgäu region the Holzfroum Allgäu is developing a Forest-Wood-Network (DiWaHN Digital). The aim of the project is to bring together regional players and entrepreneurs digitally, to ensure security of wood supply in the industry and to build resilient structures. This will be achieved through a joint digital platform for supporting, mapping and handling the regional value chain in the region. Additionally, the regional timber market is to be stabilized through suitable contractual arrangements to buffer the demand for logs and sawn timber. This particular project is only one example of many and currently in the review phase for LEADER funding, i.e. as part of a European Union program of measures.

3.3 Efficiency indicators for vertical integration

Differently from the integration by agreement, vertical integration can be very efficient in retaining locally a higher share of added value of the supply chain, but it is necessary that operators (farmers, forest owners, cooperatives, artisanal processors) are able to properly manage two important aspects of the vertical integration process:

1. individual farms, forest properties but above all the cooperatives must be properly managed, monitoring all the time revenues and costs, in particular external labour costs and depreciation linked to the fixed capital invested. In turn, they must be correctly dimensioned in relation to the volume of processing and the type of activity. The duration of the ageing and refining process of the product can also be crucial and must be carefully valued. The financial aspects related to external financing also need to be well assessed to balance outcoming cash flows to settle debts through incoming cash flows from sales and funding;

2. all operators must be able to effectively manage the marketing phase, which ideally closes the value chain. This requires specific skills that are not always within the reach of all operators, especially small farmers and artisans. The marketing phase is delicate because it involves a series of distinct, although interrelated processes (identification of the customer portfolio, sales performance, selling price definition, inventory control, production planning, promotion activities and labelling, and transmission of very relevant information to the consumer, etc.). Managing the marketing phase properly means being able to control the volume and value of the final product sales.

The proper management of the two aspects, which are at the same time technical and economic, allows to increase the income of individual enterprises participating in the supply chain directly (case b) or through cooperatives (case c).

The case of individual farms that directly process their own production and carry our direct sales is a widespread case, when the value chain concerns products with small volumes. There are many examples of this type: Castelmagno cheese for Piedmont or in general, many of the small productions of goat and sheep cheese, directly sold at farms. In this case, in addition to the role played by the individual farmer, the presence of a Protection Consortia is fundamental as its controls on producers and its market promotion activities support the image of the product. In these cases, the best indicator of efficiency is represented by the income of the processing farm. This income has direct reference to the level of implementation of the two aspects of the vertical integration described above. However, as operators are private entities, it is difficult to gain full knowledge of these data, as they are obviously considered sensitive. The final selling price could give some indications, but it is only a partial indicator. But even farm income can be misleading in some cases. In the case of Reblochon producers in the Aravis in France, the overall profitability of the farms is indeed high in absolute value, but the income related to farmer' labour is not so high, considering the very high number of hours required.

In the case of cooperatives, instead, the most direct indicator of the vertical integration efficiency is the price paid to their members, which is easier to be valued, especially by farmers. The contacts had during the mandate of the WG MAMF provide good evidence that where cooperation is stronger and better organised (the case of the dairy Cooperatives for French Comté, Beaufort and Gruyere cheeses is emblematic, but the same applies to fresh fruit in Italian Alpine regions, and for slaughtered meat in Germany of the initiative "Weitnauer Kalb") the price paid to members who provide the raw materials is significantly higher (also 40-50% in the case of Comté) compared to the market price of the raw material as such. Moreover, it is also more stable compared to the price fluctuations that can be observed periodically in relation to market demand and supply, giving greater economic certainty to local farmers.

In any case, it should be emphasized that even in cases when mountain raw materials get higher prices, it is not certain that farmers and forest owners always obtain fully satisfactory incomes. In the mountains, yields are lower, harvest season is shorter, working conditions are harder and farm costs are very high due also to more limited economies of scale compared to other conditions. Also, mountain conditions impose other higher production infrastructural and logistic costs (reinforced roof for snow, greater storage capacity for effluents during the winter, distance from dealers, etc).

These concepts should be transmitted to consumers, to make them aware of the difficulties involved by mountain agriculture and forestry but also of the important role mountain communities play for the benefit of the environment and the rest of population in other areas.

4 POSSIBLE STRATEGIES TO RETAIN THE ADDED VALUE AT THE LOCAL/SUB-REGIONAL LEVEL: BRING CONSUMERS CLOSER TO LOCAL PRODUCERS

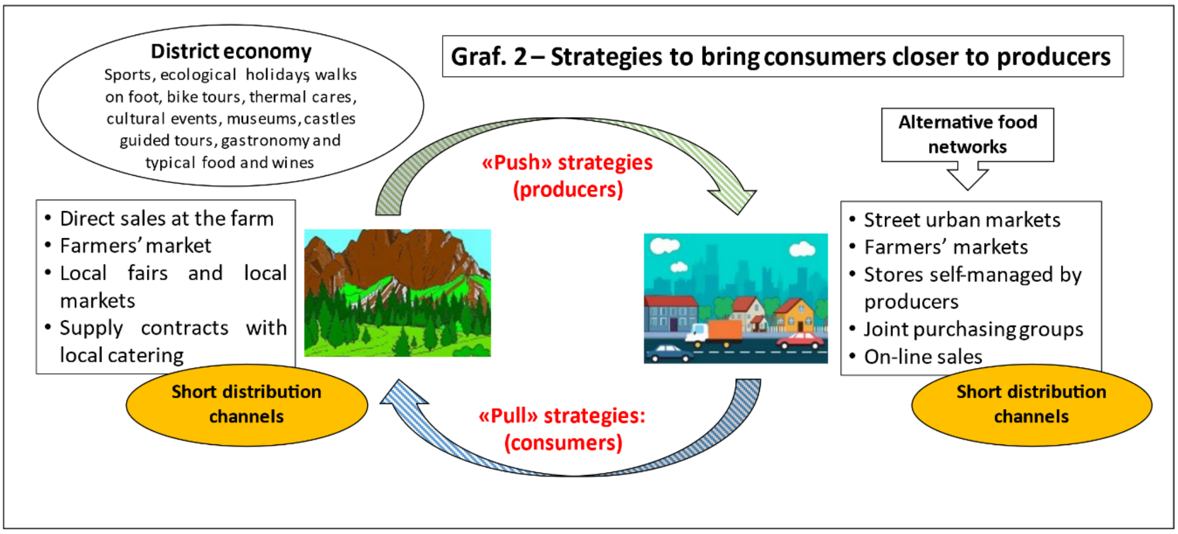
The transfer of a satisfactory share of the added value of mountain value chains to local producers is not only achieved by an effective vertical integration, but also requires strategies that allow to shorten distribution channel between producers and consumers, both as the number of steps taken by the product to reach the final consumption (very low number: better zero or 1), and as the effective distance.

The most significant market for mountain products is generally found in the urban centres closest to mountain areas, since local consumption is of course limited to a small population. It should be remembered that the volumes of mountain products, with a few exceptions, are generally small, and this fortunately does not make problems to producers for selling. The problem is basically related to finding the most suitable ways to get these volumes of product to consumers who appreciate its quality, and are willing to pay a higher price for it.

The possible strategies for achieving these goals tend to be two (Graphic. 2):

1. *"push"* strategies, which allow the producer to approach a reference market far from the production area (for example, an average or large city close to the Alpine area)
2. *"pull"* strategies, which can attract the citizen consumers (potentially also from distant regions, even from abroad) to approach the production territories.

These two strategies are both based on the realization of short distribution channels (what we call "zero-Kms sales"). They have to be understood as complementary and close to "circular" because the use of the push strategies also implies a positive impact in terms of the consideration of mountain areas by citizens interested in better knowing the production areas; while the pull strategies, which leads for different reasons consumers to visit mountain areas, move them more easily to know the local community and its products, improving the visibility of the territories and strengthening the existing value chains. Both strategies are surely favoured by local brands, even at the region or department level, that put emphasis on the alpine origin (e.g. Country of Savoy; AlpISHere; Hautes Alpes Naturally in France or Valle d'Aote or Trentino Alto Adige in Italy). The strategies will be described in the two following paragraphs.



4.1 "Push" strategies

With the "push" strategies the short distribution channel can be realized through a set of possible actions that go under the name of "alternative food networks" (Corsi et al., 2018), which include direct sales at neighbourhood urban markets, at Farmers' markets organized periodically in the cities, and at urban outlets managed by the producers themselves. Networks which – thanks to new internet technologies and following the pandemic from Covid19 – have grown with supplies to purchasing groups and direct sales with home deliveries.

All this implies, obviously, an increase in the organization of the mountain farms and in the invested capital, which is inevitably reflected in their costs (fixed and variable) and the necessary working times. In addition to the need of methods for handling goods, of equipment for sale, of any premises for sale (for rent or in ownership) and sales licences, it may be necessary to hire staff if family work is not enough. This suggests that mountain farmers should be able to organise themselves into groups to increase the range of products supply and to better distribute the increased costs. However, the higher sale price obtained and the direct contact to the market fully remains in the benefit of the farm revenue and, less the higher costs, of its income.

In our cities already many farmers, including those from mountain areas, have organized themselves in this way, especially for the sale of fruit and vegetables, honey, eggs, cheese, butter, bread and meat sausages. For example, in Savoie, dairy cooperatives have developed a large network of mountain product shops strongly linked to skiing resorts. Projects to develop baskets of mountain products in connection with train stations in ski resorts or fridges full of mountain products in mountain lodges and bar are examples of what could be organized to make local products known immediately to sports or hiking tourists.

Instead, the sale of fresh meat from mountain livestock (especially dairy cattle, but also lamb) is less widespread, probably because of its preservation needs, so more often it remains within the other distribution channels (local shops in the cities and large-scale distribution). For meat, in general there are difficulties in valuing all the cuts by consumers and, sometime, also to overcome criticism in selling young animals (although raised under good animal welfare conditions). It is necessary to raise awareness among consumers to learn how to value also the cuts which are usually considered of lower interests. A good example of how to try to get calves born from dairy cows to enter the fresh meat market (without turning to wholesalers) is provided by Germany “Weitnauer Kalb” project, with the intermediation of some operators to meet directly the supply of dairy calves (that cannot be used for internal replacement) by mountain farmers with slaughtering operators (slaughterhouses and butchers). The intermediate operators have drawn up a standard for the breeding of animals to be sent for slaughter that the farmers have learned to apply.

4.2 “Pull” strategies and tourist districts

In this case it is necessary that the territory develops a strong tourist attraction, acting on a large diversification of the activities and services offered by the mountain territories. In the mountains, the basic tourist activities are linked to the traditional winter sports and summer vacation packages that these territories have always offered. However, to increase their attractiveness towards different demand segments, it is essential to diversify the tourist packages offered, to be able to develop a tourist demand in all months of the year (not only winter or summer), also including people not interested in sports activities. The organization of fishing courses, mountain biking, paragliding and similar; the organization of exhibitions and cultural events, themed walks (heroic vineyards, biodiversity of pastures, for example), organized on foot or by bicycle (also with rented e-bikes), the offer of visit to forests as well as the offer of thermal baths and spa activities, are just a few examples of how tourist packages can be diversified to intercept a new segment of tourist demand that the pandemic from Covid19 has brought to attention, and that interests more and more families who want to live their free time not far from the big cities and in healthy and relaxing natural environments (Barbera, 2022).

There are examples of great interest (Savoie and Rhone-Alpes in France, Aosta Valley and Trentino-Alto Adige in Italy, many locations in Switzerland and Austria) which indicate how important is a district development for the alpine territories.

The presence of tourists in the mountain area promotes the development of other activities, in particular accommodation and catering, developing a local district economy very important in terms of value and jobs. The different economic components contribute to the overall added value of the area, allowing a virtuous "win-win" process of development of the territory, where all operators have an interest in maintaining and safeguarding the mountain environment for the future. Among others, this also allows many farmers and craft men to find new employment opportunities, to increase a sometime insufficient income. The so-called "multi-activity" in agriculture (widespread for example in many Italian alpine areas) is a fundamental condition for the development of marginal territories, because if these additional income opportunities were to be missing, easily a part of small farms (especially part-time farms, the most fragile) would eventually disappear, with all the negative externalities that this entails: loss of the rural landscape, of traditional production, decrease in territorial control and control of forest fires, just to mention a few.

Even in these cases, the technical innovations, such as some specific apps (although efficient traditional information and tourist offices are still good), can stimulate the interest of tourists to visit the places. Thjs is particularly true if the local entertainment and visit offers of the areas are well presented, the historical and cultural destinations well described and all the tourist services illustrated (sleeping and eating, renting bicycles and other sport gears, local shops for food and crafts - see for example http://www.suaci-alpes.fr/-Sytalp; http://www.suaci-alpes.fr/-Alpe-en-Alpe).

The presence of tourists coming from distant urban areas therefore offers to the operators of the local value chains and to farmers the possibility to intensify onsite the direct contacts with the final consumers. Also in this case, the short distribution channels (zero or at most 1 step) are the best way to enhance local products and retain locally their added value. It is important that, alongside the cooperatives (already well organized in this sense), the individual farmers and craftmen also organize themselves for direct sale, inside their own premises if it is in a strategic position, or through participation in local fairs and markets. But also supply contracts with onsite small shops and restaurants must be implemented, as these operators hopefully must become promoters of products of local origins, also for cooked food, to better develop the district economy. Other opportunities may come from experiential stays to discover milking, processing, accompany a shepherd to keep the herd in a predation zone, tour operators to meet the alpine pastures (on foot, by bike, etc.).

Obviously, as already mentioned, in all cases of direct sale the activity involves additional costs, above all fixed costs, and potentially also for an increase in the working times. All these costs can be better distributed if the local operators organize themselves not individually but in groups, thus allowing to also widen the assortment of products offered and the opening hours to the public.

5 LABELLING OF ALPINE PRODUCTS

A crucial aspect for a mountain product and its communication to the consumer is represented by its label, intended as a union between a local-level brand (geographical indication, local origin, organic farming), a trademark (producing farm, processor or cooperative), any other distinctive signs, words, symbols, and other information on the packaging; these information must be available also at the point of sale, particularly for products that are sold in bulk by weight or without particular packaging.

The label must be able to transmit to the consumer some key information in a clear and unambiguous way:

- the product nature, that is not comparable with an industrial product; consequently, its characteristics that could also be non-uniform over time and space (especially for particular cheeses when in limited quantities), in several cases these discrepancies must be considered normal and acceptable in an Alpine production context and do not detract from the intrinsic product quality (let's think, for example, of the differences between an alpage cheese and the same cheese obtained in winter)[2];
- the raw material used, which is of local origin and used in the process in an exclusive or largely prevalent way; in qualitative terms it benefits from the natural environment in which it was produced (for example, higher nutraceutical properties of cheese and butter

[2] The stability of the product characteristics nevertheless contributes to its quality and its recognition by the consumer, this is in particular what makes the strength of mountain cheeses, such as the Comté cheese.

produced in mountain pastures[3]); moreover, the use of local raw material helps to limit pollution and emissions related to transport;

- the utilised process, linked to local traditions (e.g. wood craftmanship), but also to local microclimate conditions and environmental characteristics (e.g. particular bacterial microflora, natural animal or vegetable rennet, etc.) that affect the final characteristics;
- any activated circular economy (cascading use of wood, use of reusable waste in agriculture or in the energy sector from livestock ranging);
- the advantages - economic and not economic - generated by the purchasing, for the benefit of the local community and the environment where the product chain insists (environmental sustainability);
- the greater constraints imposed by the mountain environment, which raises the farming costs, and limits the yields, to the benefit of product quality and for human and environmental health (a higher price than comparable products is justified).

Regarding the use of the local brand by producers, there must be clear protocols and severe controls for granting the use, and this naturally raises the problem of identifying a suitable body to perform these functions.

Moreover, the use of an territorial brand requires that the message associated with it is completely clear to the consumer. The excessive proliferation of territorial brands over a limited area can be negative if it leads to confusion or even to a loss of consumer confidence. From this point of view it is necessary attention from local administrations, acting if necessary with "umbrella" marks, able to limit the dispersion of visibility of the mountain territory. Local administrations could be also active in facilitating the adoption of mountain, local, products in collective catering (as this is not always allowed by sometimes too strict market competition regulations).

The activities carried out by the Working Group have shown that, in the absence of geographical indications, many Alpine areas (depending on the individual existing legislation) have organised themselves with different types of marks, to emphasize the link of alpine products to the mountain environment.

Among these brands the optional indication of quality "Mountain Product" (referred to in Reg. EU 1151/2012 and Reg. Delegate EU 665/2014; many countries had pre-existing national legislation) or “Montagna e Alpe” (https://www.blw.admin.ch/blw/fr/home/instrumente/kennzeichnung/berg-und-alp.html) for Switzerland must certainly be mentioned. It is a designation for quality and origin available for food of animal and plants origin, with the aim of promoting their recognition on the market. These indications are particularly relevant for those products that do not have an official PDI or similar formal recognition. In Italy, in 2017 the Ministry of Agricultural Food and Forestry Policies issued specific provisions for its application, and in 2018 the Italian brand was established with its logo to be applied on the label of products. Piedmont is currently the Italian region with the highest number of communications submitted (Bonadonna et al., 2020). Specific measures included in the this regulation have encouraged its use by many mountain producers through a series of rewards favouring the adoption of this sign of quality.

[3] Actually proven for Savoie cheeses

There are also cases of local brands that aim to emphasize the local origin of the raw materials used and the environmental sustainability of the value chains. It should be noted that in some cases these brands may even be numerically redundant in the same region, requiring the presence of an "umbrella" territorial brand, in order to strengthen the unitary image of the region and its products toward the consumer. For example, in the French region Auvergne-Rhône Alpes, a regional umbrella brand "Ma Région, Ses Terroirs" has been established (EUSALP-AG 6, 2022), in order to include a multitude of brands related to different food (147) and not-food (180) products, each of them recalling aspects highlighted above. In Switzerland two different approaches have been applied. One approach is the label reporting the regional provenience of food products (*regio garantie – provenienza regionale garantita – verein Schweizer Regionalprodukte*), that combines the forces of the four supra-regional organisations alpinavera, Culinarium, Das Beste der Region and Pays romand - Pays gourmand on the topic of regional products. The "Verein Schweizer Regionalprodukte". Sales promotion measures for regional products are supported within the framework of the four supra-regionally organized projects for regional sales promotion. A second approach is «Swiss Parks» label can be awarded to parks but also to products and services in regional and national parks (see https://www.parks.swiss/en/the_swiss_parks/what_is_a_park/park_product_label.php).

6 CONCLUSIONS AND RECOMMENDATION

Overall, also through the activities carried out by the Working Group on Task 3, it appears that mountain value chains are well represented and active in the different Alpine territories. In general, each locality, each region presents typical and characteristic food and non-food products, which are enhanced through brands of geographical indication, but also with other types of brand, in order to promote the typicality of the product and the local origin of the raw materials used. In general, these products have higher added value than industrial products, and this is a first positive element because they can potentially promote and strengthen the development of mountain areas Additionally, timber of short distribution is strengthening the local economy while being climate-friendlier than long-distance alternatives. Regional campaigns helps moothing the needed local timber value chains by promoting the use of wood in e.g. wooden buildings.

The horizontal and vertical integration processes, especially through the processing cooperatives, allow to strengthen the position of agricultural and forestry phases within the supply chains, but in order to keep a significant part of their added value in the territories of origin, public policies and farms management must work for enlarging the markets (private and public) for local products, for making many Alpine areas more attractive and for reducing the length of the distribution channels between producers and final consumers.

The Covid19 pandemic crisis has partly fostered these objectives. In fact, it has stimulated the interest of many people towards more local and less industrial foods, obtained according to production techniques less harmful to human health and more sustainable for the environment. The market for organic and local products showed further increases in all Alpine Convention countries compared to the years before Covid19, which had already reported substantial increases in the sales. The restrictions imposed on the movement of citizens during the Covid period have made many families rediscover mountain resorts as an ideal destination to spend their free time, even in periods different from winter and summer. This really was a great opportunity to make the mountains and their products more attractive, giving consumers the opportunity to get closer to local producers and to consider the production context *in situ*. The district development model in the mountain contexts has proved successful, and the differentiated tourist offer in response to these changed needs has allowed many Alpine areas to strengthen their visibility and attractiveness, bringing the final consumer closer to the production chains operating on site.

For a further and wider support to local supply chains in Alpine areas, the following needs will emerge for the coming years:

1. **Focusing on the consumer, to communicate quality in an appropriate way**, so that the greater willingness to pay really corresponds a perception of a different product in its intrinsic characteristics and in its environmental sustainability. The territorial brands (geographical indications -GI - and other) and the labelling so far adopted have well answered to the need of emphasizing typicality and close links with the territory of origin. The new CAP 2023-2027, in order to line up with the strategies of Green Deal, is preparing to review the geographical indication and food labelling discipline, changing the reference context and transferring attention from the main factors of the past system

(typicality, traditions, territory) to new values, probably involving also simplified nutrition information provided to the consumer (Nutriscore system or similar). Regardless of how GIs will be declined in the future, it is important that policy makers be aware of the positive effects on the environment that Alpine value chains linked to GI and non-GI products continue to have in mountain contexts. The value chains of Alpine products (cheese, meat, wood in particular) have demonstrated to be a model of sustainable production to be supported in every way, for the positive impacts on several aspects of the mountain environments. Without them, the mountain regions would become much more vulnerable, less resilient to the economic, social and environmental difficulties that will inevitably await us in the coming years.

2. **Going on to support short distribution channels, providing local services for processing and retail sectors, also promoting the adoption of new internet technologies for sale.** The ability of producers to access urban areas through conventional and technological sales channels, as well as to make direct sales on site, is giving good results. Websites, smartphone apps and social media offer new marketing opportunities. These tools allow local producers to have more visibility and attract more consumers, while they help consumers to identify individual farms. The use of these technologies is now available to many farms and cooperatives. Local level services for first-level processing, technical maintenance and facilities are also relevant for successful development of short distribution markets.

3. **Farmers and producers must establish a relationships network with other operators of primary production phase, and with other district operators.** Direct sales (both far from the farm or on site), beside higher revenues, always entail an increase in costs and work commitment, and therefore the need for adapting farms internal organization. A collaborative and non-competitive approach between producers allows a better organization of the sales process and a better distribution of fixed costs. Coordination with other operators in the district (especially tour operators, restaurant, and hoteliers) also allows a better visibility of traditional local products, in this respect, regional systems may be a promising approach. It is very important to keep the added value upstream, but tools and assistance should be provided for a proper agricultural and market governance.

4. **Facilitated access to the public food market must be guaranteed to local producers.** The nearest urban areas are markets of great interest for Alpine supply chains producers. In addition to the private markets, made up of individual citizens' food demand, public markets should also be considered, consisting of the consumption of school, hospitals, and public offices canteens. They could represent an additional outlet for mountain products. Public expenditure on food products offers a significant potential for supporting the local economy and short supply chains, by providing high quality food. Greater political commitment is needed to help local producers gaining access to these markets, by passing on the notion that the value of public procurement must also be in favour of rural development objectives. Public procurement procedures must therefore make virtuous approaches, possible by stopping to consider only or mainly the price of the supplied products as the predominant choice criteria, as this does not guarantee a good use of public money in the medium-long term. Hence, mountain products could be considered for public support. However, it is possible that many Alpine producers, considered individually, may not have the capacity to comply with a public contract. This difficulty can,

however, be overcome by horizontal and vertical integration processes, and by the collaborative approaches mentioned above.

5. **Foster the territorial involvement for the development of more effective value chains**. Value chains exert at best their effects on the socio-economy, the environment and the well being of mountain territories only if all the territorial actors are involved. In this respect, future actions should favour strong interactions among local, regional and national institutions (simplified bureaucracy, political and economical support, recognition of the peculiarities and difficulties of the mountain territories, etc), farmers, forest owners (private and public), processors (collaboration, cooperation, vertical and horizontal integrations) and citizens of the mountain areas and of the other places, considering also tourism stakeholders. Proper support to communication and animation could help in this development.

6. **Recognize and give value to the other services ensured by functioning alpine value chains**. As described in this report, value chains in mountain areas are ensuring the maintenance of the environmental assets. In this respect, ecosystem services such as landscape and biodiversity protection and climate change mitigation should enter in the construction of the price recognized to mountain productsing , biodiversity, carbon

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ANNEX 1: Best practices and cases from the Value Chains Workshop (01/02/2022)

1. Holzforum Allgäu - Network for regional value creation in the forestry- timber sector (Markus Briechle, Germany)
2. Short food chains for connecting mountains and cities: opportunities and problems (Alessandro Corsi, Italy)
3. Added value in the Austrian Alps: Either small, single and local or jointly in cooperation (Christian Jochum, Austria)
4. Value creation in mountain regions used on the example of Tête de Moine PDO (Olivier Isler, Switzerland)
5. The initiative Weitnauer Kalb – regional veal without long transport routes (Verena Graber and Stefanie Fink, Germany)