

AlpBioEco

Regional Implementation Guidelines

Piedmont Region— BM: **Apple Flour**



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INTRODUCTION

1. INTRODUCTION

The ecosystems of the Alps are exposed to environmental problems caused by economic activities and climate change. Moreover, agricultural business, producers and manufacturers in the European Alps face fierce competition on the global marketplace. There is an enormous potential for green ecological growth and workplace creation due to the development of a sustainable bio-economy. Innovative use and value of regional resources strengthens regional business. Currently not all bio-economic potential is used. One problem is that many supply chains in the European Alps are not sufficiently connected. Many waste and by-products are not used, they are just dumped or composted instead of reusing them to develop new products in accordance with a good ecological Recycling Management.

In addition, there is a lack of coherent policies and strategies to support bio-based supply chains. This is exactly where the project AlpBioEco comes into play: It fosters a territorial development of the agricultural sector using innovative methods, above all innovation for small and medium-sized businesses and strengthens economy and cooperation in the European Alps.

The overall goal of AlpBioEco is to foster a sustainable economy and support the markets and competitiveness of a bio-based economy in the European Alps. It focuses on supply chains of bio-based food and plant extracts. The project works especially on walnuts, apples and herbs which were analysed to identify their potentials. AlpBioEco uses „open innovation concepts“ to develop proper business concepts for different regions.

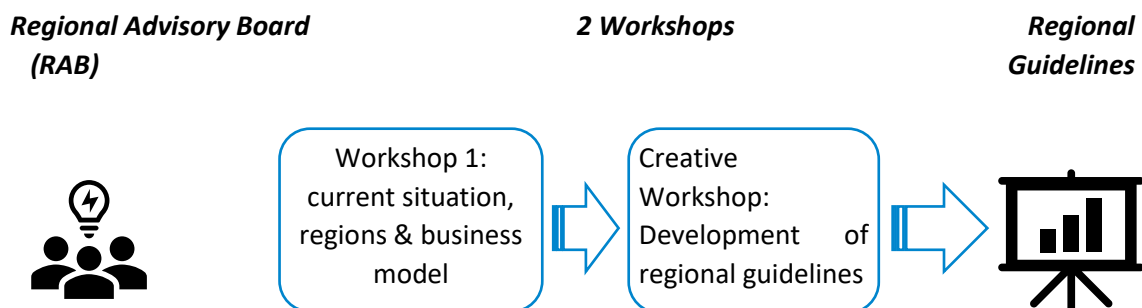
The following guide should speed up the implementation of these business models and the development of bio-economy in Upper Austria. The guide provides clear recommendations for involved decision makers in politics and economy like different Chambers, Clusters and Research Institutions. On the other hand, the guide is also directed to all those producers and businesses that are searching for market niches and further development. A detailed guideline shows all steps for implementing new business models – from market research to product development. It includes important facts about raw material and financial funding to facilitate the implementation of the new business model.

2. METHODS

In order to develop a guide for all project regions, which specifically focuses on this business models, Regional Advisory Boards (RAB) for each of the 10 regions were created. The RAB consists of experts from different fields (politics, economy, regional development, agriculture, food production, food supply, legal representatives of interests). All those experts provide their expertise and together they work on a successful implementation of the business model. The RAB dynamically connects all relevant stakeholders of a region in order to create and foster new supply chains and new opportunities that have not been taken into account previously. The RAB consists of the most important stakeholders of the bio-economy sector within a region and so it also provides a network which is of importance for future platforms / projects / recommendations.

First step was to collect information from a region and show the current situation. This was made by the RAB in different workshops under the supervision of an AlpBioEco project partner. Second step was to develop a common vision of how to elaborate recommendations for politics based on the

project. This was made in a second workshop with creative workshop methods like for example: Lego Serious Play®, Mural Tool or PESTEL. Due to the current health situation (Covid 19) all meetings were held online, offline, or hybrid versions.



Work steps performed when developing regional guides

A chairman/chairwoman was nominated for each RAB. This chairman/chairwoman is responsible for presenting and discussing the elaborated recommendations at an international meeting, the so called „Transnational Transfer Meeting“. In this meeting not only the regional guides are presented, but also a transnational and transregional guide is developed. In this guide’s transnational and transregional guidelines the project regions are presented as role models and pioneer regions and serve as model regions for others .



Work steps performed when developing transnational guides

Overview Members RAB Region Upper Austria

Function	Name	Organization	Area (Politics, SME, Industry, Chamber,...)
Chairman	Stefania Crotta – Elisa Peinetti	Regione Piemonte	Politics
Member RAB	Elisa Fammartino	Unioncamere Piemonte	Chamber of Commerce
Member RAB	Francesco Quatraro	Università di Torino	University of Turin
Member RAB	Franco Fassio	Università di pollenzo	University of Gastronomic Science
Member RAB	Marco Piccolo	Dr. Reynaldi-Cosmetica Italia	SME and Cosmetic Companies Association
Member RAB	Dario Vallauri	Polo Agrifood	Agrofood companies cluster representative
Member RAB	Lorenzo Picco	Azienda Agricola Magnarosa	Apple Farm
Member RAB	Barbara La Licata	Environment Park spa	Large company and PPs

DESCRIPTION OF THE BUSINESS MODEL: APPLE FLOUR

Apple flour is made of finely milled dried apple pomace. Apple pomace is a by-product obtained during the production of apple juices, and it contains pulp residues, skins and apple seeds. Apple pomace is normally wasted but it still contains high content of nutrients. Furthermore, apple flour is gluten-free and this increase the opportunity to use it in special diet.

In the project, the apple flour was produced using apple pomace coming from organic ancient varieties of Italian Apples. These ancient varieties have the characteristics to be more resistant to parasites and to contribute to local biodiversity.

The production process is green and sustainable since no chemical substances were used. This product still contains high quantity of sugars, fibres, pectin and different antioxidants with antiradical activities. From apple flour, it is possible to produce also an apple paste, by rehydrating and homogenize the flour, obtaining a more water-soluble product. In the project, apple flour was used in different bakery products (sponge cake, bread, shortbread cookies and cereal bars). Apple paste was used as a functional ingredient for the realization of three cosmetic products: face cream, micellar water and shower gel. This cosmetic line is 100% organic, rich in natural antioxidant and sustainable.



BUSINESS AND MARKETING OPPORTUNITIES

The use of by-products of apple industries, like the apple pomace of juice production, is an interesting opportunity for the development of local economy.

In Piedmont Region, more than 4 thousand companies produce annually 230.000 ton of apple, for a total Italian apple production of 2.2 Mton per year. Of this production, 2,3-2,5% is by-product and it is wasted. The possibilities to use these by-products in the apple value chain could lead to an increase in the profitability of the companies by diversifying the incomes. Moreover, this led to new opportunities in the circular economy, by creating and strengthened collaborations, and lead to a reinforcement of the territorial competitiveness.

The possibility to transform apple by-products in an ingredient for the food industry has interesting opportunities, in particular regarding the gluten-free sector. Moreover, apple flour is a versatile product and could be also used for realization of functional and nutraceutical food.

On the other hand, the chemical characteristics of apple flour make it interesting for application in the cosmetic sectors. High content of different type of antioxidants lead the possibility to use the apple flour as a main ingredient for the realization of different types of cosmetic formulation.

In both cases, the market penetration should be strictly correlated to the concept of territoriality and sustainability, by using an effective storytelling approach.

ADDITIONAL INFORMATION AND CONTACTS

You can find the additional information about the product [here](#).

CONTACT INFO

In the case of more information needed please contact the organization:

- Italy/Envipark/Barbara/La Licata/E-mail: barbara.lalicata@envipark.com
- Italy/ITKAM/Sonia/Barani/E-mail: SBarani@itkam.org

In the case of more information about the product, please contact the company:

- Italy/Azienda Agricola Magnarosa/E-mail: info@magnarosa.com



STATUS QUO

BIO-ECONOMY STRATEGIES

In Europe, the Bioeconomy is already worth EUR 2.3 trillion in annual turnover and accounts for 8.2% of the EU's workforce (18 Million of jobs).

Actually, more than 50 nations worldwide are proposing actions and strategies to boost their Bioeconomy, the economic dimension of which is steadily increasing.

Four students from the University of Hohenheim analysed and compared selected national bioeconomy strategies (France, Austria, Germany, Slovenia and Italy) for the development of a sustainable bioeconomy as part of their master's in bioeconomy. A comparative overview of strategies can be used as a basis for the development of proposals aimed at improving existing strategies and for a simpler process of innovation and implementation of sustainable and ecologically innovative business models and to promote interregional and interdisciplinary cooperation in the Alpine region.

In line with the European Strategy, the Italian Bioeconomy means integrating the sustainable production of renewable biological resources and converting these resources and waste streams into value added products such as food, feed, bio-based products and bio-energy.

This strategy aims to provide a shared vision of the economic, social and environmental opportunities and challenges associated with the creation of an Italian Bioeconomy based on longer, more sustainable and locally routed value chains.

The Bioeconomy strategy is part of the implementation processes of the National Smart Specialization Strategy (S3 strategy), focusing in particular on the areas of "Health, Food and Life Quality" and "Sustainable and Smart Industry, Energy and Environment". It will be implemented in synergy with the principles of the Italian National Strategy for the Sustainable Development for ensuring environmental sustainability and economic growth reconciliation.

A recent collaborative work for the drawing up of a Position Paper on Bioeconomy (6/129/CR08b/C11), developed by the Conference of the Italian Regions, monitored the strategic position of the regions with respect to three pillars of the Bioeconomy: Marine Bioeconomy, Agrifood, the Bio-based industry. The study paves the way to interregional cooperation in the Bioeconomy, especially between neighbouring territories, opening up also the necessary dialogue with national programs and strategies (1).

On a local level, the Regional Strategy for Sustainable Development (SRSvS) is the operational tool used by the Piedmont Region to achieve the sustainability objectives of the 2030 Agenda and of the National Strategy. The SRSvS permeates all regional planning to build, guide and define policies and actions aimed at economic growth in harmony with the integrity of ecosystems and with social equity. On the economical level, the Document of Regional Economy and Finance defines the reference framework for the preparation of multi-annual and annual financial statements and for the definition and implementation of the policies of the Region. This document is elaborated on the assessments of the state and trends of the international, national and regional economic and social situation (2).

(1) *BIT II-A new Bioeconomy strategy for a sustainable Italy-2019-Presidency of the Council of Ministers*

(2) *Strategia per la specializzazione intelligente del Piemonte -S3*

RAW MATERIAL

Piedmont is one of the Italian regions with the highest apples production, after Trentino Alto Adige and Veneto. 60% of Piedmont fruit growing is concentrated in the province of Cuneo with 18,479 hectares and 7,950 farms. In 2020, almost 9% of the total production is organic (Coldiretti). By-product represent 2,3-2,5% of the total production of apple fruits (Assomela).

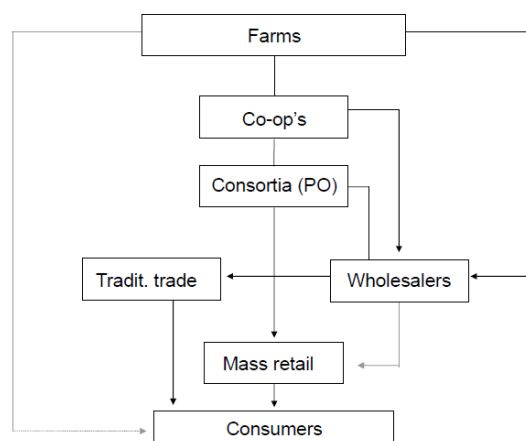
In Italy there are 2 different types of farm:

- Alpine Farms, smaller size, more specialized with higher yields;
- Po Valley farms, bigger less specialized (orchards with different typology of fruits) and lower yields

For both, the marketing opportunities are related to the sale to big cooperative.

In the figure there is the actual scheme of the market organization of Apple production in Italy (3).

(3) Giorgio De Ros and Gastone Dallago FEM – CTT Braunschweig | agri benchmark Horticulture conference 2013.



The rules governing the international apple market provide for the following quality scale: extra, first, second, second B or waste. Waste apples, which don't meet the requirements to be placed in the commercial circuit as a fresh product, are delivered to specialized plants that obtain various types of derivatives or processed from them.

The waste is in turn divided into apples for juice, apples for purees and drying apples. During the processing of apples to obtain juice or cider, huge quantities of waste are generated (peel, core, seeds, pieces of pulp, etc.), which are generally wasted. These residues, commonly known as apple pomace, represent about 250 g / kg of fresh weight of the fruit to be processed.

In Piedmont Region, there are some big interesting companies that produces apple juice on a large scale and some smaller producers. The quantity of apple pomace produced and available is still an open point that has to be analysed in order to evaluate the logistic for the production of apple flour on a large scale in Piedmont Region. In particular, a dedicated logistic organization for the realization of the apple flour immediately after the production of apple pomace or a refrigerated storage in case of post-production. Food industries and cosmetic companies require products with high level of standardization, in terms of chemical characteristics as well as taste, texture etc. The production process needs to consider these requests from all the point of view (logistic, quality assurance etc.).

ASSESSMENT OF MARKET AND CONSUMER BEHAVIOUR

The BIM of apple flour take in consideration the possibility to use the product as a functional ingredient for cosmetic products. The market analysis realized suggest that at the moment there are 5 trends in the cosmetic sector (Trend forecasting company Worth Global Style Network):

- Reduce the environmental impact;
- Multitasking products;
- Beauty also for men;
- Use of superfoods in cosmetics;
- Use of local ingredients;

On this basis, a cosmetic product that has strong connection with the territory, is sustainable in the production process, and contains food or functional ingredients, could have a positive impact on the consumers. These principles should be used for the definition and identification of the brand identity. The cosmetic market is very competitive and a detailed study of the marketing strategy, the identification of the target groups and the value proposition has to be finalized.

Apple flour could be used also as an ingredient for the food sector, in particular for the niche of gluten free products or super food. These sectors are growing continuously and represent an interesting sector to develop new products.

RESEARCH AND DEVELOPMENT

The use of apple flour as an ingredient for the cosmetic sector still needs further researches. In particular, apple flour is not water-soluble and this is a limit for the formulation of different types of cosmetic products. The alternative is the use of apple paste, water soluble and suitable for all the cosmetic categories. Apple paste production requires more technologies and this should be taking into account when performing the business plan. Other chemical characterization still has to be done, in particular to exploit the antioxidant activity of apple paste and in the cosmetic products.

In the case of cosmetic sector, policy requirements concern: firstly, apple paste should be registered to the International Cosmetic Ingredient Nomenclature Committee (INCI) that provides the systematic name for the identification of a cosmetic ingredient. Then, apple paste should receive the declaration of safety and the approval of use according to the relative directives. Moreover, a complete formulation design for the cosmetic line is needed, together with the developing of a solid cosmetic branding strategy.

In the case of food sector, the food design has to be completed with further development of recipes as well as laboratory analysis and sensory studies.

FUNDINGS AND LEGAL FRAMEWORK

In Piedmont Region, different initiatives are present for the support of bioeconomy:

- support to the managers of the innovation poles for regional cluster development programs;
- support for projects and research, development and innovation activities within the regional system of innovation Cluster, to promote technology transfer and collaboration between SMEs and research organizations on medium Technology Readiness Level (TRL) topics;
- The Bioeconomy Platform - this initiative provides for a combined non-repayable loan and credit facilitated, aimed at groups of SMEs, large companies and research organizations, which intend to develop industrial research and experimental development projects on the theme on green chemistry / cleantech and agri-food. This initiative encourages collaborative projects between SMEs, large enterprises and research organizations within the regional system of Innovative Technological Platforms on medium-low TRL issues, to promote the demonstration of innovative technologies with respect to the competitiveness of entire industrial chains;
- promotion of projects for the industrialization of research (IR² tool). Purpose of the action: to promote industrial investments capable of bridging the so-called "valley of death" that separates the most promising research results from their commercial development, on medium-high TRL issues;
- qualification and strengthening of public research infrastructures and promotion of access by SMEs to qualified research and development laboratories and services;
- facilitation of innovative investments made by SMEs (Midcap Tool and Innovation Tool for SMEs). Purpose of the action: to promote investments for environmental sustainability, safety and innovation of production processes;
- promotion of international and interregional collaborations in the field of R&D (Eranet, national technological clusters) of the Piedmont Region production system.

Regarding the funding scheme on agriculture and farmers, Piedmont Region has implemented the CE Regulation n.1305/2013 through the Rural Development Program (PSR) for the Piedmont Region that identifies the needs of agriculture and the rural world and the initiatives to finance them (approximately 1 billion euros of public funding, available for 7 years for the period of 2014-2020).

In the case of start-ups and Innovative Enterprises, the Piedmont region has approved the POR FESR 2014-2020 measure Axis I Action I.1b.4.1 through the implementation of the S-CUP call - Support for start-up consolidation and growth programs up, to strengthen and integrate investment projects by shareholders and / or third-party investors, with a financial endowment of 15 million euros in 2020

SUMMARY TABLE

This table is together completed by the RAB based on their experiences, assessments and level of knowledge. Since this advisory board is made up of people from different disciplines with perspectives from many directions, this table will provide a good overview of the current situation in the region with regard to the business model.

The term "excessive / unproblematic" defines that these areas are available to such an extent that the BM implementer only has to select without a lot of work in the search or that the framework conditions are in such a way that they no longer need to be changed to ensure implementation of the BM.

The term "too less / problematic" includes all those areas in which changes have to be made so that the BM can be implemented.

	excessive/ unproblematic	sufficient	middle	Too less/ problematic
Raw material in the region		x		
Raw material producers in the region		x		
Market and consumer		x		
Competing products				x
Dealer and Trader			x	
Interested project partner	x			
Possible processors and implementers of the BM		x		
Research institutions in the area of the BM	x			
National research / nationale experts	x			
International research / International experts	x			
Legal framework				x
Promoter of the business idea (stakeholders / areas / people)			x	
Regional funding		x		
National funding	x			
International funding			x	
Research funding		x		
Project development funding		x		
Market maturity / marketing promotion			x	
Additional financing possibilities		x		

GUIDELINES FOR STAKEHOLDER

To whom are the guidelines addressed: Cluster, Research institutions, Chambers

STRENGTHS OF THE REGION

The Piedmont region has a consolidated strategy to support innovation and development of the Bioeconomy. In the framework of "Europe 2020" strategy for smart, sustainable and inclusive growth, the regional action in support of research and innovation aims to:

- promote collaboration between enterprises, in particular small and medium-sized enterprises (SMEs), and research organizations also through clusters capable of aggregating the demand for innovation, identifying the most promising technological trajectories and developing the internationalization of research and development (R&D);
- promote the technological transfer of research results to the production system;
- mobilize public and private investments in research, development and innovation;
- develop the competitiveness of the regional production system through research and innovation by attracting significant innovative investments;

These objectives are pursued in line with the trajectories and priorities set by the regional strategy for smart specialization (S3), shared with the State and the European Union.

The presence of a clear legal framework that support bioeconomy initiatives, together with the availability of funding schemes, could give a strong and concrete support for the implementation in practices of the BIM.

RECOMMENDATIONS FOR THE STAKEHOLDERS ON THE IMPLEMENTATION OF THE BM

The BIM of apple flour has a strong connection with the Territory, is innovative, sustainable and the development perspective is remarkable, also for the scalability of the process. The idea could be strongly related to the "made in Italy" concept giving a positive perception of the whole Italian agro-food chain.

Moreover, the BIM gives new value to waste and it is cross-sectorial, by putting in connection different value chain (from the agro-food to the cosmetic sector). It could give a chance to SMEs and apple cooperatives to expand the market, in a territory where apples sector is continuously growing. A deep analysis of the amount and availability of apple by-products has to be done, to evaluate the level of scalability of the BIM. This information is important for the comprehension of both material flow, traceability and the relative logistic (i.e. needs for cold storage).

To support the development of the bioeconomy at the local level, it is essential that the institutions, that provide legislative and financial support, will intercept and promote local initiatives that can have adequate scalability. In this way, it is possible to recreate territorial "best practices" which can be an example or act as a stimulus for other ideas or processes of innovation and sustainability.

The idea to use the apple flour as an ingredient for a cosmetic product is absolutely innovative and with high level of technology that embrace the last trend in the cosmetology for the capacity to intercept the new demand and could have more than a chance in the sector.

The new products could be clearly qualified, to give immediately the value of the products (sustainability, territoriality etc.) in a saturated market. The beauty sector is jagged and the sustainability of a brand is a must, not yet a “nice to have”. For this reason, it is necessary to carry out a careful analysis of the value proposition, the identification of the personas and the customer targets, moreover to set up the right touch points.

LIST OF CONTACT – EXPERT- STAKEHOLDERS

RESEARCH INSTITUTION THAT WORK ON APPLE, CIRCULAR ECONOMY, AGRICULTURAL BY-PRODUCTS

- University of Turin- department of Pharmacy;
- University of Turin- department Agricultural Science;
- University of Pollenzo
- University of Piacenza- Food department
- University of Parma- Food Department

EXPERTS AND PUBLIC INSTITUTION FOR FUNDING OPPORTUNITIES

- Chamber of Commerce-
- ALPS Enterprise Europe Network;

-

GUIDELINES FOR SMALL AND MEDIUM ENTERPRISES

In order to build up a successful business from the idea to the marketable innovation some steps are required. The following picture gives you a review of the most important facts to be taken into account for the implementation. You will find detailed data for availability of resources, possible business partners or supporting measures and framework directives in the first part of this guidelines. The pictured numbers and facts and figures support you with the first step to implement the business idea and enable first evaluation for raw material enquiry, environmental and market research.

Roadmap

START

1 Select business model

2 Planning
✓ Environmental analysis
✓ Market analysis
✓ Raw material research

3 Fundings

4 Find Cooperation and Implementation partners

5 Product development

6 Funding for market launch

7 Market maturity

8 Success

FINISH

START



1. 1. Would you like to develop yourself and your company and have you decided to find a mode to use apple by-products? This roadmap takes you step-by-step from choosing a business model to launching your product;



2. Do you want to invest in the food sector or in the cosmetic sector? Firstly, you have to identify the type of products that you would produce and then make a in deep market research; Analyze what amount of raw material do you need and what quantity is actually available for you. Get information with experts on analysis and further research on the raw material do you need;



3. Design your project idea and simulate a business models with local expert (mentor, chamber of commerce). Find funding opportunities on a local level (PSR and Regional supporting action) or with EU supporting funding (Chambers of commerce and Regional Cluster gives you information and support). If you want to launch a start-up company you may find opportunities and funding by applying to specific call or through local Incubators;



4. Find the right partner to put your ideas into practice. A list of possible experts and stakeholders that you could contact can be found in this document;



5. The product development is the core of the BIM implementation: find the right partners to set the test and product prototypes, make sure to be replicable and to work with high level of standardization.



6. Funding opportunities could be found to launch the project: chambers of commerce, clusters, incubators could support you to find the right way. The preparation of the business plan is very important, as well as a clear presentation of the project idea. This could help you to find mentors, business angels and financing supports.



7. Choose the right partners to go to the market. Analysis on the value proposition is the starting point to define the market. Need to evaluate the scalability of the business idea in order to identify the right market and the distribution channels. On line commerce could help you to start your activity (i.e shopify). Take in consideration that Different countries could have different needs. Fix your customer and supplier relationships and enter the market together with your partners. Targeted marketing campaigns inform the customer and increase the market opportunities.

8. Set a strong cooperation with other companies and research institutions to boost ypour activity and the possibilities to have success.



ABOUT US

You want to know more details about our project?



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www.alpine-space.eu/alpbioeco



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PROJECT PARTNERS



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