

The AlpBioEco project uses innovative methods to foster sustainable development in the European Alpine region and raises awareness regarding the economic potential in bioeconomy.

## REASONS WHY WE CHOOSE TO FOCUS ON THE APPLE VALUE CHAIN IN THE ALPBIOECO PROJECT

Apples are by far the **most widely grown fruits in the European Union**<sup>1</sup> and especially important for the Alpine region. South Tyrol, for example, is the largest connected apple growing region in Europe with 18,400 hectares and annual harvest amounting to approx. 950,000 tonnes. Even if the **apple market is quite saturated** and that table apples are currently the most profitable product<sup>2</sup> in the apple industry, the apple value chain still presents **unexplored bioeconomic potentials** that can contribute to increasing regional value creation.

## POTENTIALS OF THE APPLE VALUE CHAIN

To find new possibilities, the AlpBioEco team first analysed the apple value chain in a two-step iterative process, using **market studies** and **laboratory analyses**. This process led to the conclusion that the most promising target material for an innovation process is **apple pomace**. The solid residue of apples after they have been pressed to make juice, as it is available in large quantities as waste in the beverage industry. Apple pomace can be used to develop products in various fields such as **cosmetics** (seed oil, body cream), **food products** (pectin, food supplements), **biodegradable packaging** and other goods (apple paper, tableware, apple wax etc.).

## IDEAS FOR ECO-INNOVATIVE PRODUCTS

The AlpBioEco team then designed **new eco-innovative business models** together with small and medium enterprises, cluster organisations, academia and societal actors to accelerate the collective learning and value creation. The first workshop sequence resulted in **440 ideas for apples**, walnuts and herbs. For the apple value chain, in total more than **10 workshops** were conducted with farmers, entrepreneurs, scientists, intermediaries, and interested citizens.

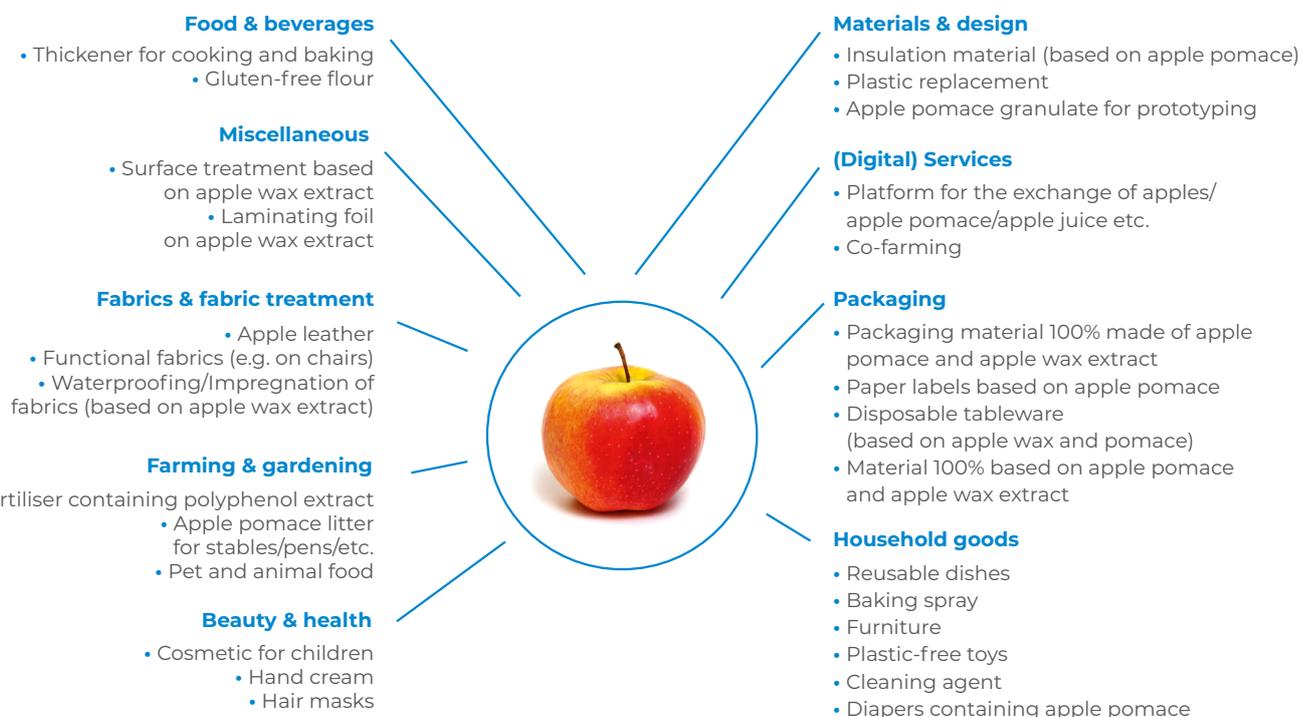


Figure 1: Overview of selected innovation ideas based on apple pomace, apple wax extract and polyphenol. Photo: Fresh red apple isolated on white, ©irin-k

<sup>1</sup>Fruit logistica European statistics handbook 2020, page 2.

<sup>2</sup>AlpBioEco T1 report „Results and Replicable Roadmap - Analysis of the bio-based value-chains apples, walnuts and herbs“, page 5.

## BUSINESS MODELS SELECTION AND TEST PHASE

At the later stage, **two business models** from the apple value chain have been selected by AlpBioEco project partners for further development and pilot testing: the **“gluten-free apple flour”** and the **“disposable tableware and biodegradable packaging”**. They were chosen according to the **degree of novelty**, the **market attractiveness and feasibility**, the **sustainability** and **eco-innovative character** or the potential to stimulate the emergence of new social/transnational interlinkages between value creating partners.

**“Gluten-free apple flour”** has been tested and validated for human nutrition and for natural cosmetics in Italy and in Slovenia. For human nutrition, apple flour is a promising regional gluten-free alternative to grain flour. Depending on the raw materials processed, apple flour can be very rich in vitamins, minerals and antioxidants that are essential ingredients in cosmetics such as micellar water, shower gel, shampoo. **“Disposable tableware and biodegradable packaging”** based on apple pomace is a promising alternative to conventional plastic products that can contribute to the reduction of environmental pollution caused by plastic waste. Its relevance will become even greater when single-use plastic products will be forbidden due to EU legislation by 2021.

## DEVELOPMENT OF POLICY AND TRANSFER GUIDELINES

In the final part of the AlpBioEco project, in work package **“T4 - Policy Transfer Preparation”**, the project results for transfer to policy-making and to other regions or countries. To achieve this, **regional advisory boards** consisting of regional representatives from business, science, civil society and politics, were set up for each project region. Together with these regional advisory boards, **regional policy implementation guidelines** were developed. These guidelines present the strengths and weaknesses of the project regions for the chosen business model and contain economic and policy recommendations to promote its implementation in the respective region.

To promote the implementation of the developed eco-innovative business models also in other regions or countries beyond Piemonte, Upper Austria and the autonomous Province of Bozen/Bolzano, the AlpBioEco team held a **transnational meeting** with representatives from all regional advisory boards and developed a transregional and transnational transfer guideline. This guideline presents recommendations on how the project partners can cooperate on a **supra-regional level**, but also how the business models can be transferred to other Alpine regions or countries.

**Project partners working on the apple value chain:**



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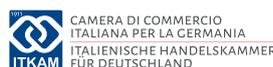
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→ For more information on our project activities and results visit project website:

<https://www.alpine-space.eu/projects/alpbioeco/en/home>

→ For detailed information on the eco-innovative business models gluten-free apple flour and disposable tableware and biodegradable packaging read our Best Practice Brochure: <https://www.alpine-space.eu/projects/alpbioeco/en/activities-results/main-activities-results/validation-bms>

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