

Tagamanent Wool Washing Plant

A local valorisation model for small-scale sheared wool

PROJECT DESCRIPTION

Wool treatment and valorisation remain uncommon practices, often leading livestock farmers to regard wool as a waste product. The lack of appropriate infrastructure and the difficulty in accessing viable markets discourage its reuse and recovery.

In this context, the Municipality of Tagamanent has promoted the creation of a wool washing facility—an essential initial step to enable the future utilisation of this resource. The plant is conceived as a small-scale modular installation, allowing for future expansion, and aims to offer commercial opportunities for wool from local flocks. It is based on an economically viable model that supports the continuity of sheep farming and its essential role in landscape management and forest fire prevention.

The project is supported by the Catalan Waste Agency (Agència de Residus de Catalunya – ARC), which has awarded a direct grant of €500,000 to establish a sustainable and scalable wool valorisation model.

In addition, the municipality plans to refurbish a public building to house the facility and enable other complementary activities linked to the bioeconomy and the livestock sector.



IDENTIFIED BARRIERS

EWashing sheep wool is a relatively costly process—both economically and environmentally—which poses particular challenges for a highly fragmented primary sector, characterised by low incomes and limited professionalisation. In addition, the wool produced by flocks in Catalonia is generally of low quality and difficult to market, as current markets are not sufficiently developed to support profitable business models.

Nonetheless, sheep farming plays a key ecological and territorial role, contributing to wildfire prevention, biodiversity conservation, and habitat improvement. Despite the technical limitations of the wool itself, it remains a valuable local resource with potential applications in sectors such as bioconstruction, organic fertilisation, and textiles.

In this context, Bioboost has aimed to identify and activate both financial and non-financial tools to enable the deployment of small-scale wool washing facilities. These are understood as key infrastructures for maintaining extensive grazing systems and the associated ecosystem services. At the same time, the project seeks to revitalise the wool market and contribute to the Catalan textile industry by providing a new, renewable and locally sourced raw material—thus enhancing the sector's resilience and alignment with the circular economy.

The main barriers identified include:

- Fragmentation of the sector and lack of collaboration networks among key actors in the wool value chain
- Absence of viable business models and difficulty accessing stable and profitable markets for processed wool
- Lack of regulatory and governance frameworks to support efficient public-private management
- Technological and logistical challenges, particularly regarding the optimisation of wool washing, sorting, and transformation processes



HOW BIOBOOST HAS CONTRIBUTED TO THIS PROJECT?

Bioboost has brought a systemic perspective to the project, conducting an analysis of the challenges, trends, and market opportunities, while exploring ecosystem credits as innovative financing tools to help turn the initiative into a viable business model.

This support has been translated into the following actions:

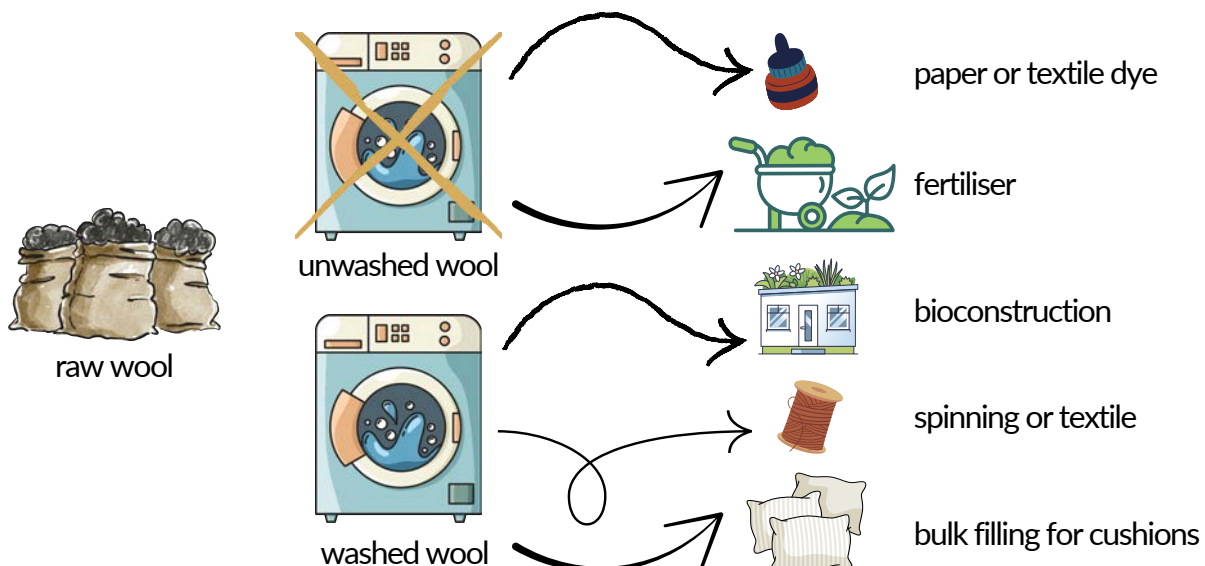
1 Creation of the “Ramat de la Llana” Hub:

To address the fragmentation of the sector, Bioboost promoted the creation of a working group in collaboration with the Municipality of Tagamanent and the Catalan Waste Agency. This hub has brought together key actors including wool producers, artisans, spinning mills, research and innovation centres, bioconstruction experts, machinery suppliers, textile and fertiliser companies, and public authorities. This collaborative space, launched during the first Wool Hub Day in October 2024, enables the sharing of needs, resources, and strategies aimed at building a viable wool valorisation model.

2 Market Study for Wool Valorisation:

To ensure the economic viability of the project, Bioboost carried out a detailed analysis of potential markets for sheared wool, taking into account both its quality and the technical requirements of various sectors. The main challenge lies in finding suitable uses for both unwashed and washed wool, identifying applications where this resource can be transformed into high value-added products.

The analysis revealed opportunities across several market segments:



HOW BIOBOOST HAS CONTRIBUTED TO THIS PROJECT?

3 Definition of Legal Structures and Management Model

A preliminary analysis was carried out to compare different legal and governance models for the future operation of the wool washing facility, supporting the selection of the most suitable option. The models assessed include:

- Direct municipal management: full public control with higher technical and operational demands.
- Publicly owned company: 100% public capital, offering flexibility with institutional oversight.
- Administrative concession: outsourced to a private operator, under municipal supervision.
- Mixed-ownership company: public-private partnership combining investment and business expertise.
- Non-profit association: collaborative model with local stakeholders, strengthening the community approach.

This comparison helps align the final choice with Tagamanent's strategic goals and operational capacity.

4 Impact Assessment

Bioboost carried out a Life Cycle Assessment (LCA) focused on the wool valorisation process, from origin to factory gate (cradle-to-gate). The study was applied to four commercial applications of wool: carpets, mattress filling, bio-insulation, and roving wool for spinning, as well as to the overall operation of the plant.

The LCA considered various environmental impacts, including greenhouse gas emissions, water consumption, fossil resource use, eutrophication, toxicity, and tropospheric ozone formation.

The results show that mattress production is the application with the highest climate impact, reaching up to 16.8 kg of CO₂ equivalent per kilogram of raw wool. In contrast, bio-insulation stands out as the application with the lowest environmental impact, with only 0.72 kg of CO₂ equivalent per kilogram.

Among the strategies identified to reduce these impacts are the use of photovoltaic solar energy and the collection of rainwater for the washing process.



LESSONS LEARNT AND CONCLUSIONS

The Tagamanent wool washing plant has provided valuable insights for future initiatives focused on the valorisation of local natural resources. The main lessons learned include:

- **Multisectoral collaboration is essential.** The creation of the Ramat de la Llana Hub has broken the isolation of the livestock sector and enabled synergies between public institutions, businesses, and technology providers. This coordination has been key to advancing towards a viable and scalable model.
- **The modular, replicable plant model opens up new territorial opportunities.** This approach allows the project to be adapted to other rural areas with livestock activity and forestry potential, turning the risk of land abandonment into an opportunity for local development.
- **Market orientation is indispensable.** Without a clear commercial strategy and accurate identification of market niches, the facility risks being underused. Stimulating demand also helps to strengthen livestock farming activity.
- **Governance and legal frameworks are critical.** Defining an efficient and sustainable management model is fundamental to ensure the long-term continuity of the initiative. Public-private collaboration models that combine entrepreneurial initiative with institutional support are recommended.
- **Private leadership with public support enables new business creation.** The project has shown that the private sector is essential for revitalising the value chain, but initial public backing is needed to reduce risks and ensure viability.
- **Innovative financial incentives can be transformative.** Instruments such as ecosystem credit schemes can help recognise and reward the environmental services generated by grazing and wool valorisation, making otherwise unviable projects feasible.



LESSONS LEARNT AND CONCLUSIONS

The Tagamanent project therefore represents a pioneering model of applied bioeconomy in the wool sector in Catalonia. With the support of Bioboost, significant progress has been made in building a local value chain, defining a viable technical and business model, and identifying markets with growth potential.

The project lays the technical, economic, and legal foundations for replication in other territories, activating local circular loops and promoting the revalorisation of an often underused natural resource. In addition to generating social (rural employment, support for extensive livestock farming), economic (new bioeconomy business models), and environmental benefits (waste reduction, efficient resource use), it also directly contributes to key ecosystem services such as wildfire prevention, open landscape maintenance, and biodiversity enhancement.

