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CONCEPT FOR THE DEVELOPMENT OF HERITAGE-SENSITIVE & CIRCULAR TEXTILE CRAFT & INDUSTRIAL PRODUCTS THROUGH CROSS-BORDER MATCHMAKING

SUPPORTED BY THE EUROPEAN UNION THROUGH THE INTERREG ALPINE SPACE PROGRAMME

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Executive Summary

This document proposes a **conceptual and operational framework** for the development of heritage-sensitive and circular textile products, addressing both craft-based and industrial contexts. It is intended as an **orientation tool** for textile SMEs, business support organisations, cultural institutions, and intermediaries involved in early-stage product development, innovation support, and territorial valorisation. and sectoral contexts.

The starting point of the framework is that **heritage-sensitive and circular textile products cannot be developed using the same logics that underpin conventional sourcing, design, and production models**. Dominant approaches in the textile sector tend to prioritise acceleration, delocalisation, and cost minimisation, often treating materials as interchangeable commodities and heritage as a symbolic or narrative add-on disconnected from fibre origin, local skills, and territorial value chains. Such logics are poorly suited to working with local fibres, traditional knowledge, and living heritage practices.

Drawing on analyses and pilot actions developed within the AlpTextyles project, this document reframes Alpine textile heritage as a **living system of practices, skills, materials, and relationships**. Historically shaped by constraints of availability, distance, and seasonality, Alpine textile practices relied on parsimony, the use of local resources and by-products, shorter and often cross-border value chains, and collective knowledge transmission. Rather than relics of the past, these elements provide **operating logics** that remain highly relevant for contemporary sustainability and circularity challenges.

The framework is structured around four guiding principles:

- **Heritage sensitivity**, centred on communities and practitioners as custodians of living heritage;
- **Material realism**, starting from the actual properties and constraints of local fibres and related techniques;
- **Circularity and sustainability by design**, embedded upstream in concept development and value-chain configuration;
- **Cross-border pragmatism**, recognising historical and ecological continuities that transcend national borders.

Rather than proposing a single model to replicate, the document identifies **transferable formats and development logics** that can be adapted across regions and materials. These include material libraries, participatory inventorying, ethical codes, responsible design briefs, and cross-border matchmaking logics. What can be scaled is not the products themselves, but the way problems are framed and addressed.

Three material domains are explored in depth:

- **Wool**, where pilot actions demonstrate how undervalued or wasted resources can be transformed into differentiated materials through documentation of skills, material testing, and cross-border value-chain configurations;
- **Flax and linen**, where the focus is on reconnecting fragmented heritage systems through festive practices, knowledge exchange, and community-based initiatives, in a context where raw material availability is structurally limited;
- **Natural dye plants**, where heritage knowledge is translated into contemporary applications through scientific mediation, tested protocols, and training resources accessible to both craft and industrial actors.

A dedicated chapter addresses **responsible heritage-based innovation**, adapting international principles on **consent**, **recognition**, and **shared value** to Alpine textile heritage contexts. It shows how risks of misrepresentation, decontextualisation, and misappropriation can be mitigated through concrete governance devices, such as participatory inventorying, ethical codes developed by heritage communities, and carefully designed briefs for designers and schools. These mechanisms demonstrate that responsibility is not a constraint on innovation, but a condition for its legitimacy and durability.

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Sorting greasy wool in Val Camonica by members of the Code di Lana Association.
Picture by Diego Rinallo (2024)

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Introduction

Purpose and scope of the Outupt

This document proposes a **conceptual and operational framework** to support the development of heritage-sensitive and circular textile products, spanning both craft-based and industrial applications. It is addressed primarily to **textile SMEs**, including craft enterprises and manufacturing companies, as well as to intermediary and business support organisations such as clusters, chambers of commerce, innovation hubs, craft centres, museums, and regional development agencies.

Rather than presenting a catalogue of pilot results, this output functions as a **strategic orientation and decision support tool**. Its purpose is to explain *why* and *how* certain approaches to textile product development are more likely to generate sustainable, resilient, and culturally grounded outcomes when engaging with local fibres, traditional knowledge, and living heritage practices. It focuses on early-stage decision-making: how product development projects should be framed, how value chains should be configured, and how collaboration between heterogeneous actors should be organised.

The framework presented here builds on analyses, mappings, and pilot actions developed within the AlpTextyles project, and is articulated through three material domains: wool; flax and linen; and natural dye plants. While these material domains are examined through Alpine cases, the development logics articulated in this document can, to some extent, be replicable and transferable to other territorial and sectoral contexts.

Target audiences

The document is designed for readers who are directly involved in, or support, textile product development processes, including:

- craft-based and industrial textile SMEs;
- designers and creative professionals working with material innovation;
- business support organisations facilitating innovation, matchmaking, and scaling;
- cultural institutions and intermediaries engaged in heritage safeguarding and valorisation;
- fashion/design schools interested in training students in responsible ways of dealing with heritage communities.

It assumes limited prior expertise in heritage policy or intellectual property frameworks, and therefore introduces related concepts only insofar as they support practical orientation.

Heritage-sensitive development logics

A central premise of this document is that **heritage-sensitive and circular textile products cannot be developed using the same logics that underpin conventional sourcing, design, and production models**. In many contemporary contexts, heritage is mobilised downstream, as a symbolic or narrative layer added to products whose materials, value chains, and technical choices have already been defined elsewhere. Such approaches tend to disconnect heritage from the material origin of fibres, from local skills, and from territorialised value chains.

In contrast, this document treats Alpine textile heritage as a **living system of practices, skills, materials, and relationships**, rooted in specific landscapes and historically shaped by constraints of availability, distance, and seasonality. Heritage is not approached as a fixed tradition to be preserved unchanged, but as a repertoire of operating logics that can inform contemporary development challenges. These include parsimony in the use of resources, the valorisation of by-products, shorter and often cross-border value chains, and collective forms of knowledge transmission.

Shifting to heritage-sensitive development logics therefore requires rethinking how textile products are conceived from the outset: starting from the properties of available materials, existing skill repertoires, and feasible configurations of actors.

Guiding principles of the approach

The framework proposed in this output is structured around four interrelated principles, each of which has been developed and empirically tested through AlpTextyles mapping activities and pilot actions.

Heritage sensitivity

Heritage is understood as a living system of practices, materials, skills, and territorial relations. Central to this approach are the individuals, groups, and communities who are the bearers and custodians of this heritage. This perspective is aligned with the UNESCO notion of living heritage, also referred to as Intangible Cultural Heritage, which emphasizes safeguarding, transmission, and community recognition.

Material realism

Products are developed starting from the actual properties, constraints, and affordances of local fibres, dyeing plants, materials, and techniques. Rather than forcing local resources to conform to dominant quality standards or market expectations, this approach seeks applications and product typologies consistent with their material characteristics.

Circularity and sustainability by design

Circular and sustainable strategies are embedded upstream, at the level of concept development and value chain configuration. Given the breadth of these concepts, this output prioritizes dimensions that were concretely tested through AlpTextyles pilot actions, notably the use of local fibres and resources that would otherwise go to waste, such as coarse or undervalued wool, and the shortening of value chains to reduce transport-related environmental impacts.

Cross-border pragmatism

Borders are treated as operational connectors rather than administrative barriers, reflecting historical, ecological, and technical continuities across Alpine regions, and shaping many feasible material pathways. As demonstrated by AlpTextyles mapping activities and pilots, geographically contained cross-border value chains can offer superior environmental performance, facilitate access to complementary skills or processing stages, and avoid the duplication of investments within national boundaries.

Structure of the Output

This document was prepared by **Diego Rinallo**, Lifestyle Research Center, emlyon business school, drawing on close collaboration with AlpTextyles partners and on empirical material generated throughout the project. It is organized to support progressive reading, depending on the needs and position of the reader.

Chapter 1 examines why dominant textile development logics—based on acceleration, delocalisation, and cost minimisation—are ill-suited to heritage-sensitive and circular innovation.

Chapter 2 introduces different ways textile products can relate to heritage, focusing on skills, traditional knowledge, and archetypal pathways of heritage-based innovation.

Chapters 3-5 each focus on a distinct material domain (wool, flax and linen, and natural dye plants), applying the framework to show how heritage-sensitive and circular development logics take material-specific forms.

Chapter 6 addresses responsibility and governance, showing how principles of consent, recognition, and shared value can be operationalised through participatory inventorying, ethical codes, and design briefs.

The **Conclusions** synthesise the main insights.

Examining the aesthetic results of artisanal weaving of yearns obtained from two autochtonous sheep breeds (Bergamasca and Montafoner steinschaft) during AlpTextyles pilots, Valposchiavo, 2024.

1. Why heritage-sensitive textile development requires a different logic

Heritage-sensitive and circular textile products cannot be developed effectively using the same logic that underpins dominant sourcing, design, and production models in the contemporary textile and fashion industries. This is not primarily a question of ethical positioning or communication strategy, but a structural issue concerning how value chains are organized, how resources are understood, and how knowledge circulates between actors.

From the perspective of the UNESCO Convention for the Safeguarding of the Intangible Cultural Heritage, textile heritage does not reside primarily in objects or finished products. It is embedded in **practices, knowledge, skills, representations, and cultural spaces**, continuously recreated by communities in interaction with their environment. When prevailing development logics disrupt these relations, they do not merely transform products; they weaken the conditions that allow textile heritage to remain *living* and *transmissible*.

1.1 Structural limits of dominant textile development logics

Several characteristics of dominant textile development models are structurally misaligned with the safeguarding and valorization of living textile heritage. Rather than treating heritage as a starting point for development, these models tend to subordinate materials, skills, and territories to pre-defined market logics.

Delocalization and loss of territorial anchoring

Conventional textile value chains are largely organized around delocalization and offshoring, driven by cost minimization and scale efficiencies. Fibres, yarns, fabrics, and finished products are sourced and processed across distant regions, often independently of the territories where raw materials originate. This spatial fragmentation disconnects materials from the practices, skills, and forms of knowledge historically associated with them and weakens local capacities by externalizing key processing stages.

Acceleration and disconnection from ecological and social rhythms

The progressive acceleration of fashion cycles, from fast fashion to hyperfast fashion, has reinforced a temporal logic increasingly detached from agricultural, seasonal, and ecological rhythms. Living textile heritage, by contrast, is historically structured around slower cycles of animal husbandry, cultivation, fibre preparation, and skill transmission. When speed and responsiveness to volatile markets becomes dominant organising principles, these rhythms are redramed as constraints or inefficiencies rather than as constitutive conditions of production.

Standardization and substitution of local resources

Dominant models tend to treat fibres and dyes as standardized, globally interchangeable inputs. This has contributed to the substitution of locally available and often less polluting resources with more standardized but environmentally intensive alternatives, such as synthetic fibres replacing natural fibres, or chemical dyes replacing traditional dye plants.

In Alpine contexts, this has marginalized resources that were historically integral to local economies and practices, and has weakened the material basis upon which heritage-related skills and knowledge could be reproduced and transmitted.

Heritage reduced to a narrative layer

Heritage is frequently mobilized as a storytelling or branding device. This results in a disjunction between symbolic references to heritage and the material, technical, and organisational realities of value chains, transforming heritage into a static image rather than a dynamic process of transmission, adaptation, and practice.

Separation between craft and industrial systems

Globalization and specialization have reinforced a structural separation between craft-based and industrial textile production. While these systems historically coexisted in Alpine regions, they now tend to operate in parallel, with limited interaction. Industrial products often compete with craft products while simultaneously drawing on the cultural meanings and symbolic value generated by craft traditions.

For industrial actors, this separation results in the loss of access to situated knowledge, opportunities for material experimentation, and the fine-grained sensitivity to fibres and processes that craft practices embody. For craft actors, competition with lower-cost industrial products increases economic vulnerability and contributes to the fragility of living heritage practices.

Overall, this separation constrains the emergence of hybrid, complementary, and territorially grounded configurations capable of supporting heritage-sensitive and circular innovation.

1.2 Consequences for environments, landscapes, and resource use

These dominant logics affect not only products and markets, but also environments, cultural landscapes, and patterns of resource use.

A particularly illustrative example is **wool**. Historically, wool was a central economic resource in Alpine regions, embedded in coherent local value chains and fully valorized through a wide range of applications. Today, in many Alpine contexts, wool has become an underused or even unwanted by-product of livestock farming. Large quantities are discarded or downcycled, despite being renewable, biodegradable, and locally available. This represents a significant loss of material value and a missed opportunity from a circularity perspective.

Similar dynamics can be observed with **dye plants**. In the past, many Alpine regions relied on spontaneously growing or locally foraged dye plants as part of diversified agro-ecological systems. These practices and related skills have largely disappeared, replaced by more polluting chemical dyes and centralized supply chains. Yet, pilot actions within AlpTextyles show that dye plants can not only be foraged, but also cultivated, opening up new possibilities for local production, biodiversity enhancement, and low-impact coloration processes. Here again, resources that were once integral to local systems are now underexploited.

Beyond materials, the disconnection of textile value chains from territorial practices has consequences for **cultural landscapes and biodiversity**. Practices such as transhumance, small-scale fibre production, and diversified land use have historically contributed to maintaining open landscapes and biodiversity-rich ecosystems. When these practices lose economic relevance, landscapes become more vulnerable to abandonment, homogenization, and ecological degradation.

1.3 Reframing Alpine textile heritage as a resource for sustainability and circularity

It is important to recognize explicitly that many Alpine textile heritage practices were already aligned with principles that are today associated with sustainability and circularity. They were not designed according to contemporary environmental frameworks, but emerged from conditions of scarcity, environmental constraint, and territorial embeddedness.

Historically, these practices were characterized by:

- parsimonious use of resources and full valorization of materials and by-products;
- reliance on locally available natural fibres and dyes;
- relatively short and coherent value chains;
- production rhythms adapted to ecological and social cycles.

In this sense, circularity was to no little extent an **intrinsic property of how textile systems were organized**. When these systems are dismantled or disconnected from their territorial foundations, circular strategies become more difficult to implement and risk being reduced to technical fixes or symbolic claims.

Acknowledging this does not imply idealizing the past or freezing practices in time. In line with the UNESCO understanding of Intangible Cultural Heritage, heritage remains living precisely because it evolves. However, it does suggest that the values and operating logics embedded in Alpine textile heritage constitute a **critical resource for rethinking sustainability and circularity today**, especially when combined with contemporary technologies, design practices, and cross-border cooperation.

1.4 Toward an alternative starting point

The approach proposed in this output builds on this diagnosis. Rather than adapting heritage to dominant market models, it starts from the premise that heritage-sensitive and circular textile development requires rethinking value chains from the outset. This means reconnecting materials, knowledge, and territories, and creating conditions for dialogue between craft and industrial systems without collapsing their differences.

The following chapters develop this perspective by exploring different ways textile products can relate to heritage and by illustrating, through concrete pilot actions, how alternative development logics can be implemented in practice.

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Master artisan Anja Musek in her wet felt workshop, Skofja Loka, Slovenia.
Picture courtesy of Arts and Crafts Center, Skofja Loka.

2. Different ways products can relate to heritage

Heritage-sensitive textile innovation cannot be understood solely by looking at products or outcomes. It requires attention to the **skills, knowledge systems, and cultural expressions** that underpin production, and to how these are maintained, transformed, or recombined over time. From the perspective of the UNESCO Convention for the Safeguarding of the Intangible Cultural Heritage, heritage is living precisely because it evolves. The key question is therefore not whether change occurs, but **how change is negotiated**, by whom, and with what consequences for the continuity of practices and meanings.

Complementary to this perspective, the work of the World Intellectual Property Organization introduces the notions of **Traditional Knowledge (TK)** and **Traditional Cultural Expressions (TCEs)**. TK refers to collectively developed and transmitted knowledge, skills, and practices, while TCEs designate the forms through which such knowledge and cultural meanings are expressed, including patterns, motifs, and aesthetic conventions. Together, these notions help clarify what is at stake when heritage is mobilised in product development: not only visible forms, but the knowledge systems and practices that sustain them.

Taken together, UNESCO and WIPO offer complementary ways of thinking about heritage as a **living repertoire of skills, knowledge, and expressions**, embedded in communities and territories, and mobilized through practice.

2.1 Heritage as a repertoire of skills, traditional knowledge, and cultural expressions

The conceptual framework presented in this chapter was initially developed in the context of the Interreg Alpine Space project AlpFoodway, focusing on food heritage, and has been further extended and refined through AlpTextyles in relation to Alpine textile heritage. This continuity reflects deep structural similarities between food and textile systems. Both are rooted in agriculture, both rely on embodied and tacit knowledge, and both historically transformed the same resources into multiple outputs, such as sheep providing milk, meat, and wool.

In both projects, heritage-based innovation is understood as the **recombination of existing skill repertoires with new competencies** (see also Deacon and Rinallo, 2024). This approach is consistent with UNESCO's understanding of living heritage and with WIPO's view of TK and TCEs as dynamic, adaptive systems. Innovation does not oppose heritage; it becomes one of the ways through which heritage remains living, provided that the underlying knowledge and expressions are meaningfully engaged.

Viewing heritage through the lens of skill repertoires helps move beyond an object-centred or purely symbolic understanding of heritage-based innovation. What matters for the vitality of living heritage is not that products reproduce past forms unchanged, but that communities retain the **capacity to practice, transmit, and adapt** their skills and knowledge.

In Alpine textile contexts, heritage repertoires typically combine:

- traditional knowledge related to fibres, materials, processes, and environmental conditions;
- traditional cultural expressions, such as style elements, patterns, and aesthetic conventions;
- embodied technical skills, including sheep shearing, foraging for dyeing plants, fibre handling, spinning, weaving, or dyeing;
- social and organizational practices linked to seasonality, collective work, festive events, and inter-generational transmission.

Innovation may mobilize different components of this repertoire in different ways. Some product development processes emphasize continuity and safeguarding, others focus on reinterpretation or extension. Tensions often arise when external competences, such as product design or branding, are introduced without adequate mediation.

These competences, more typically found in urban areas, are frequently necessary to reach contemporary markets, but they may also reflect urban imaginaries or romanticized representations of Alpine life that risk disconnecting TCEs from the TK and practices that give them meaning.

2.2 Innovation through reconnecting and extending skill repertoire

Keeping textile heritage living rarely depends on safeguarding a single practice in isolation. In most cases, it requires **reconnecting fragmented parts of value chains and extending existing skill repertoires with new competencies**. Heritage-sensitive innovation therefore hinges on how traditional knowledge and cultural expressions are combined with skills related to design, processing, quality management, promotion, regulatory compliance, market access, and adaptation to contemporary lifestyles.

In Alpine textile systems, fragmentation often affects several dimensions simultaneously. Agricultural production may persist without local processing capacities. Processing know-how may survive without product development or market outlets. Traditional knowledge may be documented but no longer practiced. At the same time, competencies necessary to make products viable in contemporary markets, such as product design, prototyping, branding, or certification, are often located in urban centres and disconnected from traditional material production and territorial realities.

Heritage-sensitive innovation can emerge when these elements are **brought back into relation**, and when missing competences are deliberately added. Several AlpTextyles pilot actions and case studies illustrate this dynamic (see sections 3-5).

In the case of **wool** (section 3), sheep breeding and shearing continue across Alpine regions, yet wool has often become an undervalued by-product. Matchmaking efforts focused on reconnecting agricultural actors with processors and designers capable of working with the specific properties of local wool, and with downstream competences related to product development and market positioning. The resulting products were often innovative and, in some cases, radically new, as hey re-embedded a neglected resource into coherent value chains.

A similar logic applies to **flax and linen** (section 4). In some Alpine communities, festive events and symbolic practices linked to flax have persisted, even though cultivation and processing had ceased. In others, flax cultivation has been partially revived. Cross-border exchanges enabled by AlpTextyles allowed these different contexts to be connected, cross-fertilising knowledge and generated the pre-conditions for pursuing heritage-sensitive innovation.

Natural dyeing (section 5) provides a further example. Historical knowledge of plant-based dyeing had largely disappeared from contemporary textile production. Through the AlpTextyles mapping and pilots, this knowledge was retrieved and extended through the addition of scientific, technical, and product development competences, including experimentation, standardization, and, in some cases, the transition from foraging to cultivation. Here, innovation depended on combining traditional knowledge with new forms of expertise rather than on preserving practices unchanged.

Matchmaking thus operates as an **iterative process of alignment** between agriculture, processing, traditional knowledge holders, and added competences related to design, research and development, marketing, production, and value chain configuration. External competences may however carry romanticized or stereotypical representations of Alpine life. Without mediation, such representations risk reducing traditional cultural expressions to clichés. When carefully integrated, however, added competences can support both innovation and the safeguarding of living heritage.

The next section builds on this understanding to outline a set of analytical archetypes describing different ways textile products can relate to heritage, recognizing that most real-world initiatives combine several dimensions simultaneously.

2.3 Heritage-sensitive product innovation pathways based on skill recombination

The following pathways describe **how new textile products can emerge from different configurations of existing and added skills**. They are not stages in a linear process but rather **analytical lenses** that can help SMEs and business support organizations understand *what kind of product innovation should be pursued*, *which skills need be mobilised*, and *which competences should be added or reconnected*.

In practice, most initiatives combine elements from several pathways. Making these configurations explicit helps clarify strategic choices, partnership needs, and innovation scope (see **Figure** in the next page).

Pathway A. Reproducing heritage products by safeguarding endangered skills

(Product continuity through skill safeguarding)

Product logic: Products remain close to historical forms, uses, and techniques. Innovation does not lie in changing the product, but in making its continued production possible under contemporary conditions.

Skill configuration: Existing skills are still embodied but fragile. This is for example the case of senior practitioners who are likely to retire without a chance of transmitting their knowledge. This can be prevented by adding complementary competences around the product, such as documentation, quality stabilization, transmission formats, or better promotion (highlighting cultural meaning) or market access.

Heritage-sensitive textile innovation Pathways: Four archetypes

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Product Configuration

Skill Configuration

	Continuity (forms, uses, typologies close to historical precedents)	Innovation (new forms, uses, applications, functions)
Recombined / extended skill repertoire (addition of design, scientific, industrial, market, or regulatory compliance skills)	**Pathway D: Retro-innovation through knowledge retrieval and extension** • **Product logic**: Referencing past practices or aesthetics • **Skill logic**: Knowledge is fragmented or dormant and must be reconstructed • **Innovation type**: Knowledge and technical translation	**Pathway C: Creating new products to valorize local resources and upstream skills** • **Product logic**: Often radical innovation, no historical precedent • **Skill logic**: Upstream heritage skills preserved; downstream skills added • **Innovation type**: Structural, value-chain, material-led
Stable / traditional skill repertoire (skills largely embodied and practiced)	**Pathway A: Reproducing heritage products by safeguarding endangered skills** • **Product logic**: High continuity • **Skill logic**: Core skills already exist but are fragile • **Innovation type**: Organizational, transmissive, economic (not formal or functional)	**Pathway B: Developing contemporary products from stable heritage skill repertoires** • **Product logic**: Clearly innovative (new garments, new typologies) • **Skill logic**: Heritage skills remain practiced and central • **Innovation type**: Formal, aesthetic, use-based reinterpretation

Without these added competences, the product and the skills that sustain it would likely disappear. Innovation is therefore organisational and economic rather than technical or design-oriented.

Alpine examples

- Inventorying and formalizing textile techniques so they can be transmitted, taught, and reactivated by new generations of makers, as done in Val Camonica (see Section 3).
- Craft wool or linen products intentionally kept close to historical models, but adapted to contemporary quality or safety standards

Through this pathway, **product development consists in creating the conditions for continuity**, rather than in transforming forms or substance.

Pathway B. Developing contemporary products from stable heritage skill repertoires
(Innovation through product reinterpretation)

Product logic: Products are new in form, use, or composition, but remain recognizably connected to past aesthetic or technical skills. Continuity is expressed through adaptation to current needs and lifestyles.

Skill configuration:

- Core heritage skills remain practiced and stable;
- New competences can be added, typically in design, pattern-making, prototyping, or market positioning.

Here, the **product itself changes**, while the underlying skill repertoire remains active. New product development is consistent with the UNESCO notion of living heritage, continuously recreated by bearer communities.

Alpine examples

- *Montagna Addosso* capsule collection in Val Camonica, where contemporary garments reinterpret Alpine textile vocabularies while maintaining aesthetic contiguity (see section 3);
- Projects developed between heritage communities and fashion schools, translating Alpine textile references into contemporary collections.

This pathway illustrates how **external design competences can enrich heritage without misrepresenting it**, provided that translation is carefully mediated.

Pathway C. Creating new products to valorize local resources and upstream skills

(Radical product innovation anchored in heritage resources)

Product logic: Products may have no historical precedent. Their legitimacy derives from re-embedding undervalorized local resources into coherent value chains.

Skill configuration

- Upstream skills and traditional knowlege, such as animal breeding, shearing, crop cultivation, or basic fibre handling, is safeguarded
- Downstream skills are missing and must be added: advanced processing, industrial prototyping, product design, adaptation to differentiated market needs, marketing and promotion.

Although products can be **radically new**, they preserve and revalue **upstream practices** that would otherwise lose economic and/or cultural relevance.

Alpine examples

- The Alpine Wool Library, developing new product applications for wools from autochthonous sheep breeds that had become a wasted by-product (see section 3);
- Collections developed by brands such as La Routo or Salewa (chapter 3), where innovative products permit to pay decent prices to sheep farmers, thus contributing to safeguard transhumant pastoral traditions.

This pathway entails a **strong connection between circularity and heritage**, where radical innovation serves the continuity of upstream skills and resources as well as contributing to cultural landscapes.

Pathway D. Developing new products by reactivating dormant or fragmented knowledge
(Retro-innovation through knowledge retrieval and extension)

Product logic: Products are developed taking inspiration from the past. As a result, partially lost or fragmented knowledge can be made usable again.

Skill configuration

- Traditional knowledge survives only in museums, archives, memories, or other regions;
- New competences are added, including scientific validation, experimentation, and scaling strategies.

Here, heritage skills are no longer fully embodied as living practices. Product development can turn dormant or lost knowledge living again, revitalizing it.

Alpine examples

- AlpTextyles natural dyeing pilots, retrieving historical dyeing knowledge and extending it through experimentation, standardization, and cultivation (see section 5);
- Flax and linen exchanges between Slovenia and Switzerland, reconnecting festive traditions, cultivation practices, and processing know-how across borders (see section 4).

Using the pathways

These pathways should be read as **configurations of product innovation and skills**. A single initiative may move between pathways over time or combine several simultaneously. Sections 3-4 examine how heritage-sensitive and circular innovation takes shape in practice through **specific materials and fibres**. They draw on pilot actions and mapping activities developed within the AlpTextyles project to show how different materials activate distinct challenges, opportunities, and configurations of skills.

Wool, flax and linen, and natural dyes differ not only in their physical properties, but also in the historical trajectories of their value chains, the status of associated knowledge, and the degree to which production systems have been disrupted or displaced. As a result, heritage-sensitive innovation in these contexts emerges through **material-specific arrangements**, combining material affordances, traditional knowledge, existing practices, and newly added competences in different ways.

Each section follows the same logic:

- a brief recap of the material's situation in the Alpine context;
- a set of descriptive case studies drawn from pilot actions and mapping activities;
- practical "how-to" insights and lessons learned, distilled from AlpTextyles pilot actions and mappings, offering concrete guidance on early-stage decision-making, value-chain configuration, and collaboration across craft, industrial, and institutional actors.

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Flock of sheep.
Picture courtesy of Arts and Crafts Center, Skofja Loka.

3. Wool

3.1 Wool in the Alpine context: a brief recap

For centuries, wool was a **relevant material resource** in Alpine regions. It was embedded in traditional agropastoral systems that linked sheep breeding, shearing, fibre processing, textile production, and everyday use. This gave origin to embodied knowledge on how to make the most of wool, based on its material properties that varied by breed, territory, season, and intended applications.

Today, this system has largely disintegrated. While sheep breeding and shearing continue for reasons related to food production (milk, meat), landscape management, biodiversity, and agropastoral heritage, wool itself has frequently become an **undervalued or even unwanted by-product**. Processing infrastructures have mostly disappeared, local outlets are scarce, and market expectations are shaped by global standards favouring uniform, fine fibres associated with imported Merino wool. As a result, significant quantities of Alpine wool are discarded, exported at very low prices, or downcycled.

This situation makes wool a material with much **potential** for heritage-sensitive and circular innovation. The resource is present, and upstream practices persist. What is missing are the **connections, competences, and value-chain configurations** needed to turn wool from (mostly) waste into viable products consistent with its material properties and territorial anchoring.

3.2 Val Camonica (Lombardy): from skills documentation to heritage-sensitive innovation

The Val Camonica pilot, coordinated by Regione Lombardia through the Archive of Ethnography and Social History, represents the most comprehensive attempts within AlpTextyles to connect **heritage safeguarding, design, and product development** around local wool. Rather than starting from a predefined product idea, the pilot deliberately began with a **territorial diagnosis of skills, materials, and practices**, acknowledging both their richness and their fragility.

The valley retains a long history of wool use linked to agropastoral life, domestic production, and small-scale craft activities. Yet, as in many Alpine regions, these practices were increasingly disconnected from contemporary economic circuits. The pilot therefore focused on **making existing knowledge visible, transmissible, and usable**, and on testing how it could inform new forms of product development without falling into folklorization.

This work unfolded through a sequence of coordinated actions: ethnographic documentation, skills mapping, explained below; immersive design work; and product experimentation, most notably through the *Montagna Addosso* collection. Together, these elements make Val Camonica a particularly fertile case for extracting **replicable how-to solutions**.

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HOW-TO

Map local skills and traditional products with innovation in mind

The problem

In many Alpine regions, wool-related skills still exist but are dispersed, aging, and rarely documented in ways that support innovation. Mapping efforts, when available, often result in static inventories disconnected from product development.

What was done in Val Camonica

The pilot adopted a **heritage-sensitive and process-oriented approach** to mapping. Instead of cataloguing products alone, documentation also focused on:

- gestures and sequences of work;
- tools and materials used;
- decision points (why this wool, why this technique);
- conditions of practice (seasonality, domestic vs collective work).

Traditional products were documented not as museum pieces, but as **outcomes of specific skill combinations**. The resulting materials took the form of fiches, visual documentation, and thematic groupings explicitly designed to be read and reused by designers, artisans, and intermediaries.

ALPTEXTYLES index

category: artefacts

Title: Mittens

Source: Codadilana / Bosio

Dimensions: Various sizes

Material: Wool

Technics: Knitting

Tools: Needles

Site: Malonno, Brescia

Description:

The mittens by Codadilana are inherently linked to a well-established tradition of glove and mitten production rooted in the history of Malonno. In the twentieth century, numerous local women engaged in glove production on behalf of the Alpina company, a wool yarn firm operating in the Bergamo area. The required wool was transported by a woman appointed by the company to Malonno, where she coordinated a group of women involved in making gloves. These were subsequently returned to the local contact and then resold to the company. Codadilana revives and revitalizes this tradition, collaborating with Bosio to obtain high-quality Bergamo wool and also using its own wool. However, there are also experiments in progress using only colored Codadilana wool. The yarn used consists of two threads, as an increase in the number of threads would result in an increase in thickness and size of the mittens, making them excessive. The processing involves the use of knitting needles with the four-needle technique, giving the mittens their characteristic shape. The decorations (fig. 1) are inspired by traditional gunats typical of the area and are crafted by a woman who continues to produce these ornaments, thus perpetuating a practice rooted in local history. The collaboration between Codadilana and local artisans highlights the continuity and adaptation of these ancient techniques in the contemporary context.

Notes:

Decorations:

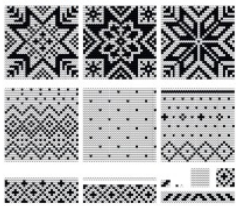


fig. 1

A04

ALPTEXTYLES index

category: tools

Title: Manual loom

Dimensions: 2 x 1,8 x 1,2 m

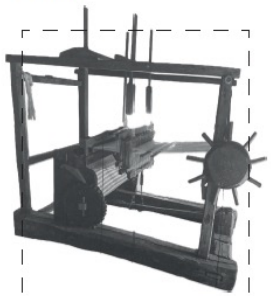
Material: Wood, Wrought iron

Weave: plain

Guardian: Gina Melotti, Gemma Zanardi

Source: Ca'Mon

Site: Monno, Brescia



Description:

The manual loom is an artisanal tool rooted in ancient textile principles passed down through generations. The loom model utilized employs two pedals that actuate the heddles in corresponding numbers. The heddles are small frames with central rings (Fig. 1) through which the warp threads pass. The shuttle, or bobbin, alternates between the two sets of warp threads, creating a perpendicular interweaving of warp and weft threads, resulting in the simplest fabric, known as canvas (Fig. 2). Weaving occurs by alternating pressure on the pedals and firmly securing the weave through the movement of the reed pulled towards oneself. The produced fabric is then gradually wound onto a horizontal cylinder located near the seated weaver. Originally, this weaving technique was employed to produce linen or hemp fabric for domestic purposes. However, with the cessation of domestic craftsmanship during the war, Monno's weavers reinvented themselves in the production of carpets known as "pezzotti." Despite the limitation of the two-heddle loom in creating intricate designs, it still provides a wide range of creative possibilities. The warp, crafted from thin cotton, linen, or synthetic thread, forms the robust structure of the fabric, while the weft allows for creativity in both color and design.

Processing Phases: 1. Warping; 2. Loom Loading (Sleying); 3. Weaving.

Notes:

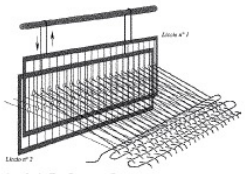


fig. 1

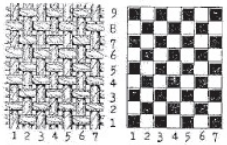


fig. 2

E38

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Illustrative elements from the AlpTextyles mapping activity during the Val Camonica pilot (artefact/product, left; tool, right).

ALPTEXTYLES index

category: techniques

Title: Warping

Tools: Warping machine

Processing: Pezzotto

Guardian: Gina Melotti, Gemma Zanardi

Material: Variables

Location: Monno, Brescia

Description:

The "warping" process represents the preliminary phase in textile production that precedes the use of the manual loom. This operation involves the use of a wooden beam called the "stèla," equipped with holes through which one thread at a time (made of hemp, flax, or wool) is drawn. Subsequently, the threads are passed from one support to another on the warping machine without overlapping.
For the creation of carpets, cotton is used, purchased in forty-five skeins, each weighing a total of 4.58 grams. This cotton is unraveled using a "atrio" wound in twenty-four "gonitolti" and passed through the "stèla," a slat with 20 holes, positioned on the warping mill, which can be either mobile or wall-mounted.
Through the manual operation called "cèrnere," the braided skein is formed, ready to be loaded onto the loom. At the end of this complex series of actions, 32 "portate" are formed, each consisting of 40 threads, for a total of 1280 warp threads to be laid. This detailed process underscores the precision required in the preparation of the warp, fundamental for the success of the weaving process and the creation of the desired carpets.

Notes:



C22

sources:
1. Melotti, Germano. *La Natura Indosso*, 2021. http://books.google.ie/books?id=reQizwEACAAJ&dq=8894871185&hl=&cd=1&source=gbs_api.
2. Maraea.it. "Il Pezzotto Di Monno - Maraea.it," February 6, 2021. https://maraea.it/il-pezzotto-di-monno/.

ALPTEXTYLES index

category: techniques

Title: Sorting

Tools: -

Processing: Wool

Guardian: Codadilana

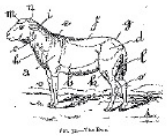
Material: Raw wool

Location: Malonno, Brescia

Description:

The initial phase of Codadilana's textile supply chain begins with the collection of wool from shepherds, who sometimes do not follow the optimal collection procedure. The wool, obtained from sheep shearing, undergoes a process of sorting and selection by Codadilana, distinguishing between the longer and finer wool and the darker and lighter colors. The finer wool comes from the upper part of the neck and back to the mid-ribs, while the coarser wool is extracted from the belly and neck. The thus divided wool is subsequently stored in large sacks, destined for the subsequent cleaning phase. The goal is to reach a quantity of one thousand kilograms, which will be later shipped to Austria for the washing process. After washing, a portion of the wool is spun for the production of items like socks, while another portion is used in the creation of felted wool.

Notes:



The finest and best wool from the fleece is that of the shoulders, a. Following in order of merit are the wool from the hips, b, the sides of the neck, c, and the flanks, d, which constitute the best parts of the fleece. Lower grades are obtained from the withers, e, the saddle, f, the rump, g, the throat and chest, h, the upper part of the neck, i, the thighs, k, the base of the tail and buttocks, l, the head, m, and the hides, o.

C24

sources:
1. MaciLit Valle Camonica. "La Raccolta Della Lana 2021 - MaciLit Valle Camonica," May 12, 2021. https://maciLit/raccolta-lana-valle-camonica/.

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AlpTextyles

Illustrative elements from the AlpTextyles mapping activity during the Val Camonica pilot (techniques).

Replicable takeaway

- Map **skills and processes**, not only artefacts;
- Format documentation so it can circulate beyond heritage institutions;
- Treat mapping as the *first step of an innovation process*, not as an end in itself.

Regione Lombardia has produced several complementary documents and visual tools linked to this mapping work, which can serve as concrete references for similar initiatives, available on the AlpTextyles website.

HOW-TO
Enable designers to learn Alpine heritage without clichés

The problem
External designers often approach Alpine heritage through romantic or stereotypical representations of mountain life, leading to superficial or misleading products.

What was done in Val Camonica and other pilot areas
Designers involved in the pilot were required to engage in **situated learning before design**. This included:

- field immersion and study visits;
- direct interaction with local practitioners;
- exposure to real working conditions and constraints;
- analysis of documented techniques before any creative proposal.

Design briefs were grounded in **material and functional realities** rather than symbolic inspiration. Designers were asked to justify their choices in relation to documented skills, materials, and uses, rather than aesthetic references alone.

This approach shaped the *Montagna Addosso* collection, where garments and accessories avoided folkloric motifs and instead expressed continuity through texture, construction logic, and material presence.

Replicable takeaway

- Require immersion and learning before design;
- Use documentation as a constraint, not just inspiration;
- Translate heritage into **functional and material parameters**, not decorative motifs.

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c. Typical Structure of a Study Visit

1	Introduction and welcome	- Welcome of the participants. - Introduction to local culture and practices.
2	Exploration of the Local Context	- Guided tour of areas of cultural, historical and productive interest. - Introduction to local artisan and textile practices.
3	Practical workshops	- Practical training sessions on specific techniques (e.g. weaving, natural dyeing). - Direct involvement with local artisans and experts.
4	Interactions with Local Actors	- Meetings with artisans, entrepreneurs, institutions and researchers. - Discussion on the challenges and opportunities of the sector.
5	Networking session	- Sharing experiences between participants and the local community. - Creating contacts and potential collaborations. - Reflections and closure

Outline of study visits during the AlpTextyles pilots. Author: Designer Francesco Ferrero.
Full report on Study Visits available on the AlpTextyles website.

to. Itinerary of activities

Workshop Practical

The reception takes place at the Codadilana headquarters, where participants are introduced to the local wool manufacturing process. The morning continues with a practical workshop on natural dyes and wool sorting, offering an overview of the valley's traditional techniques and the role of queues in the local wool supply chain.

03.

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Report of Study Visit in Valcamonica (part). Author: Designer Francesco Ferrero.
Full report on Study Visits available on the AlpTextyles website.

to. Itinerary of activities

Exploration of the Local Context

Visit to Ca'Mon for a meeting with the Donne del Filo collective, a group of women engaged in manual activities at the community center. Participants have the opportunity to explore traditional textile practices in use, such as the use of the loom for the "pezzotto", directly observing the techniques and collective work that keeps these local traditions alive.

03.

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Report of Study Visit in Valcamonica. Author: Designer Francesco Ferrero.
Full report on Study Visits available on the AlpTextyles website.

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b. Description of the Actors Involved

The study visit experience involves two key players in the area, both committed to valorising local textile traditions. These realities work to preserve artisanal skills and promote sustainable practices, offering a space for exchange and learning for communities.

Codadilana

Codadilana is an association founded in Malonno in 2012, dedicated to the recovery and valorisation of local wool. Through the collection, processing and promotion of artisanal products, Codadilana aims to preserve the textile traditions of Valle Camonica, supporting pastoralism and local craftsmanship.

03. https://www.facebook.com/CodadiLana/?locale=it_IT

Ca'Mon

Ca'Mon is a community center for art and crafts located in Monno, in Valle Camonica. The center presents itself as a meeting place and cultural exchange, hosting artists, artisans and residents. Ca'Mon promotes the valorization of traditional knowledge and innovation.

https://centrocamon.it/

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c. Takeaways

Mastery in Traditional Practices: Acquisition of specific skills in natural dyeing and traditional weaving.

Strengthening Product Quality: Reflections on how artisanal techniques can raise the quality of textile products in terms of aesthetics and durability.

Rediscovery of Traditions and Community Work: Importance of collective and intergenerational activities in maintaining traditions.

Story of the Territory Through Fabrics: Understand how textile heritage can become a means to tell and promote local history.

Development of Documentation Tools: Importance of documenting practices and knowledge to enable their transmission and application in other areas.

Report of Study Visit in Valcamonica. Author: Designer Francesco Ferrero.
Full report on Study Visits available on the AlpTextyles website.

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AlpTextyles

HOW-TO
Connect safeguarding and product development through translation

The problem
Safeguarding initiatives often stop at documentation and inventorying, while product development often proceeds without reference to heritage processes.

Safeguarding and innovation were treated as **two phases of the same process**. Documented techniques informed product experimentation directly. Rather than reproducing historical garments, the design team identified **core transferable elements**, such as:

- types of stitches or weaves;
- material thickness and density;
- construction principles linked to durability and use.

These elements were translated into contemporary product typologies, adapted to present-day contexts while maintaining continuity of skills. The result was not replication, but **informed transformation**, in line with the UNESCO notion of living heritage.

Replicable takeaway

- Identify which parts of a practice are transferable across products.
- Accept small adaptations as a condition for keeping skills alive.
- Prototype early to test both material limits and market relevance.

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a. Context and objectives

The project aims to enhance Codadilana's work through interventions on multiple levels:

1 ..... 2 3

Research and documentation

Mapping raw materials, semi-finished products and production processes available locally, while investigating the poetic, narrative and iconographic value of the world of wool and sheep farming.

Development and design

Create a contemporary collection of artefacts linked to transhumance and the reuse of wool, integrating ethics, sustainability and respect for traditional knowledge in design and production.

Impact on the territory

Promote the involvement and trust of the local community, generating economic and cultural opportunities by promoting an exchange of innovative practices and solutions between realities.

01. **Create a wool valorization system that is sustainable, rooted in the territory and projected towards the future, respecting cultural memory and community dynamics.**

Stages in the «Una Montagna Addosso» product development process.
Full report «Una Montagna Addosso, the Collection» available on the AlpTextyles website.

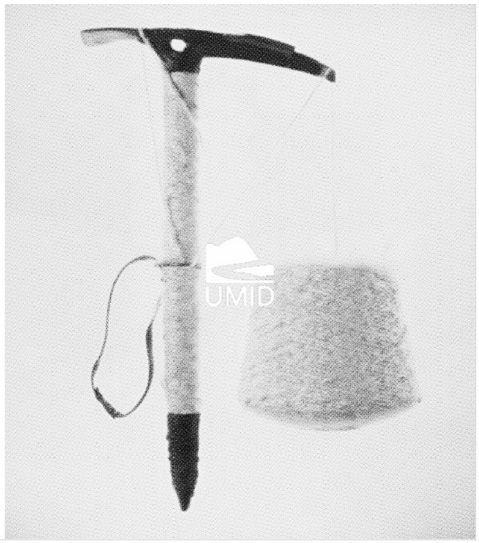
Interreg Co-funded by the European Union
Alpine Space
AlpTextyles

Report **Collection**

c. General concept

It was born from these intentions *Una montagna indosso*, a collection of products developed by Codadilana to celebrate the use of wool in mountain clothing across generations. The collection traces a journey that starts from shepherds, passes through domestic knitting and arrives at modern clothing, valorising a raw material rooted in the territory. Wool, with its extraordinary versatility and universal use, has dressed generations and continues to do so. Today, considered a special waste difficult to dispose of, wearing it becomes not only a gesture of sustainability, but also an act of cultural resistance and reconnection with the roots.

01.



Report **Collection**

c. General concept

Territory identity

- Inspiration from transhumance and the knowledge handed down by shepherds.
- Exploration of traditional clothing and their symbolic meanings.
- Rooted in the culture and landscapes of Valle Camonica and the Alps.

Wool enhancement

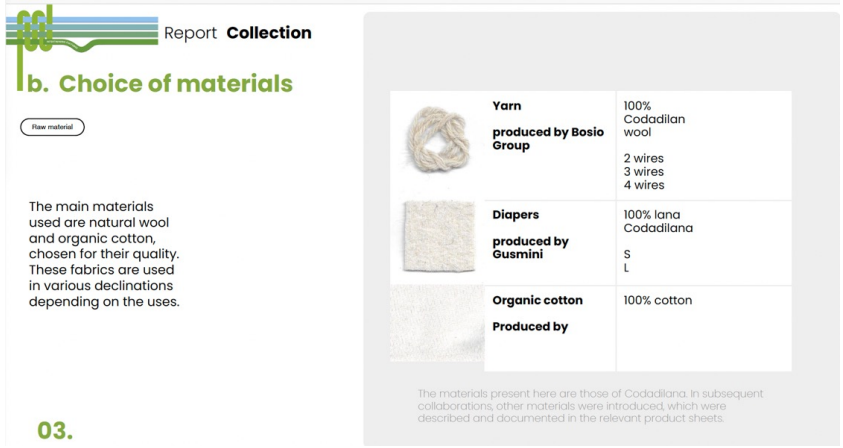
- Wool as a symbol and resource: a fiber that embodies nature, memory and innovation.
- Experimentation with artisanal processes and modern techniques to reimagine its use

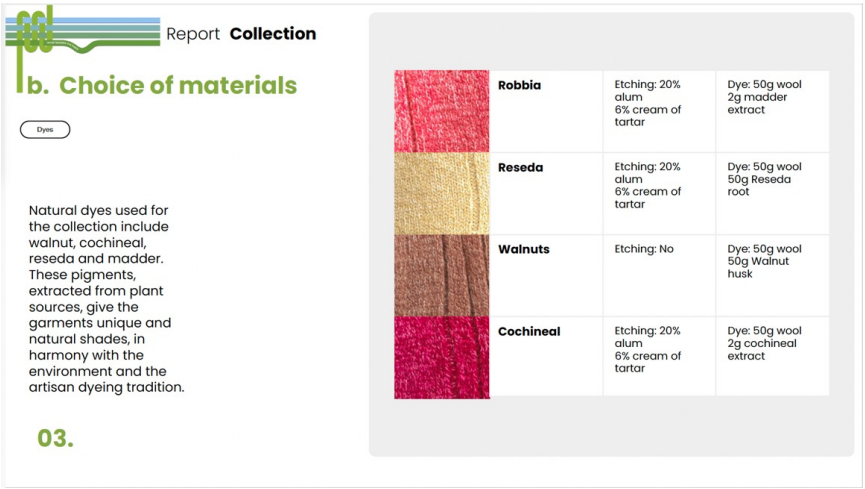
Social and environmental impact

- Support for local communities through practices that respect the custodians of traditional knowledge.
- Promotion of a production cycle that protects the environment and promotes sustainable relationships.

01.

General concept of the «Una Montagna Addosso» collection.
Full report «Una Montagna Addosso, the Collection» available on the AlpTextyles website.





Steps in the collection development process: choice of materials, prototyping.
Full report «Una Montagna Addosso, the Collection» available on the AlpTextyles website.

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AlpTextyles

b. Innovations introduced

The project aims to enhance Codadilana's work through interventions on multiple levels:

1 ..... 2 ..... 3 4

Items

- Fusion of functionality and artisanal heritage
- Adapted for practical and contemporary use

Materials

- Synergistic use of natural materials
- Experiments on natural dyes

Production Processes

- Collaborations with local artisans
- Experimentation with modern knitting techniques

Identity

- Definition of a coordinated identity
- construction of a new storytelling

06. **Creating a constantly evolving collection that not only responds to current needs, but is able to evolve into the future, drawing strength from craftsmanship and experimentation.**

Designer and report author Francesco Ferrero reflections on innovation introduced through the pilot.
Full report «Una Montagna Addosso, the Collection» available on the AlpTextyles website.

UMID – Una Montagna Indosso
Francesco Ferrero with Regione Lombardia

Garments as guide, form, gesture.
Born from a dialogue between **land, labor, and legacy,** the collection retraces the long thread of wool in Alpine life. Conceived by the Codadilana association (IT) as part of a collective research process, designed by Francesco Ferrero, and co-created with **local craftswomen**, UMID utilizes a **hand-woven fabric from Tessitura di Valposchiavo** — paying homage to generations of mountain practices, from shepherds and spinners to contemporary makers. It explores how **vernacular knowledge and traditional techniques can meet new ways of thinking and making**, reactivating wool as both material and cultural resource.

Francesco Ferrero is a multidisciplinary designer working at the intersection of **place-based research and community engagement**.
UMID emerged from his studies in Eco-Social Design at the Free University of Bozen-Bolzano and his current PhD in Design for Cultural Heritage. His practice combines artisanal experimentation with participatory processes, seeking forms of innovation that grow from shared knowledge and rooted, situated practices.

Each piece in the collection is **a distilled essential: a tool for everyday survival shaped by care**, simplicity, and purpose. They embody gestures of protection and resilience, echoing a landscape where beauty and necessity are deeply entwined. Wearing UMID means inhabiting a story in which **the mountain is not a backdrop but a guide** — and wool is more than fabric. **Wool is memory**. It is resistance. It is a **living companion** connecting body, craft, and territory in one continuous gesture.

©Photos: Courtesy of Francesco Ferrero

Production | Archivio di Etnografia e Storia Sociale – Regione Lombardia (IT)
In collaboration with | Comunità Montana di Valle Camonica (IT), Codadilana Association Malonno (IT)

Administrative Officer in charge of the Heritage Unit – General Directorate of Culture | Carmen Ragno

Project Manager | Agostina Lavagnino
Organizational Secretary | Elisabetta Vento
Administrative Secretary | Lise Aline Begalli

This printed booklet you are leafing through is the culmination of a year-long effort and the result of extensive research carried out by Codadilana. A journey that moves between the artisanal heritage of the past and the ambition to reactivate a small wool supply chain in Malonno, in Valle Camonica. The project, promoted by Regione Lombardia in collaboration with the Comunità Montana di Valle Camonica within the framework of the European Alpine Space Programme AlpTextyles, focuses on the textile traditions of the territory. Valle Camonica, with its rich history tied to wool processing, pastoralism, and Alpine transhumance, thus becomes the focal point of a path of cultural and productive revitalisation. This commitment takes shape, among other things, in a collection of garments developed in collaboration with a network of local artisans and small manufacturers, using wool sourced through the fleece collection programme promoted by Codadilana.

Art & Executive Director | Elena Turetti

Concept & Collection Designer | Francesco Ferrero

Textile | 100% Bergamasca sheep from Valle Camonica (IT)

AlpTextyles
INTERTWINING CULTURES

SCRAPBOOK

33 34

Each piece was created with local craftswomen and SMEs and embodies the mountain as "a guide — not a backdrop," blending Swiss handwoven fabrics from Val Poschiavo with Lombardy industrial knitting using Bergamasca and Montafon Stone Sheep wools.

@ AlpTextyles at Milano Unica 2025.

AlpTextyles
INTERTWINING CULTURES

SCRAPBOOK

Interreg Co-funded by the European Union
Alpine Space
AlpTextyles

Source: AlpTextyles (2025), Young designers' Collection Scrapbook. Available on the AlpTextyles website.

Interreg Co-funded by the European Union
Alpine Space
AlpTextyles

HOW-TO
Build a local wool business model starting from a local resource

The problem

Local wool is often perceived as economically unviable due to its heterogeneity, limited volumes, and lack of processing infrastructure.

What was done in Val Camonica

The pilot reframed wool as a **territorial resource whose value lies in coherence rather than scale**.
Business logic focused on:

- small series and semi-finished products;
- uses consistent with fibre properties;
- short and transparent supply chains;
- involvement of shepherds as active economic actors, including early-stage sorting.

Rather than competing with global wool markets, the model emphasized differentiation, traceability, and alignment between material, product, and use.

Replicable takeaway

- Start from what local wool can do, not what it cannot.
- Prioritize semi-finished products and niche applications.
- Build value through coherence and transparency, not volume.

Conclusion

The Val Camonica pilot demonstrates that heritage-sensitive wool innovation can rely on **methodical sequencing**:

- mapping skills with future use in mind;
- enabling designers to learn rather than project their a priori views;
- translating documented practices into products;
- grounding business models in material realities.

This sequence is **highly transferable** and provides a concrete reference for other Alpine regions seeking to mobilize wool as a circular and culturally grounded resource.

Readers interested in replicating this approach are encouraged to consult the additional Regione Lombardia materials linked to this pilot, which provide detailed methodological guidance, visual documentation, and design outcomes.

3.3 The Alpine Wool Library: making material diversity visible and usable

The **Alpine Wool Library**, developed by **emlyon business school** in collaboration with **Fibershed DACH**, was conceived as an experimental and pedagogical device to address a recurrent obstacle in Alpine wool valorization: the **systematic devaluation of local wool due to its heterogeneity and misalignment with dominant industrial standards**.

The Library is a material knowledge infrastructure designed to make **Alpine wool diversity visible, comparable, and usable** for product development. It was conceived as a **working tool** for designers, SMEs, craftspeople, and business support organizations.

The Wool Library brings together **physical samples of wool from six Alpine sheep breeds**, selected to reflect the diversity of fibre qualities, territorial contexts, and valorization challenges encountered across the Alpine arc. For each breed, the Library combines **material samples, technical information, processing experiments, and performance testing**, allowing users to engage directly with the fibres and to understand both their potential and their limits.

The Alpine Wool Library showcase at Milano Unica.

Source: AlpTextyles Milano Unica 2025 Scrapbook

The six breeds documented in the Library include:

- **Bergamasca sheep** (Italy);
- **Engadin sheep** (Switzerland);
- **Jezersko–Solčava sheep** (Slovenia);
- **South German Merino** (Germany);
- **Merino d'Arles** (France);
- **Montafon Stone sheep** (Austria).

These breeds were selected as **contrasting cases**, illustrating the wide range of Alpine wool characteristics, from relatively fine Merino-derived fibres to coarser and more heterogeneous wools traditionally used for robust and functional textiles.

For each breed, the Library documents:

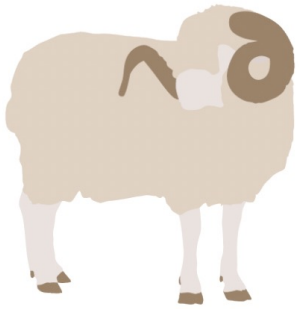
- the **territorial and pastoral context** (geography, scale of farming, organization of breeders);
- the **material characteristics of the fleece** (fibre diameter ranges, length, crimp, heterogeneity);
- the **traditional and historical uses** associated with that wool;
- the **constraints and opportunities** for contemporary valorization.

Alpine Wool Library

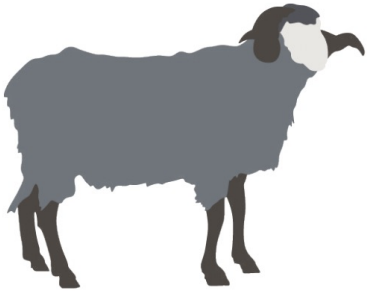
Altextyles x Alix Arto, Emma Casella, Nina Conrad from Fibershed DACH

Interreg Co-funded by the European Union
Alpine Space
AlpTextyles

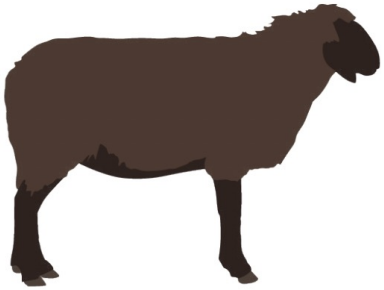
Pecora Bergamasca, Italy



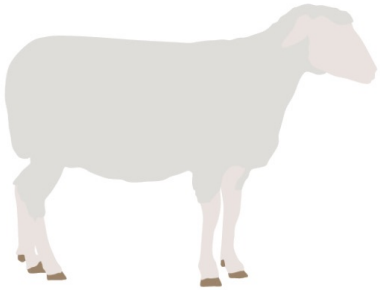
Merino d'Arles, France



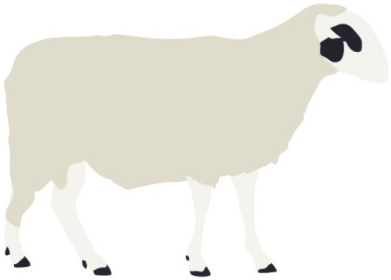
Montafoner Steinschaf, Austria



Engadinerschaf, Switzerland



Merinolandschaf , Germany



Jezersko–Solčava , Slovenia

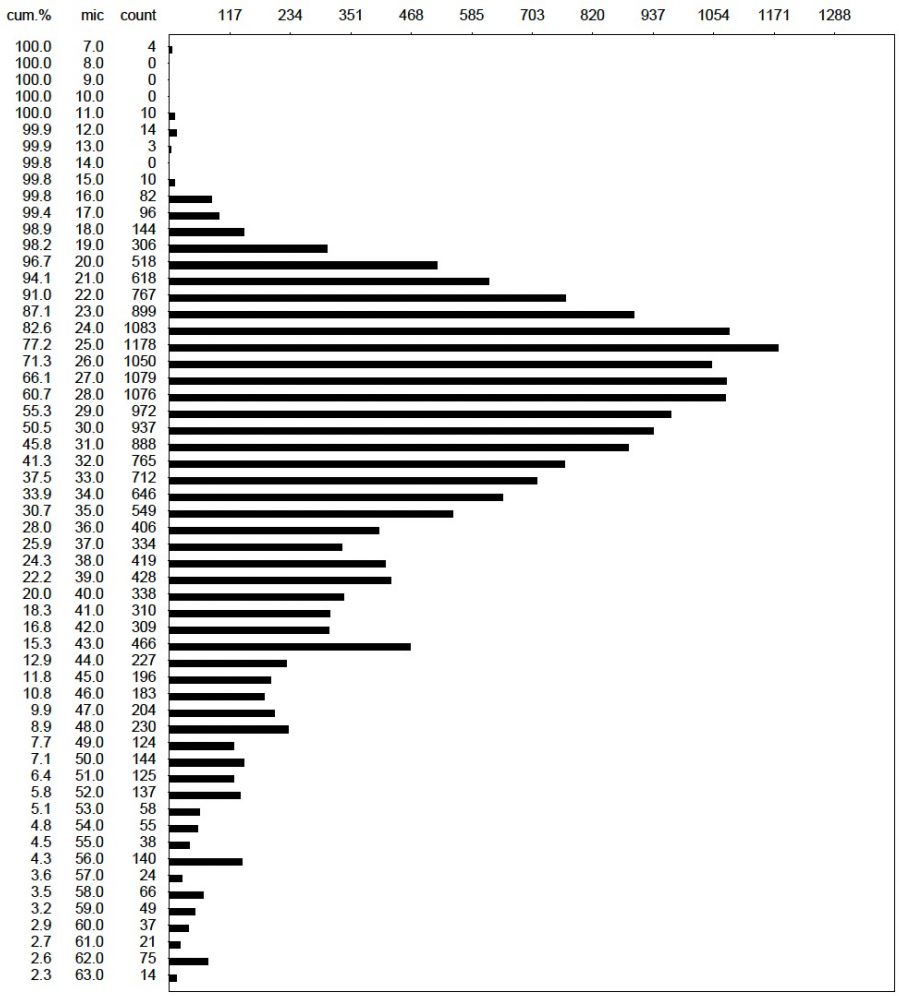
Beyond descriptive documentation, a key component of the Library is the **technical testing of fibres**, carried out to assess how Alpine wools behave under different transformation and use conditions. Technical data was complemented with knowledge developed working with the fibres through a wide range of competencies. Thanks to this, it was possible to bridge heritage knowledge and contemporary product development, developing **operational information** for industrial use.

Depending on the breed and fibre characteristics, testing included:

- assessment of **spinnability** and yarn regularity;
- evaluation of **felting behaviour**, density, and cohesion;
- testing of **knitted and woven samples** to observe elasticity, resistance, and surface qualities.

These tests were intended to **identify realistic application domains**, clarify limits, and inform design and value-chain decisions. In doing so, technical testing complements craft knowledge and sensorial evaluation, providing a shared reference point for dialogue between breeders, craftspeople, designers, and industrial actors.

Example of OFDA fiber test (Bergamasca sheep wool)



cum.%	mic	count
100.0	7.0	4
100.0	8.0	0
100.0	9.0	0
100.0	10.0	0
100.0	11.0	10
99.9	12.0	14
99.9	13.0	3
99.8	14.0	0
99.8	15.0	10
99.8	16.0	82
99.4	17.0	96
98.9	18.0	144
98.2	19.0	306
96.7	20.0	518
94.1	21.0	618
91.0	22.0	767
87.1	23.0	899
82.6	24.0	1083
77.2	25.0	1178
71.3	26.0	1050
66.1	27.0	1079
60.7	28.0	1076
55.3	29.0	972
50.5	30.0	937
45.8	31.0	888
41.3	32.0	765
37.5	33.0	712
33.9	34.0	646
30.7	35.0	549
28.0	36.0	406
25.9	37.0	334
24.3	38.0	419
22.2	39.0	428
20.0	40.0	338
18.3	41.0	310
16.8	42.0	309
15.3	43.0	466
12.9	44.0	227
11.8	45.0	196
10.8	46.0	183
9.9	47.0	204
8.9	48.0	230
7.7	49.0	124
7.1	50.0	144
6.4	51.0	125
5.8	52.0	137
5.1	53.0	58
4.8	54.0	55
4.5	55.0	38
4.3	56.0	140
3.6	57.0	24
3.5	58.0	66
3.2	59.0	49
2.9	60.0	37
2.7	61.0	21
2.6	62.0	75
2.3	63.0	14

Date	: 09Apr25
Sample ID	: Italian wool unwashed(Av3)
Description	: white
Lot/Client	: 336
Operator	: ca

OFDA2302:5.410 Cal: D = 4.7954*WH -2.37
Filename: Fibershed Wool Analysis April 2025.mes

Diam	= 32.32[10.94] um
CV	= 33.85 %
CEM	= 20.94 um
CF	= 54.23 %
Spin fineness	= 35.46
Sample size	= 20001
Curve	= 44.21[41.95] deg/mm

Source: Spycher Handwerk

By combining **breed-level documentation, processing experiments, and technical testing**, the Alpine Wool Library allows users to move back and forth between **material properties, transformation techniques, and potential product uses**. This integrated approach addresses a critical bottleneck in heritage-sensitive innovation: the lack of shared, evidence-based understanding of non-standard fibres.

The Library was designed as a **replicable format** that can be adapted to different regional and national contexts.

Detailed breed fiches, processing protocols, and technical testing results are available in the AlpTextyles deliverables produced by emlyon business school within WP2, available on the AlpTextyles website, which readers are encouraged to consult to adapt this approach to their own territorial contexts.

HOW-TO
Develop a wool library

The problem

Local and regional wools are often excluded from valorization because their heterogeneity does not fit dominant industrial norms. This exclusion happens early, before fibres are explored in relation to their actual properties and potential uses.

What the Alpine Wool Library shows

Heterogeneity can become a resource if it is **made visible, interpretable, and experiential**. Rather than simplifying diversity, the Library builds conditions for actors to *work with it*.

Concrete steps

- ***Inventory locally available breeds:*** Start by identifying sheep breeds present in the territory and the volumes of wool they produce. This does not require exhaustive coverage: even a small number of breeds can already generate positive outcomes.
- ***Gather information on heritage uses and practices:*** For each breed, document how the wool was used (garments, blankets, felting, technical uses), historically and surviving local uses. This anchors material exploration in local knowledge.

- ***Inventory locally available breeds:*** Start by identifying sheep breeds present in the territory and the volumes of wool they produce. This does not require exhaustive coverage: even a small number of breeds can already generate positive outcomes.
- ***Combine technical testing with qualitative experimentation:*** Subject fibres to basic technical tests (spinnability, comfort, resistance), but complement these with experimentation carried out with a **network of craftspeople, semi-industrial and industrial processors**. This combination allows quantitative data to be enriched with qualitative insight from multiple expertises.
- ***Develop material samples across processing modes:*** Produce samples using different transformation logics (spinning, knitting, weaving, needle felting, wet felting). These samples function as *material arguments*, helping designers, craftpeople and industrial users imagine applications in clothing, home textiles, or interior design.
- ***Use the library as a tool for aesthetic inspiration as well as technical learning:*** The tactile, visual, and sensorial qualities of material libraries can “seduce” designers, manufacturers, and craftpeople, creating interest where abstract data would not.
- ***Showcase the library in targeted contexts:*** Present the library during textile fairs, interior design fairs, professional events, or curated workshops. This situates local wool within contemporary professional arenas rather than heritage-only settings.
- ***Make the library consultable and lendable:*** Allow designers, SMEs, and institutions to consult or temporarily borrow samples. Circulation increases impact and supports experimentation beyond the original project.
- ***Start small and expand progressively:*** A library does not need to be complete from the outset. New breeds, samples, and tests can be added over time, following interest and available resources.

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Alpine Wool Library: Woven, knit, and felted samples made with wool from 6 Alpine sheep breeds

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HOW-TO

Add value-chain information to material libraries to support early feasibility decisions and reduce innovation risk

The problem

Wool-based innovation initiatives often fail for two opposite reasons. In some cases, feasibility problems emerge too late, after time and resources have already been invested. In other cases, projects are abandoned prematurely because using regional wool is perceived as “not feasible” for contemporary products, based on assumptions rather than evidence.

What the Alpine Wool Library shows

Material libraries become significantly more powerful when they integrate **value-chain information alongside fibre samples**. This transforms them into early diagnostic tools rather than inspirational showcases alone. By reducing both late-stage failure and premature abandonment, this approach encourages **realistic experimentation with existing resources**, minimizing wasted effort and avoiding unnecessary substitution with imported materials. And by making value-chain configurations visible early, actors can prioritize **shorter, geographically contained chains**.

Concrete steps

- ***Link each wool to its points of availability:*** For each breed or wool type, indicate where the wool is available (farmers, cooperatives, wool collectors), in what approximate quantities, and at what price ranges.
- ***Map processing options by transformation type:*** Specify where the wool can realistically be processed depending on the intended transformation (e.g., washing, spinning, knitting, weaving, needle felting, wet felting). Document what is already possible with local/regional partners. Document also cross-border options.
- ***Use the library to support go / no-go decisions:*** Before committing to a product concept, use the combined material and value-chain information to assess feasibility. This supports informed decisions, whether the outcome is to proceed, adapt the concept, or postpone investment.

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Wool sorting (left picture) and scouring (middle) at Laines d'Ici. Wool after washing (right). Pictures taken at Laines d'Ici.

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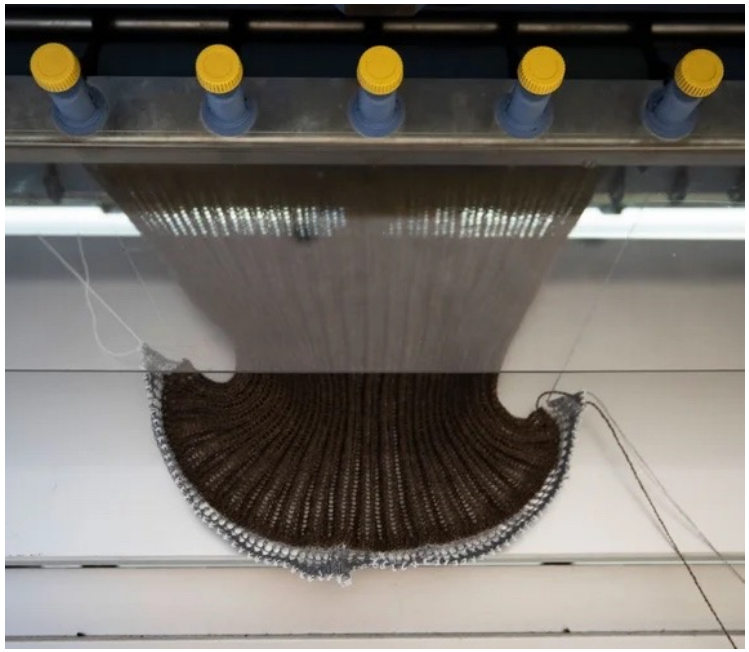
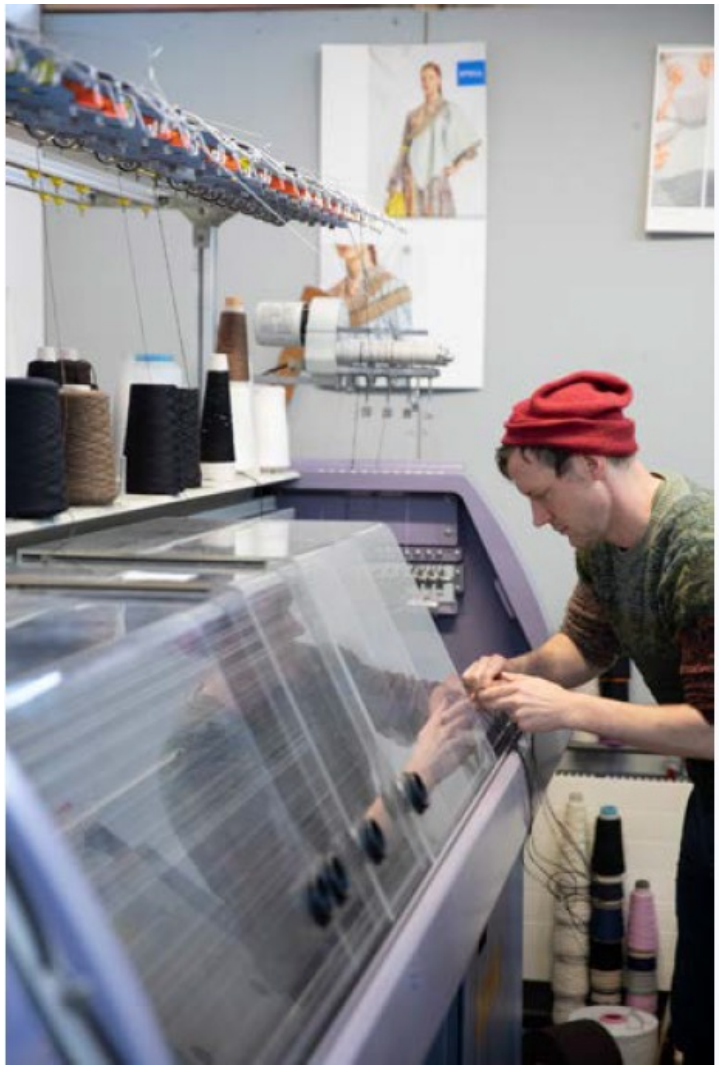
Hand weaving (left), Ms Coraline Sandoz working on the loom (center), and samples off the loom (right).

Photographs taken at Ms Coraline Sandoz's workshop (CH).





Industrial knitting machine (left), Mr Urs Landis installing the machine (center), and knitted samples (right).

Photographs taken at Urs Landis Strickwaren(CH).

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Carded wool ready to be wet felted (left).
Samples after wet felting (right).

Photographs taken at Magalie Nussbaumer's workshop, CH

Carded wool batts entering the machine to be needle felted (left). Felt sample coming out of the machine(center). Finished sample (right). Photographs taken at Pro Verzasca(CH).

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HOW-TO
Mobilize craft knowledge as an aesthetic and prototyping resource

The problem

Craft knowledge is often either romanticized as heritage or bypassed in favor of industrial design processes. As a result, valuable material intelligence is lost.

What the Alpine Wool Library shows

Even when final products are semi-industrial or industrial, craft practices can play a crucial role **upstream**, informing aesthetic judgement, material sensibility, and early prototyping. Craft-informed prototyping encourages **material efficiency, durability, and appropriateness of use**, all of which are central to circular design logics rooted in existing skills and resources.

Concrete steps

- ***Involve craftspeople early as knowledge holders:*** Engage craftspeople not primarily as producers, but as experts in texture, density, finishing, and material behaviour.
- ***Use craft outputs as reference points:*** Existing craft objects, samples, or techniques can guide designers and SMEs in understanding what a fibre can realistically express, without copying forms directly.
- ***Support low-threshold prototyping*****:** Craft-based experimentation allows rapid testing of ideas without heavy industrial investment, helping refine and testing concepts before scaling.

- ***Build mutually beneficial relationships*:** Collaboration can generate learning opportunities for both sides, but it requires clarity about roles, recognition of knowledge, and fair conditions.
- ***Remain attentive to risks of cultural appropriation:*** When mobilizing craft knowledge for innovation, it is essential to avoid approprion or misrepresentation. These issues are addressed explicitly later in this output, but they should already be considered at this stage.

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Alpine Wool Library, knitted samples realized by Urs Landis Strickwaren, under the coordination of Fibershed DACH..

Pecora Bergamasca, Italy

Merino d'Arles, France

Engadinerschaf, Switzerland

Merinolandschaf , Germany

Montafoner Steinschaf, Austria

Jezersko–Solčava , Slovenia

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Alpine Wool Library, wet felt samples realized by Pro Verzasca, under the coordination of Fibershed DACH.

Pecora Bergamasca, Italy

Merino d'Arles, France

Engadinerschaf, Switzerland

Merinolandschaf , Germany

Montafoner Steinschaf, Austria

Jezersko–Solčava , Slovenia

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AlpTextyles

Alpine Wool Library, wet felt samples realized by Magalie Nussbaumer, under the coordination of Fibershed DACH..

3.5 Brands pursuing resource-led innovation with regional wools

This section presents two **brands** that illustrate how regional and Alpine wools can be integrated into contemporary product strategies at scale. These cases are not AlpTextyles pilots. They were mapped as **best practices** exemplifying one of the innovation pathways identified in Chapter 2, namely **resource-led innovation based on the revalorization of undervalued local materials**.

Both cases demonstrate that working with regional wools is feasible also in industrial contexts when innovation is driven by **material realism**, **pragmatic value-chain design**, and **selective technical choices**.

La Routo: blending regional wool for performance and wearability

La Routo is an outdoor apparel project explicitly rooted in Alpine pastoral territories and in the **re-opening and reactivation of the historic transhumance trail (la routo)** linking southern France and northern Italy. The brand was conceived as a contemporary outdoor collection accompanying this reopening, with the ambition of reconnecting **walking practices, landscapes, and pastoral heritage** through material culture.

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Products from the La Routo collection, presented at the Salon des Randonneurs, Lyon, 2024.
Pictures by Diego Rinallo.

The initiative was developed through collaboration among different actors, bringing together:
• the **Collectif des éleveurs de Mérinos d'Arles**,
•the **Maison de la Transhumance**,
•and **MDG Naturfasern GmbH**, which played a key role in new product development and value chain coordination.

From a material standpoint, La Routo is built around the **valorization of wool from the Merinos d'Arles**. The initial ambition was to rely exclusively on this regional wool. However, during development, a concrete material problem emerged: garments intended for **direct skin contact** did not consistently meet expectations in terms of softness and comfort when using Merinos d'Arles wool alone.

The decision to **blend Merinos d'Arles wool with wool sourced from the Falkland Islands** was therefore a **pragmatic solution to a material constraint** identified during prototyping. Falklands wool provides a baseline of softness and regularity, making next-to-skin products wearable, while Merinos d'Arles wool retains its role in anchoring the collection territorially and materially. This blending choice is presented transparently as a functional compromise that enables the valorization of merino d'Arles wool and extending the resulting product assortment.

La Routo's value chain is intentionally **short and geographically contained**, with the exception of the Falklands wool input. Key transformation stages are organized across **France, northern Italy** (notably in **Biella**, a historic textile district with specialized competences in wool spinning and finishing) and **sourthern Germany**. Excluding the Falklands input, the overall value chain remains within a few hundred kilometers, reflecting both historical continuities across the Alpine arc and contemporary industrial pragmatism.

Heritage is mobilized strongly in La Routo, but not as a purely symbolic narrative. It is expressed through:

- the valorization of merino d'Arles wool, a heritage resources that had lost economic significance, through a fair compensation to breeders;
- the collective organization of the initiative itself, through the involvement of Maison de la Transhumance and the breeder association;
- the alignment of products with walking and outdoor practices linked to transhumance routes.

While other artisanal and smaller-scale initiatives valorizing Merino d'Arles wool exist and play a crucial role in safeguarding heritage skills and practices, the involvement of an entreprenerial organization capable of coordinating product develpment and complex value chains has made it possible to operate at a different scale. This configuration allows significantly larger quantities of wool to be valorized through industrial production.

Salewa: using regional wool as insulation material in outdoor garments

Salewa is an Alpine-rooted outdoor brand operating at an international scale, with product development driven by requirements of **thermal performance, durability, and functional reliability**. Within selected product lines, the brand has integrated **regional Alpine wool**, sourced notably from **Tyrolean and South Tyrolean sheep breeds**, into its outdoor garments.

In contrast to apparel projects centered on fabrics or next-to-skin wear, Salewa mobilizes regional wool primarily as an **insulation material**. Wool is used in padding layers, where its intrinsic properties (thermoregulation, moisture management, resilience, and comfort across temperature fluctuations) can be fully activated. In this configuration, wool is not intended to function as a visible textile surface, but as a **functional component** within multilayer garment systems.

To meet the demanding performance standards of outdoor garments, Alpine wool is **combined with other fibres, including synthetic materials**, and integrated into insulation materials designed to optimize warmth-to-weight ratios, breathability, and durability. Additional technological innovation supports this integration, allowing wool to contribute its specific advantages without being required to meet criteria for uniformity or softness associated with next-to-skin textiles.

Salewa products, AlpTextyles Stand, Milano Unica professional textile fair, 2025.

In this case, blending operates at the level of **materials and functions**. Wool becomes part of a composite insulation solution, selected for what it does best. This approach enables the use of regional wool in applications that would otherwise rely exclusively on synthetic insulation, without forcing wool into roles for which it is less suited.

Also Salewa's value chains are **cross-border**. Wool sourcing, material processing, insulation development, and garment assembly are organized across Alpine regions rather than within a single national framework. This configuration mirrors both historical interdependencies within the Alpine space (i.e., Austrial Tyrol and Italian South Tyrol) and contemporary territorial specializations, allowing the brand to access relevant resources and expertise while maintaining geographically contained supply chains.

Key lessons

Taken together, the cases of La Routo and Salewa illustrate how **resource-led innovation with regional wools** can be achieved through different product logics, scales, and degrees of heritage explicitness. These cases thus highlight some lessons for brands and SMEs considering similar pathways.

Lesson 1
Blending as a pragmatic enabler of regional wool valorization

Both cases show that blending is often a **condition of feasibility** when working with regional wools, but that blending can take multiple forms depending on product objectives.

In the case of La Routo, blending Merino d'Arles wool with Falklands wool emerged as a **solution to a concrete material problem** identified during product development, namely ensuring comfort for garments worn next to the skin. Blending here stabilizes softness and regularity while preserving the territorial anchoring and identity of the collection. It enables the use of regional wool in apparel applications that would otherwise remain inaccessible.

In the case of Salewa, blending operates at the level of **materials and functions** rather than fibre homogeneity. Regional Alpine wool is combined with other fibres, including synthetics, within insulation layers designed for thermal performance. Here, blending allows wool to be used precisely where its properties are most effective, without forcing it into unsuitable roles.

These configurations show that blending should not be interpreted as a loss of authenticity or heritage value. Instead, it functions as a **design variable** that can be adjusted to reconcile material properties, user requirements, and production constraints. From a circularity perspective, blending enables the productive use of wools that might otherwise remain undervalued or unused, reducing waste and reliance on fully synthetic alternatives.

Lesson 2
Cross-border value chains as a condition of feasibility and coherence
Both cases also demonstrate that **regional wool valorization does not necessarily align with national borders**. Instead, geographically contained **cross-border value chains** often provide the most coherent and effective solutions.

For La Routo, organizing key transformation stages across France, sourthern Gemany, and northern Italy, notably in established textile hubs such as Biella, makes it possible to access specialized competences while keeping the value chain within historically connected Alpine regions. Excluding the non-Alpine Falkland wool required for blending, the overall chain remains short in geographical terms.

For Salewa, cross-border configurations reflect the distributed nature of the competences required for insulated outdoor garments, spanning sourcing, material processing, technological development, and assembly. This organization allows the brand to combine regional wool sourcing with advanced industrial capabilities without reverting to distant global supply chains.

In both cases, cross-border pragmatism supports circularity by:

- avoiding duplication of specialized infrastructure at national level;
- reducing transport distances;
- reconnecting regions shaped by shared ecologies and pastoral histories

The key lesson is that **regional value chains should be understood geographically and materially**. Circular and heritage-sensitive innovation benefits from flexible value-chain design that follows resources, skills, and material flows rather than political boundaries.

Valposchiavo: Flax/linen heritage exhibition during the 2024 edition of the Festa de lo Pan Ner.

4 Flax and Linen

4.1 Flax and Linen in the Alpine context: a brief recap

Flax and linen have historically played a significant role in Alpine regions, both as textile fibres and as cultural resources embedded in domestic economies, seasonal rhythms, and social life. As documented in the historical and ethnographic materials developed within AlpTextyles, flax cultivation, processing, and use were once widespread across Alpine valleys, supporting the production of everyday textiles such as clothing, household linens, and work-related items, as well as ritual and festive objects. These practices mobilized a broad repertoire of skills, from sowing and harvesting to retting, breaking, spinning, weaving, and finishing, often organized within households or small community-based systems.

Today, this historical importance contrasts sharply with the **very limited presence of flax cultivation and processing in Alpine areas**. While cultural memories, practices, and representations of flax remain present, the material basis that once supported linen production has largely disappeared. This situation results from a combination of **structural constraints** that have progressively reshaped European agricultural and textile value chains.

At global level, Europe occupies a **dominant position in flax production**. According to data reported by the Alliance for European Flax-Linen and Hemp, European countries account for **around 80% of world flax fibre production**, with flax production highlighy concentrated in a limited number of regions, primarily in northern France, Belgium and the Netherlands.

These regions benefit from specific climatic conditions, highly specialized agronomic know-how, and long-standing industrial infrastructures that support fibre quality and scalability. Within this European landscape, **France is the clear leader**, concentrating the largest share of cultivation and playing a central role in setting quality standards, agronomic practices, and industrial organization for the sector.

Even within Europe, flax value chains are typically organized at a **transnational scale**, and mostly offshored to Asian countries. This configuration has enabled the maintenance of a European flax sector, but it also reinforces the separation between cultivation areas and regions where flax heritage remains culturally salient but fiber production inactive.

The Swiss case illustrates these dynamics particularly clearly. **SwissFlax**, founded in 2014, aims to rebuild a national flax value chain and process Swiss flax on an industrial scale. The initiative brings together actors from agriculture, research, and business, with an explicit commitment to sustainability and slow fashion.

While flax cultivation has been successfully reintroduced in Switzerland, notably in the Emmental region, the value chain itself remains organized at **European level**. Swiss flax fibres are processed in the Netherlands, spun in Poland, and then returned to Switzerland, where weaving and knitting mills transform the yarn into fabrics, interior furnishings, and garments.

This configuration remains environmentally preferable to full offshoring to Asia and demonstrates the feasibility of maintaining flax value chains within Europe. At the same time, it highlights the **absence of territorially integrated flax value chains in Alpine regions**, including those mountaineous areas where flax-related heritage practices persist. In these contexts, local Alpine flax fields, where they still exist or are being experimentally reintroduced, are not yet able to support product development due to constraints related to volumes, quality consistency, and access to processing facilities.

For AlpTextyles, these conditions had direct implications. Unlike wool, which is still produced in significant quantities across Alpine regions and could therefore support concrete new product development pilots, flax and linen are characterized by **strong heritage relevance but limited raw material availability and structurally fragmented value chains**. Within the project timeframe, this made it unrealistic to engage in flax- or linen-based new product development comparable to the wool pilots. Instead, AlpTextyles interventions focused on **documentation, safeguarding, cross-border exchanges, and the exploration of feasibility conditions**, rather than on scaling or market-ready product innovation.

4.2 Flax and linen festive events: living heritage in practice

Across Alpine regions, **festive events and collective gatherings** remain among the most visible expressions of living flax and linen heritage. Although these practices are no longer systematically connected to sustained production, they play a crucial role in safeguarding embodied knowledge, social meanings, and intergenerational transmission related to flax cultivation and processing.

In **Slovenia**, flax-related heritage continues to be actively performed through public events and festivals that bring together demonstrations of traditional techniques, storytelling, and community participation. Events such as flax scutching and spinning festivals, organized in rural and peri-urban contexts, showcase key stages of the flax processing sequence and re-embed them within contemporary cultural life. These festivals often mobilize local associations, craftspeople, and cultural institutions, and function as important moments of transmission and public recognition of flax-related skills.

In **Switzerland**, a variety of **brächete** and flax-related events persist or have been revived in Alpine and pre-Alpine regions. These events are typically organized around the collective breaking and processing of flax, following seasonal rhythms and emphasizing communal participation.

Alongside these community-based events, initiatives such as **Ziehlein** contribute to the contemporary visibility of flax and linen heritage in Switzerland. Ziehlein operates at the intersection of cultural mediation, education, and public engagement, using flax and linen as entry points to discuss historical practices, material knowledge, and sustainable textile futures. With multiple locations in Swtizerland, such initiatives play an important role in **connecting heritage practices to wider publics** and in sustaining interest in flax beyond purely folkloric contexts.

Taken together, these festive events and initiatives illustrate how flax and linen continue to exist as **living heritage**, enacted through gestures, tools, narratives, and social relations. They maintain the cultural memory of flax knowledge and reaffirm its place within Alpine identities. At the same time, they also reveal a growing separation between **symbolic and performative practices** on the one hand, and **cultivation, processing, and contemporary textile production** on the other.

From an intangible cultural heritage perspective, these events are not residual survivals but active sites of cultural reproduction. However, their capacity to support heritage-sensitive innovation depends on their ability to interact with evolving material, economic, and institutional conditions. This tension between vitality and constraint provides an essential backdrop for understanding the role of cross-border exchanges and feasibility exploration discussed in the following section.

4.3 AlpTextyles flax and linen pilot: cross-border exchanges to recombine fragmented knowledge

The AlpTextyles flax and linen pilot was implemented between 2022 and 2024 as a series of **cross-border exchanges, field visits, and collective learning activities**, designed to reconnect fragmented forms of flax-related knowledge across Alpine regions. Given the limited availability of flax as a raw material and the absence of territorially integrated value chains, the pilot did not pursue immediate new product development. Instead, it focused on **raising awareness** on the shared flax and linen heritage of Alpine regions, the **recombination of dispersed skills and practices**, and the **feasibility exploration of heritage-sensitive product development**.

The pilot brought together **different communities and organizations** from Switzerland, Slovenia, and northern Italy, whose situations differed markedly. In **Slovenia**, flax-related knowledge remains particularly visible through **festive events, demonstrations, and community practices**, even though flax cultivation has mostly ceased. Field visits, trainings, and exchanges took place in areas such as **Davča** and the **Škofja Loka** region, where flax heritage continues to be performed and transmitted through collective events and local associations. Slovenian partners contributed detailed knowledge of traditional gestures, tools, and processing sequences, offering an essential perspective on flax as a **living cultural system**, sustained through festive practice rather than production.

AlpTetyles awareness-raising activities on flax/linen heritage in Skofja Loka, organized by AlpTextyles partner [Rokodelski center Skofja Loka]

AlpTetyles flax braking and carding workshop organized by AlpTextyles partner [Rokodelski center Skofja Loka](#) (2024)

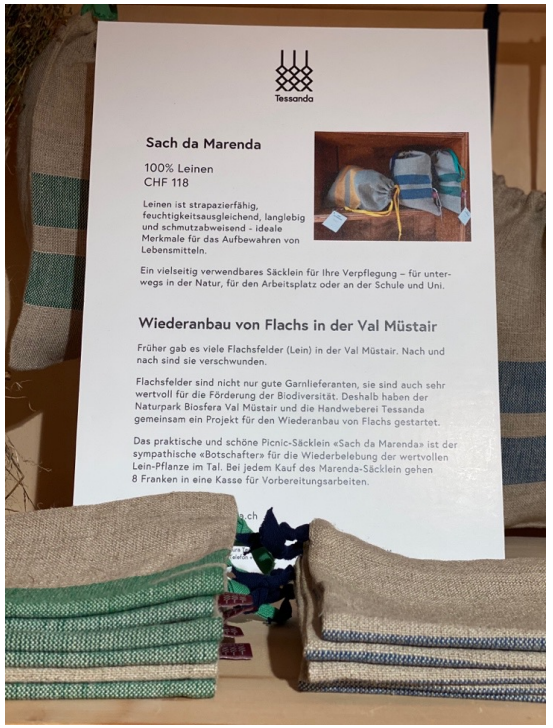


AlpTetyles spinning workshop organized by AlpTextyles partner [Rokodelski center Skofja Loka](#) (2025)

AlpTetyles weaving workshop organized by AlpTextyles partner [Rokodelski center Skofja Loka](#) (2025)

In Switzerland, a first key site of the pilot was **Val Müstair**, where AlpTextyles engaged with an ongoing local initiative led by **Biosfera Val Müstair**, in cooperation with local farmers and **Tessanda**, one of the three remaining Swiss artisanal weaving workshops. Launched in 2021, this initiative aimed at the **re-cultivation of flax** as part of a broader strategy combining biodiversity protection, landscape management, and support for pollinators within the perimeter of the natural park. Flax was reintroduced not primarily as a fibre crop, but as an agroecological and cultural resource embedded in a protected Alpine landscape.

AlpTextyles activities built upon this initiative through study visits and exchanges, using Val Müstair as a **reference case** to understand how environmental objectives, heritage values, and community engagement can precede and frame any future economic valorization. The pilot also benefitted from the revival of the **Flachs-Brächete Val Müstair** in October 2023, a communal event dedicated to the traditional processing of flax, combining demonstrations, participation, and conviviality. During the 2024 edition, exchanges with communities from Slovenia and Northern Italy made it possible cross-fertilization of knowledge and skills, as well as serving as inspiration for future initiatives. Within this context, as a cooperative engaged in professional weaving and textile production, Tessanda served as a **site of contemporary textile competence**, allowing participants to observe how linen can be processed today within a professional environment.



Val Mustair: flax field (left). Tessanda loom (center) and linen products (right).

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Val Mustair: Pictures from the 2024 Brachete (flax/linen festival).

Another Swiss pilot site was **Valposchiavo**, where activities focused on **heritage awareness, cultural mediation, and community engagement**. In this context, the **Fondazione Musei Valposchiavo**, supported by AlpTextyles partner **Polo Poschiavo**, played a central role, notably through the annual event **Festa de lo Pan nero**. While primarily dedicated to food heritage, this event provided a platform to raise awareness of broader agro-pastoral and textile traditions of the valley, including flax and linen. By reconnecting historical narratives with contemporary concerns, these initiatives contributed to renewed local interest in flax cultivation and encouraged some farmers to experiment with seeding flax, later engaging with the emerging Alpine flax network. In addition, these initiatives sparked interest in reviving production of *spelorscia*, a linen textile traditionally used for hay collection (currently replaced by plastic materials), drawing on historical uses of linen fabrics in Alpine farming contexts, where robust, breathable, and durable textiles were required for handling agricultural materials.

Across these different contexts, the pilot deliberately worked with **exchanging of complementary heritage knowledge and skills**: between regions where flax survives primarily as heritage, regions where it is reintroduced for environmental and landscape reasons, and regions where textile competences persist without local raw material availability. Cross-border exchanges enabled participants to compare situations, identify complementarities, and clarify what additional competences, infrastructures, and institutional support would be required to move beyond safeguarding toward future forms of heritage-sensitive innovation.

Valposchiavo: Pictures from the 2024 Festa de lo Pan Ner, focused on flax/linen heritage.

Notably, despite the presence of professional weaving workshop both in Val Mustair and in Valposchiavo, during these initiatives it was not possible linen yarns made with locally cultivated yarns, due to limited quantities and ongoing experimentation with right flax varieties for processing. Seen as a reachable goal, however, this set a vision for future initiatives.

One concrete outcome of this process was the consolidation of **Glin Alpin**, a cross-border initiative emerging from the pilot activities. Glin Alpin aims to provide a platform for continued exchange, coordination, and visibility around Alpine flax and linen.

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HOW-TO
Reconnect fragmented knowledge across territories

Problem

No single Alpine territory today concentrates the full set of skills, resources, and infrastructures required for flax cultivation, processing, and contemporary textile development. Knowledge related to flax survives in **fragmented forms**, dispersed across regions and embedded in different practices, institutions, and rationales. The same might hold true for other Alpine heritage fibers, such as wool and hemp.

What the AlpTextyles flax and linen pilot shows

The pilot demonstrates that **cross-border exchanges and study visits** make it possible to reconnect these dispersed elements. Festive practices and demonstrations (notably in Slovenia), environmental and biodiversity-oriented cultivation initiatives (such as in Val Müstair), and existing textile competences (in Val Müstair and Valposchiavo) can be brought into dialogue, even when they no longer coexist within a single territory. This can create a cross-border and transnational community of practice, creating strong bonds amongs individuals, groups, and communities, and facilitating knowledge exchange and reciprocal inspiration.

Concrete steps

1. Identify where knowledge still lives

Map existing forms of relevant knowledge and its custodians across borders. In the pilot, these included festive events, professional processing practices, museum collections, oral histories, and small-scale cultivation experiments. These are **living heritage knowledge resources.**

2. Bring together complementary actors through matchmaking

Organize matchmaking between actors with **different but complementary roles**, such as:

- communities maintaining flax-related festive practices,
- farmers experimenting with flax for biodiversity or landscape management,
- textile cooperatives or workshops with contemporary processing skills,
- cultural institutions and intermediaries able to document and mediate knowledge.

Do not expect all competences to be present locally. Heritage skills are fragile, but what is forgotten somewhee can be remembered somewhere else.

3. Organize reciprocal field visits and study tours

Reciprocal visits allow participants to observe practices in situ, compare tools and techniques, and discuss constraints openly. Use these moments to clarify what knowledge can be transferred, adapted, or combined, and what cannot

4. Document and share knowledge collectively
During exchanges, document practices, tools, gestures, and narratives using accessible formats (notes, photos, short videos, sketches). Share documentation among participants to support **collective learning** and avoid knowledge remaining confined to individual actors.

5. Use modest experimentation to test feasibility
Where conditions allow, encourage **small-scale, use-specific experimentation** (e.g. limited cultivation, symbolic or functional textile prototypes). Treat these experiments as learning tools, not as precursors to scaling.

6. Build a community of practice rather than a value chain
Prioritize the creation of a **community of practice** that meets regularly, exchanges knowledge, and reflects collectively on future possibilities. Over time, support the emergence of **light governance mechanisms** such as informal networks or associations (e.g. initiatives like Glin Alpin) to coordinate exchanges, articulate shared visions, and maintain momentum.

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Study visit and practice exchange of Slovenian flax/linen heritage communities in Val Mustair, organized by AlpTextyles partner [Rokodelski center Skofja Loka](), 2024.

5 Natural Dye Plants

5.1 Context: from traditional dye plants to contemporary challenges

Natural dye plants have long played a central role in Alpine textile systems, where colouring practices were historically embedded in domestic economies, craft production, and early forms of organized manufacture. Knowledge of dye plants, extraction techniques, and fibre–colour interactions circulated within households and communities, often closely linked to local ecological conditions and seasonal rhythms. These practices formed an integral part of Alpine textile heritage, contributing not only to material aesthetics but also to the cultural meanings associated with colours, garments, and uses.

Over the course of the twentieth century, natural dyes were progressively displaced by synthetic alternatives. This shift was driven by the growing demands of industrial textile production for **speed, standardisation, and cost efficiency**, as well as by the ease with which synthetic dyes could deliver uniform and predictable results at scale. As a consequence, knowledge related to dye plants and natural colouring processes became increasingly marginalised, surviving primarily within **craft practices, artisanal experimentation, and niche cultural contexts**, rather than within mainstream industrial production.

Today, natural dyes remain relatively **present in craft and small-scale textile contexts**, where variability, local sourcing, and manual control can be accommodated and even valued. In contrast, their adoption at **industrial scale remains limited**, due to concerns related to reproducibility, colour fastness, process integration, and compatibility with existing production lines. For many industrial textile SMEs, natural dyes are technically risky.

At the same time, interest in natural dyes has re-emerged across both craft and industrial milieus, driven by a combination of environmental, health, and differentiation concerns. Natural dyes are increasingly associated with **non-toxic processes, reduced reliance on petrochemical inputs, and bio-based value chains**, as well as with narratives of authenticity and territorial anchoring. However, this renewed interest often confronts a persistent gap between **heritage knowledge and contemporary technical feasibility**.

In the Alpine context, this gap is particularly striking. Dye plants are widely available across Alpine landscapes, and many of them have long histories of use in textile colouring. Yet the knowledge required to translate these resources into **reliable, repeatable, and transferable dyeing practices** has largely been lost or fragmented. As a result, natural dyes tend to circulate either as isolated craft experiments or as symbolic references, rather than as components of structured textile value chains.

The AlpTextyles pilot on natural dye plants addressed this situation by positioning natural dyes as a **field of heritage-sensitive and circularity-informed innovation**. By combining heritage knowledge with scientific testing and technical experimentation with lead users, the pilot sought to clarify under what conditions natural dyes can be mobilized today by both craft practitioners and textile SMEs. Rather than opposing tradition and innovation, this approach reframes natural dyes as a **strategic resource**, locally available and in some cases resulting from the use of by-products, as capable of contributing to differentiated, circular, and territorially anchored textile value chains and end products.

5.2 The AlpTextyles pilot on natural dye plants: from ethnobotanical heritage to innovation-oriented experimentation

The AlpTextyles pilot on natural dye plants was designed to address a specific and recurring bottleneck identified across Alpine textile ecosystems: while dye plants are abundant and historically well documented, **their contemporary use is constrained by the lack of reliable, transferable, and scalable practices**. The pilot therefore focused on translating ethnobotanical heritage into **innovation-oriented experimentation** capable of serving both craft practices and industrial textile SMEs.

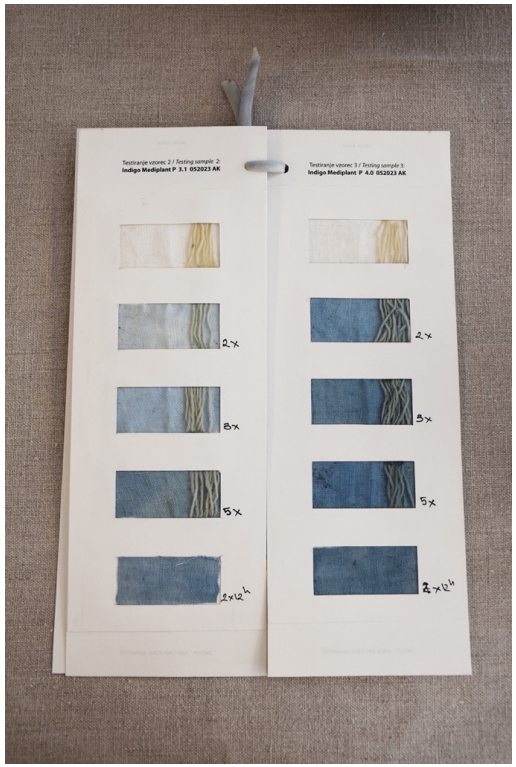
The pilot was coordinated by **Mediplant**, a Swiss research and innovation centre specialized in **medicinal, aromatic, and functional plants**, with long-standing expertise in applied research at the interface between agriculture, science, and market-oriented innovation. Mediplant acted as a **scientific and technological intermediary** between heritage knowledge and contemporary textile applications. Building on ethnobotanical research and documented traditional uses of dye plants, Mediplant combined experimental cultivation and sourcing, laboratory-based extraction and dyeing tests, and pre-industrial trials. This approach ensured that traditional knowledge was not merely recorded or safeguarded, but **translated into operational practices** that could be assessed in terms of reproducibility, feasibility, and transferability. This intermediary role was crucial in bridging the gap between **tacit, place-based practices** and the technical and organizational requirements of contemporary textile production.

A defining characteristic of this pilot was its **explicitly dual orientation**. On the one hand, the work responded to the needs of **craft practitioners and artisanal communities**, for whom natural dyes remain a meaningful and viable practice that can be supported by clearer protocols and labour-saving practices. On the other hand, the pilot addressed the concerns of **industrial textile SMEs**, for whom natural dyes often appear attractive but technically uncertain. Rather than privileging one scale over the other, the pilot explored how the same plant resources and dyeing processes could be adapted to **different production logics**.

To ensure diffusion beyond the immediate pilot sites, results were actively shared with textile SMEs through **Techtera** and **Confindustria Moda**, which played a key role in connecting the pilot's outputs to broader professional networks in France, Italy, and elsewhere. This dissemination made it possible to confront experimental results with real industrial constraints and to position natural dyes not as niche curiosities, but as **potential components of differentiated production strategies**.

At the same time, the pilot maintained strong links with **heritage and craft-oriented contexts**, notably in **Valposchiavo, Val Camonica, and Slovenia**, where knowledge of dye plants survives in different forms. Workshops, demonstrations, and exchanges with local practitioners allowed the pilot to remain grounded in living practices, while also testing how these practices could be adapted or complemented by scientific and technical inputs.

Across these different contexts, the pilot did not aim to reinstate historical dyeing systems as they once existed. Instead, it sought to identify **points of articulation** between heritage knowledge, contemporary science, and market realities. By doing so, it demonstrated that natural dye plants can serve as **shared resources** across craft and industrial settings, provided that appropriate mediation, testing, and documentation are in place.



Testing of Mediplant-developed indigo dyes (Satis Tinctoria) in Slovenia (craft practitioners).
Pictures courtesy of AlpTextyles partner [Rokodelski center Skofja Loka](), 2024.

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Testing of Mediplant-developed larch bark dyes (Satis Tinctoria) in Slovenia (craft practitioners).
Pictures courtesy of AlpTextyles partner [Rokodelski center Skofja Loka](), 2024.

In this sense, the natural dye pilot illustrates a broader principle central to this AlpTextyles output: heritage-sensitive innovation does not require choosing between tradition and industry. It requires **designing interfaces** that allow knowledge, materials, and practices to circulate meaningfully and respectfully across scales, territories, and professional cultures.

5.3 Emblematic Alpine natural dye resources: plants, trees, and by-products

The AlpTextyles pilot on natural dyes worked with a **diverse set of bio-based resources**, reflecting both the ecological richness of Alpine territories and the plurality of ways in which natural dyes can be sourced today. The pilot deliberately explored **multiple sourcing logics**, including foraging, farming, and the use of forestry and agro-industrial by-products. This diversity was central to understanding how natural dyes might realistically be reintegrated into contemporary craft and SME textile practices.

Among the resources explored, several emblematic cases illustrate different configurations of heritage knowledge, material properties, and innovation potential.

Indigo (Isatis tinctoria) was investigated as a historically documented dye plant with a long-standing presence in European and Alpine contexts. While largely displaced by imported indigo and later by synthetic dyes, indigo remains a powerful reference point for both craft and industrial actors. Within the pilot, indigo was sourced through **both experimental cultivation and controlled foraging**, allowing comparison between different origins and extraction conditions. This work highlighted indigo's strong symbolic and aesthetic appeal, but also its technical demands, particularly in relation to fermentation, reduction processes, and colour consistency. As such, indigo exemplifies a dye resource with high value potential, but also high requirements in terms of skills, equipment, and process control.

Lady's mantle (Alchemilla spp.), a widely available Alpine plant with deep ethnobotanical roots, offered a contrasting profile. Traditionally used for medicinal and domestic purposes, it also holds documented dyeing properties. In the pilot, lady's mantle was primarily explored through **foraging-based sourcing**, reflecting its spontaneous presence in Alpine landscapes. This made it accessible to craft practitioners and small-scale experimentation, while also revealing limits in terms of yield, colour variability, and seasonal dependency. The pilot's testing showed that while such plants can produce valuable chromatic results, their integration into more structured production requires careful documentation and realistic expectations regarding reproducibility.

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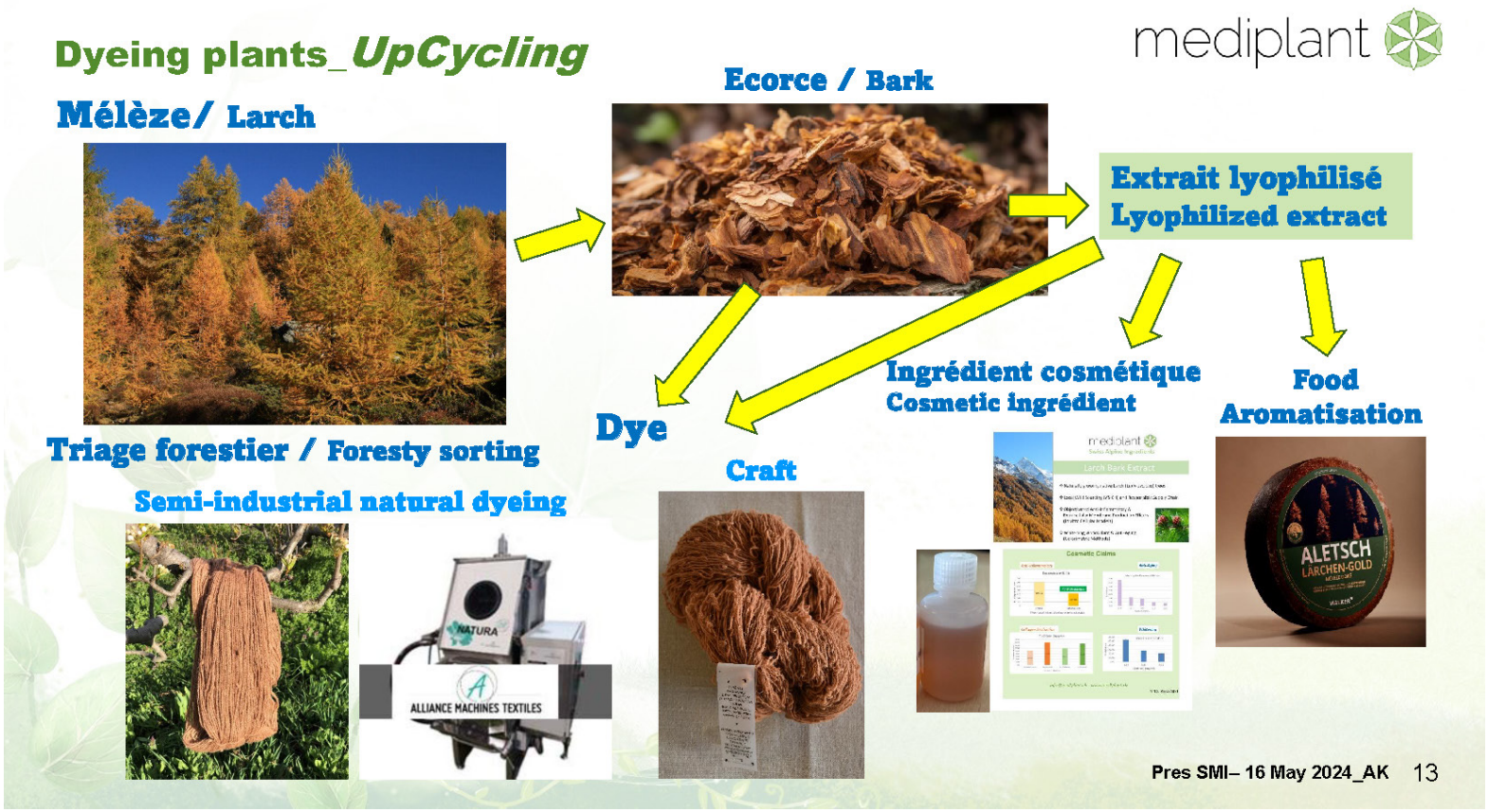
Left: Isatis Tinctoria (woad), source: Stefan.lefnaeir, CC BY-SA 4.0
Right: Alchemilla (Lady's Mantle), source Rasbak, CC BY-Sa 3.0

The use of **larch bark (Larix decidua)**, a **forestry by-product**, did not rely on plant cultivation or foraging, but on existing forest management and timber processing activities. Its use as a dye resource exemplifies a strong circular logic, transforming residual material into added-value inputs for textile applications. Within the pilot, larch bark proved particularly relevant for semi-industrial and industrial contexts, where access to stable quantities and integration into existing value chains are critical. Its inclusion underscores how natural dyes need not be limited to herbaceous plants, but can draw on broader bio-based systems embedded in Alpine economies.

Beyond these core cases, the pilot also explored **agro-food by-products**, notably residues from wine production such as grape skins and pomace. While not central to the pilot's experimentation, these resources also served as illustrative examples of how natural dye strategies can intersect with other Alpine sectors. Their inclusion reinforced the idea that dye innovation can emerge from **cross-sectoral linkages**, rather than from textile systems alone.

Across these different resources, the pilot highlighted a key distinction between **foraging-based and farming-based sourcing**. Foraging relies on intimate ecological knowledge, seasonal awareness, and local stewardship, and tends to be associated with craft practices and small-scale experimentation. Farming, by contrast, requires agronomic expertise, investment, and coordination, but offers greater control over quantities and qualities.



Lach bark dyes extraction process and application. Courtesy of Mediplant.

Importantly, the pilot showed that both approaches can coexist and complement each other, and that **farmed dye plants may represent an opportunity for farmers** seeking added-value crops, provided that downstream processing and market pathways are clarified.

The comparison between foraged and farmed resources also revealed differences in **variability and standardisation**. Foraged plants tend to exhibit greater variability in colour outcomes, influenced by microclimates, soil conditions, and harvesting times. Farmed plants, while requiring more upfront organisation, offer greater potential for consistency. Rather than framing this as a problem to be eliminated, the pilot treated variability as a **design and positioning parameter**, to be managed differently depending on whether the target context is craft, niche production, or larger-scale manufacturing.

Overall, this diversity of natural dye resources demonstrates that heritage-sensitive innovation does not rely on a single model of sourcing or production. Instead, it depends on the ability to **mobilise appropriate competences and networks** for each resource, aligning ecological conditions, knowledge systems, and production logics. By making these differences explicit, the AlpTextyles pilot provides a foundation for SMEs and craft actors to identify which natural dye pathways are compatible with their capacities, ambitions, and territorial contexts.

5.4 From traditional knowledge to usable protocols: Making natural dyes workable for craft and SME contexts

One of the central challenges addressed by the AlpTextyles natural dye pilot was not the absence of knowledge, but its **form and circulation**. Knowledge related to dye plants has long existed in Alpine regions, embedded in domestic practices, craft traditions, and ethnobotanical repertoires. However, this knowledge is often **tacit, localised, and experiential**, transmitted through practice rather than through formalised instructions. While this mode of transmission is well suited to small-scale craft contexts, it poses significant limitations when natural dyes are considered for broader use by textile SMEs.

The pilot therefore focused on a crucial operation: the **translation of traditional ethnobotanical knowledge into usable, shareable, and testable protocols**. This did not involve replacing heritage practices with scientific ones, but rather creating interfaces between different knowledge systems. Ethnobotanical insights and historical uses provided orientation, while laboratory testing and technical experimentation allowed these practices to be assessed in terms of reproducibility, variability, and technical feasibility.

A key contribution of the pilot was to make explicit parameters that are often implicit in traditional dyeing practices. These include quantities of raw material, extraction ratios, temperatures, processing times, and interactions with different fibres. By formalising these elements, the pilot made it possible to **compare outcomes across batches, seasons, and sourcing modes** (foraged versus farmed plants), and to identify where variability could be managed, tolerated, or even valorised.

This work was particularly important for bridging craft and industrial perspectives. For craft practitioners, the protocols function as **supportive tools**, helping to stabilise practices without eliminating flexibility or sensitivity to materials. For SMEs and industrial actors, they act as **risk-reduction devices**, clarifying what can realistically be expected from natural dyes in terms of consistency, yields, and integration into existing production processes.

Importantly, the pilot did not aim to produce universal recipes applicable in all contexts. Instead, it demonstrated the value of **situated protocols**, which remain open to adaptation while providing a shared reference framework. This approach acknowledges that natural dyes are inherently sensitive to ecological conditions, plant variability, and processing choices, and that their successful use depends on informed decision-making rather than full standardisation.

TESTIRANJE/BARVANJE Z MACESNOVIM LUBJEM, november 2023—*TESTING WITH LARCH BARK, November 2023*

št. vzorca/*sample No.*	material	priprava/*preparations*	proces barvanja/*dyeing proces*	rezultati/*results*	obstojnost/*durability*
vzorec 1/*sample 1*	**barvilo/*dye*:** liofilizirano macesnovo lubje/*Larch bark/Lyophilized dry extract* ***tkanina/fabric:*** *100% lan - 1 kom. prtič 30x30 cm* *100% linen - 1 pcs. napkin 30x30 cm* ***preja/yarn:*** *100% ovčja volna (neposukana)* *100% sheep wool (untwisted)*	**barvilna kopel/*dye* bath:** Raztapljanje pigmenta v vroči vodi in priprava barvilne kopeli. *Dissolving pigment powder in hot water and preparation of the dye bath.* ***tkanina/fabric:*** Laneno tkanino sem predhodno strojno oprala (95°C) in čez noč namočila v vodi; pred barvanjem sem jo dobro ožela. *I have previously machine-washed linen fabric (95°C) and soaked in water over night; before dyeing I rinsed it well.* ***preja/yarn:*** Volno sem predhodno ročno oprala in čez noč namakala v vodi; pred barvanjem sem jo dobro ožela. *I have previously hand-washed wool and soaked it in water over night; before dyeing process I rinsed it well.*	**Proces barvanja/*dyeing* process:** V mlačno barvilno kopel sem potopila pripravljeno volno in laneno tkanino in počasi segrevala do vrenja; pri najmanjši temperaturi sem materiale barvala 2 uri in jih potem pustila v kopeli, da se je le-ta ohladila na sobno temperaturo. Potem sem jih dobro ožela in oprala v mlačni vodi. *I dipped the prepared wool and linen fabric into a lukewarm dye bath and slowly heated it to boiling; I dyed the materials at the lowest temperature for 2 hours and then left them in the bath to cool down to room temperature. Then I rinsed them well and washed them in lukewarm water.*	**Rezultati/*Results*:** Rezultati barvanja so dobri, tako na volni kot na laneni tkanini. *Dyeing results are good, both on wool and linen fabric.*	**Rezultati/*Results*:** Rezultati po pranju so zadovoljivi tako pri volni kot laneni tkanini ob upoštevanju navodil (ročno pranje pri 40°C, tekoči detergent za občutljive tkanine). *The results after washing are good for both wool and linen fabrics if the instructions are followed (hand wash at 40°C, liquid detergent for delicate fabrics).*
vzorec 2/*sample 2*	**barvilo/*dye*:** liofilizirano macesnovo lubje/*Larch bark/Lyophilized dry extract* ***tkanina/fabric:*** *100% lan - 3 kom. prtič 30x30 cm* *100% linen - 3 pcs. napkin 30x30 cm* ***preja/yarn:*** *100% ovčja volna (neposukana in sukana)* *100% sheep wool (untwisted and twisted)*	**barvilna kopel/*dye* bath:** Raztapljanje pigmenta v vroči vodi in priprava barvilne kopeli. *Dissolving pigment powder in hot water and preparation of the dye bath.* ***tkanina/fabric:*** Laneno tkanino sem predhodno strojno oprala (95°C) in čez noč namočila v vodi; pred barvanjem sem jo dobro ožela. *I have previously machine-washed linen fabric (95°C) and soaked in water over night; before dyeing I rinsed it well.* ***preja/yarn:*** Volno sem predhodno ročno oprala in čez noč namakala v vodi; pred barvanjem sem jo dobro ožela. *I have previously hand-washed wool and soaked it in water over night; before dyeing process I rinsed it well.*	**Proces barvanja/*dyeing* process:** V mlačno barvilno kopel sem potopila pripravljeno volno in laneno tkanino in počasi segrevala do vrenja; pri najmanjši temperaturi sem materiale barvala 2 uri in jih potem pustila v kopeli 2 dni, da se je le-ta ohladila na sobno temperaturo. Potem sem jih dobro ožela in oprala v mlačni vodi. *I dipped the prepared wool and linen fabric into a lukewarm dye bath and slowly heated it to boiling; I dyed the materials at the lowest temperature for 2 hours and then left them for 2 days in the bath to cool down to room temperature. Then I rinsed them well and washed them in lukewarm water.*	**Rezultati/*Results*:** Rezultati barvanja so dobri, tako na volni kot na laneni tkanini. Med 1. in 2. vzorcem v barvi ni bistvene razlike. *Dyeing results are good, both on wool and linen fabric. There is no significant difference in color between the 1st and 2nd samples.*	**Rezultati/*Results*:** Rezultati po pranju so zadovoljivi tako pri volni kot laneni tkanini ob upoštevanju navodil (ročno pranje pri 40°C, tekoči detergent za občutljive tkanine). *The results after washing are good for both wool and linen fabrics if the instructions are followed (hand wash at 40°C, liquid detergent for delicate fabrics).*

Larch bark dye testing report.
Courtesy of AlpTextyles partner [Rokodelski center Skofja Loka](), 2023.

TESTIRANJE/BARVANJE S SILINO, julij 2023—*TESTING WITH WOAD/INDIGO, July 2023*

št. vzorca/*sample No.*	material	priprava/*preparations*	proces barvanja/*dyeing proces*	rezultati/*results*
vzorec 1/*sample 1:*	**barvilo/*dye*:** **Indigo Mediplant P 3.0 052023 AK** - naravni izvleček siline v prahu (Isatis Tinctoria) - apno/*lime* - fruktoza/*fructose* Razmerje/*ratio:* ***1*** (barvilo/*dye powder*) **: *2*** (baza/*base*) **: *3*** (sladkor/*sugar*) ***tkanina/fabric:*** 100% lan/*linen* ***preja/yarn:*** 100% ovčja volna (neposukana)/ *100% sheep wool (untwisted)*	**barvilna kopel/*dye* bath:** Priprava barvilne kopeli v razmerju: **1** (barvilo) **: 2** (baza) **: 3** (sladkor). Potopi v barvilni kopeli: cca. 30 min. - 2x, 3x, 5x. Oksidacija med posameznimi potopi: cca. 30 min.. *Preparation of dye bath in the ratio: **1** (dye) **: 2** (base) **: 3** (sugar). Dips in a dye bath approx. 30 min. - 2x, 3x, 5x. Oxidation between individual dives: 30 min..* ***tkanina/fabric:*** Laneno tkanino sem predhodno strojno oprala brez detergenta pri 95°C. Pred barvanjem sem jo vsaj 12 ur namakala v vodi. *I have previously machine-washed the linen fabric without detergent at 95°C. Before dyeing, I soaked it in water for at least 12 hours.* ***preja/yarn:*** Surovo neposukano volneno prejo sem predhodno tretirala v galunu. Pred barvanjem sem jo vsaj 12 ur namakala v vodi. Surovo sukano volneno prejo sem uporabila neoprano in suho, brez namakanja. *I previously treated the raw untwisted wool yarn in alum. Before dyeing, I soaked it in water for at least 12 hours.* *I used raw spun wool yarn, unwashed and dry, without soaking.*	**Proces barvanja/*dyeing process*:** Potopi v barvilni kopeli cca. 30 min. - 1x, 3x, 5x, 7x - barvilna kopel je bazična (pH 12), T= cca. 40°C. Oksidacija med posameznimi potopi: 30 min.. Po končanem barvanju in oksidaciji sem vse vzorce namočila v vodo s kisom in dobro splahnila in pošušila na zraku. *Dips in a dye bath approx. 30 min. - 1x, 3x, 5x, 7x -- the dye bath is basic (pH 12), T= approx. 40°C. Oxidation between individual dives: 30 min..* *After finishing the dyeing and oxidation, I soaked all the samples in water with vinegar and rinsed them well and dried them in the air.*	**Rezultati/*Results*:** Volna, predhodno tretirana v galunu, ne sprejema dobro barvila. *Wool previously treated in alum does not accept dye well.*

Woad/indigo dye testing report.
Courtesy of AlpTextyles partner [Rokodelski center Skofja Loka](), 2023.

HOW-TO

Use tested extraction and dyeing protocols as a basis for replication and adaptation

Rather than proposing generic guidance on natural dyeing, the AlpTextyles pilot produced a set of **tested extraction and dyeing protocols**, documenting how specific Alpine bio-based resources can be transformed into usable dyes under controlled conditions.

The following examples show how such protocols are structured and how they can be mobilized by craft practitioners and textile SMEs. *See the AlpTextyles website for other resources and tests, also covering other natural resources.*

ALPTEXTYLES · CASE STUDIES ·

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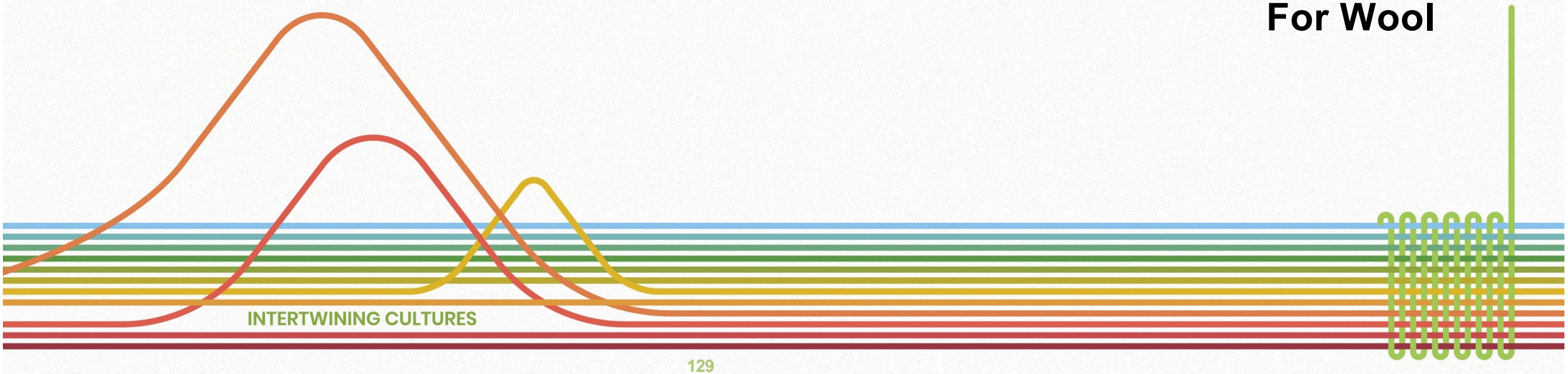
Natural Indigo
Dyeing protocol
For Wool



Step 1

Preparation of the wool

- Washing in surfactant solution
- Flush with running water
- Soak in water

water quality: spring water, hardness 300 ppm

Step 2

Preparation of the indigo bath

Dissolve indigo powder + lime + fructose (quantities depending on the purity of indigo)

Step 2

Separate leaves from stems

Step 3

Add demineralized water to a ratio 1/5

(1 part plant for 5 parts water)

Step 4

Acidify with citric acid

pH below 4.0

Step 5

Overnight maceration

at room temperature

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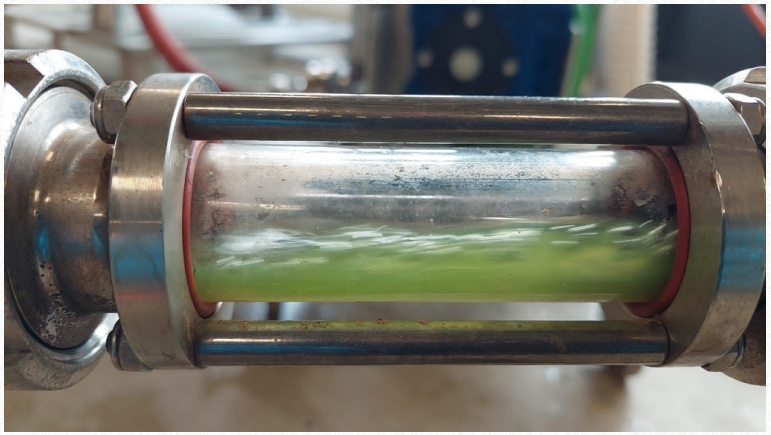
Step 6

Pressing (package press)

Step 7

Filtration (1µm)



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Step 8

Basify with soda (pH >10)

Aerate

Overnight settling

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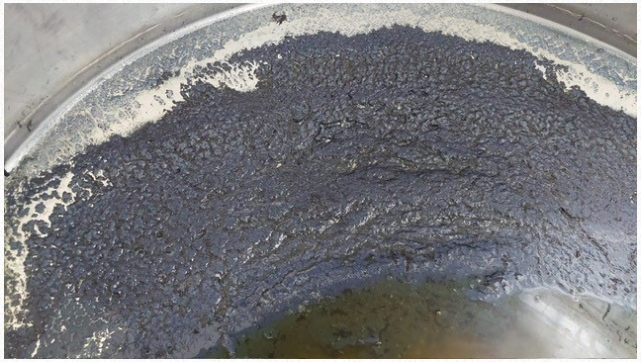
Step 9

Recovery of precipitated indigo

Sedimentation



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Step 10

Büchner filtration

Washing with alcohol

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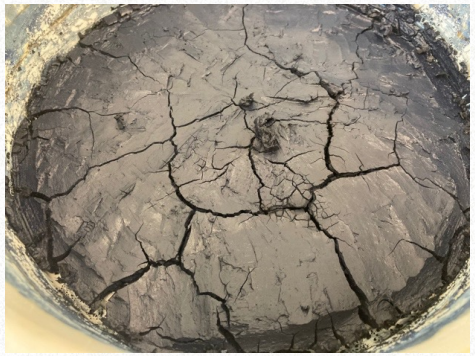
Step 11

Recovery of indigo paste

Drying

Grinding

Packaging



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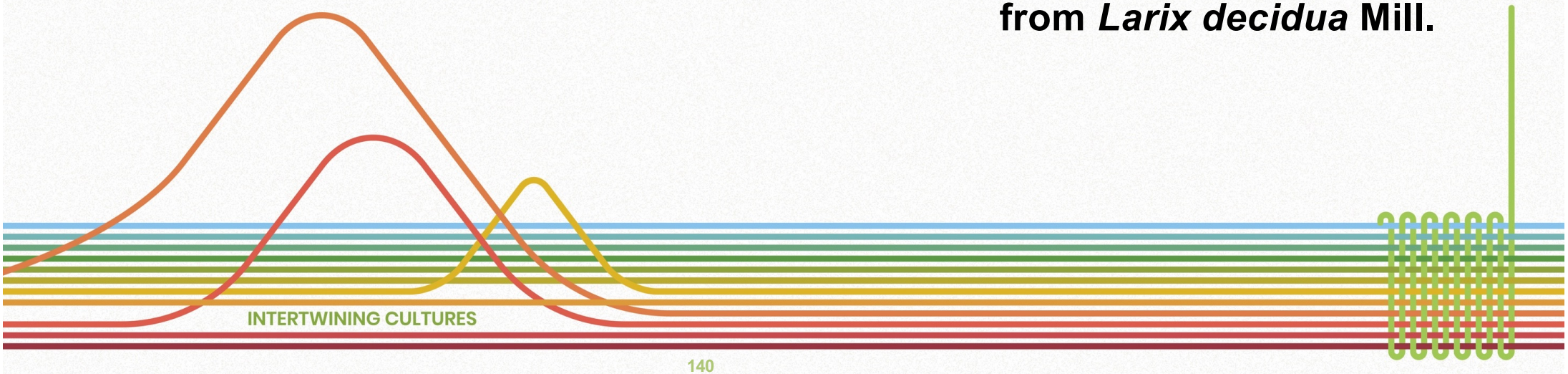
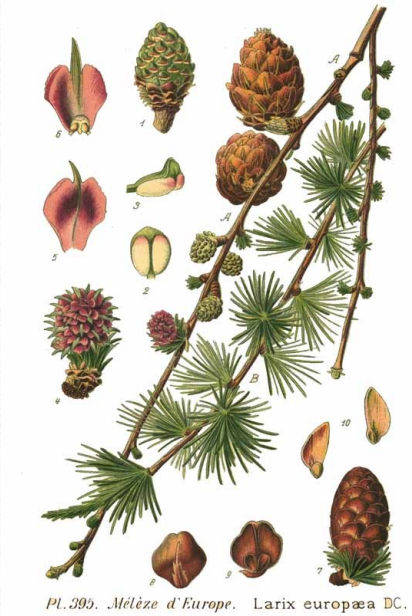
Larch bark natural dye
Extraction protocol

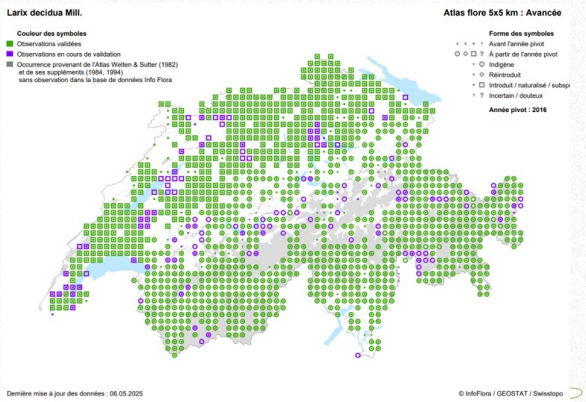
from *Larix decidua* Mill.



European Larch
Larix decidua Mill.



- Is a coniferous tree native to the mountains of central Europe, in the Alps and Carpathian Mountains.
- Its life span has been confirmed to be close to 1000 years, with ages of around 2000 years likely.
- Larch is the only deciduous conifer in Europe. Before they fall, the needles turn a bright bronze-yellow in autumn.
- The bark is pinkish-brown in colour and thick, and develops wide vertical fissures with age.
- In European folklore, larch was said to protect against enchantment. The wearing and burning of larch was thought to protect against evil spirits.
- Gives pink, orange, brown tints. Barks contain so much tannin that they self-mordant.
- Color-fast dyes on animal and plant fibers.
- In CH, wild and widespread in the mountainous regions.



Step 1

Foresty sorting

Larch woods

Natural by-product

Tons of Bark

Step 2

Bark drying

Few days @ 45-50°C

Step 3

Bark chips can be used as they are for dye baths or be grinded in fine powder.

Centrifugal grinder

Step 4

Or proceed to an aqueous extraction

Decoction in hot water @ 80°C, ratio 1/10, for 1 hour

Step 5

Filtration

Step 6

Concentration of the extract

Falling film evaporator

Step 7

Packaging

Hot filling in HDPE cans

6. Responsible heritage-based innovation: consent, recognition, and shared value

6.1 Avoiding misrepresentation, misappropriation and over-commercialization in heritage-based innovation

When textile innovation engages with living heritage, specific risks arise that are well documented in international heritage frameworks, notably within the UNESCO 2003 Convention for the Safeguarding of the Intangible Cultural Heritage. Three notions are particularly relevant in this context: **misrepresentation**, **decontextualization**, **misappropriation**, and **over-commercialization**.

Misrepresentation occurs when cultural practices, skills, or symbols are portrayed inaccurately, simplistically, or stereotypically. In textile and fashion contexts, this often takes the form of romanticized or folklorized depictions of mountain life, craft practices, or rural communities that do not reflect their contemporary realities. Even when visually appealing, such representations can distort meanings and undermine the cultural integrity of the practices involved.

Decontextualization refers to the extraction of elements of heritage from the social, territorial, and material contexts in which they are practised and transmitted. Techniques, motifs, or materials may be isolated from their original uses, rhythms, or value systems and redeployed as generic design references. While this can facilitate circulation and commercialization, it risks weakening the links between heritage practices and the communities that sustain them.

Misappropriation designates situations in which traditional knowledge or cultural expressions are used without the consent of their custodians, without appropriate recognition, or without any form of shared benefit. In innovation processes, misappropriation is not always intentional. It may result from asymmetries of power, lack of awareness, or the absence of clear rules governing collaboration between external actors and heritage-bearing communities.

Over-commercialisation refers not to market engagement per se, but to forms of economic exploitation that distort, erode, or dominate the social meanings, practices, and transmission of heritage. It differs from misappropriation in that over-commercialisation may occur even when heritage actors themselves are involved in market activities. In UNESCO debates, it designates situations in which market logics come to dominate heritage practices to the point that economic imperatives override cultural meanings, community priorities, or the conditions for intergenerational transmission. Typical symptoms include pressure for standardization, acceleration of production rhythms, prioritization of easily marketable product forms over culturally significant ones, and the narrowing of heritage repertoires to fit external demand. In current UNESCO debates, the effects of market engagement depend on who controls it, how benefits are distributed, and whether commercialisation remains compatible with the social functions, meanings, and viability of the heritage practices.

From a practical perspective, these issues are not only ethical concerns. Research on consumer responses to cultural appropriation shows that perceived misuse of cultural references can trigger negative reactions, including loss of credibility, reputational damage, and market backlash. This includes situations where products are perceived as "**heritage-washed**": formally referencing tradition while hollowing out its substance through industrial scaling or aggressive market exploitation.

For textile SMEs, designers, and intermediaries, this translates into concrete risks affecting brand legitimacy, partnerships, and long-term access to heritage resources. Projects that maximize short-term market visibility at the expense of heritage context may undermine the very cultural resources on which they depend. Responsible heritage-based innovation therefore requires **explicit safeguards built into project design and collaboration formats**, rather than corrective measures applied after products are developed.

Such safeguards might include: maintaining diversity within product portfolios, ensuring that innovation pathways remain competence-enhancing rather than competence-destroying for heritage skills, preserving space for non-market or low-market practices within heritage systems, and ensuring that communities retain agency in defining acceptable limits of change. In particular, the risk of over-commercialization is unevenly distributed across the innovation pathways identified in Section 2: it is particularly salient in pathways combining high product innovation with recombined skill repertoires, while pathways grounded in product continuity or stable repertoires tend to pose lower risks but may face challenges of under-commercialization or limited economic viability.

6.2 Reference principles and their adaptation to Alpine textile heritage contexts

To address these challenges, AlpTextyles drew on existing international principles while adapting them to the specific conditions of Alpine textile heritage. A central reference is the **3C approach**, developed by the Cultural Intellectual Property Rights Initiative, which emerged as a pragmatic way of structuring relationships between heritage custodians and external actors. The approach highlights three core dimensions that should be addressed explicitly in any heritage-based innovation process:

- **Consent**: Have the relevant communities or knowledge holders been informed and involved, and have they agreed to the proposed uses?
- **Credit**: Are the sources of knowledge, skills, and cultural expressions clearly acknowledged and made visible?
- **Compensation**: Is there a fair form of value-sharing, which may include financial remuneration, capacity building, visibility, or long-term collaboration?

Building on similar concerns, the World Intellectual Property Organization (WIPO) has developed a set of **draft steps for fashion and design contexts** intended to support respectful and meaningful engagement with Traditional Cultural Expressions (TCEs). Rather than proposing a single legal or contractual model, these draft steps outline a **process-oriented pathway** that can be adapted to different contexts.

Key elements include of WIPO's Draft Steps include:

- **Cultural context research:** Understanding the origins, meanings, uses, and potential sensitivities associated with specific cultural expressions before engaging in design or development activities.
- **Identification of legitimate custodians:** Recognising that authority over practices or expressions may be collective, locally governed, or embedded in customary arrangements rather than formal institutions.
- **Relationship-building and dialogue:** Investing time in building trust, acknowledging past experiences of misuse or misrepresentation, and engaging with existing community structures.
- **Clarification of intent and scope:** Making explicit the purpose of the project, expected outputs, potential markets, and possibilities for scaling.
- **Agreement and consent processes:** Reaching shared understandings regarding uses, representations, and benefits, and recognising that communities may decide not to grant consent.
- **Attribution and benefit-sharing:** Ensuring visible acknowledgment of cultural sources and negotiating appropriate forms of value-sharing aligned with community priorities.

Although these principles and draft steps were initially developed with particular attention to contexts involving Indigenous peoples and communities facing high levels of vulnerability, AlpTextyles considers them a useful approach also in the context of Alpine textile heritage communities.

While Alpine communities generally operate within different legal, political, and economic frameworks, they nonetheless face risks of misrepresentation, marginalisation, and asymmetric collaborations when interacting with design schools, brands, or external companies. Applying these principles in Alpine contexts therefore does not imply equating situations, but rather **adapting robust safeguards to prevent extractive or unbalanced uses of living heritage**.

These orientations are consistent with the recent **UNESCO Guidance Note on the economic dimensions of intangible cultural heritage**, which emphasises that economic activities linked to ICH should support the viability of practices and the agency of communities, rather than instrumentalising heritage as a mere resource. The guidance stresses the importance of long-term perspectives, community decision-making, and the alignment of economic objectives with safeguarding goals.

Within AlpTextyles, these global principles were translated into **context-sensitive tools and practices** suited to Alpine textile ecosystems. Design briefs, ethical codes, participatory formats, and light governance arrangements were used to make consent explicit, recognition visible, and shared value negotiable, in ways compatible with small-scale organisations, SMEs, and cross-border cultural continuities. In this sense, AlpTextyles pilots adapted these international reference frameworks into **practical, locally grounded approaches to responsible heritage-based innovation**.

6.3 Putting principles into practice in AlpTextyles pilot actions

When relevant, Textyles translated these principles into **concrete devices embedded in the design and development process itself**. This was particularly important in contexts where heritage communities interacted with external actors such as designers, schools, and companies. Across its pilot actions, AlpTextyles experimented with a set of **practical instruments** that allowed responsibility to be addressed upstream, before products, narratives, or communication materials were finalised. These instruments aimed to structure collaboration in ways that reduce risks of misrepresentation and misappropriation while enabling meaningful innovation.

6.3.1 Mapping traditional cultural expressions through participatory inventorying in Valposchiavo

Responsible heritage-based innovation requires formats that allow custodian communities to actively shape how their traditional cultural expressions are identified, documented, and potentially mobilised over time. Within AlpTextyles, a particularly emblematic example of this approach was developed in Valposchiavo around the *coperta poschiavina*, a traditional wool blanket historically produced for domestic use and still present in many family households across the valley.

The initiative, focusing on **participatory inventorying as a safeguarding measure**, was coordinated by AlpFoodway partner Polo Poschiavo, the **Fondazione Musei Valposchiavo**, which plays a central role in safeguarding local cultural heritage and hosts within its premises the **Tessitura Valposchiavo**, a living textile workshop that today produces and sells its own contemporary version of the *coperta poschiavina*. AlpFoodway partner **Bellissimo**, a communication design studio, supported the creative development, community engagement, and implementation of the initiative.

During the *Festa de lo Pan Ner* in October 2023, families were invited to bring their own *coperta poschiavina* to be photographed, documented, and contextualised. Each blanket was recorded together with its material characteristics, patterns, colours, weaving structures, provenance, and, crucially, its family history and modes of use. The strong response from the local population led to the continuation of the initiative beyond the festival, allowing further documentation until mid-November.

This operation built on an existing heritage base. The Fondazione Musei Valposchiavo already hold an important collection of *coperte poschiavine* donated by the heirs of **Annamaria Foppoli**, who had previously documented the blankets she had restored. The participatory inventorying carried out within AlpTextyles significantly expanded this corpus, both quantitatively and qualitatively, by reconnecting objects with living memories, households, and narratives.

Invitation to the Valposchiavo population to bring the family's coperta poschiavina at the Festa de lo Pan Ner 2023 (lett). Exhibition focused on the coperta Poschiavina at the Musei Valposchiavo (right).

From a UNESCO perspective, this initiative exemplifies inventorying as a **living safeguarding process** caried out with the participation of communities. It does not extract objects from their social context, but instead reinforces awareness, recognition, and transmission by involving families as active custodians. From the perspective of responsible innovation, it also performs a crucial function: it creates a **shared knowledge base on traditional cultural expressions** before any reinterpretation, or market-oriented initiative is defined.

From the perspective of responsible innovation, this initiative achieved several outcomes simultaneously:

- it recognized households and families as legitimate custodians of textile heritage, not merely as informants;
- it created a shared knowledge base that makes the diversity and variability of the *coperta poschiavina* visible, avoiding standardized or stylized representations;
- it established trust and legitimacy for any future design or valorization initiatives, by ensuring that knowledge circulation begins within the community rather than outside it.

The deliberate absence of commercial interaction at this stage is a key feature of the approach. By situating the inventorying process within a cultural and museal framework, the initiative avoids commodification and allows knowledge to be consolidated under conditions of trust and legitimacy.

At the same time, future uses are not precluded. On the contrary, it lays the groundwork for possible forms of retro-innovation or educational activities that can draw on documented diversity rather than on stylised or stereotypical representations, particularly relevant in a context where domestic production of blankets has long ceased.

This case demonstrates how participatory inventorying can function as a **bridge between safeguarding and future-oriented innovation**. It shows that involving communities as co-authors in the documentation of their heritage is not an obstacle to development, but a necessary step for ensuring that any future use of traditional cultural expressions is informed, legitimate, and socially grounded.

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HOW-TO

Develop participatory inventorying of textile Traditional Cultural Expressions (TCEs)

Problem

Textile traditional cultural expressions are often poorly documented, fragmented across household and cultural organizations. External actors (designers, companies, institutions) tend to work with partial or decontextualized knowledge, increasing the risk of misrepresentation or inappropriate reuse. Communities themselves may not fully recognize the diversity, variability, and contemporary relevance of their own textile heritage.

What we learned

Participatory inventorying, when coordinated by trusted cultural institutions, can function as both a safeguarding and innovation-enabling practice. In Valposchiavo, inviting families to bring their own *coperte poschiavine* for documentation transformed inventorying into a collective act of recognition, awareness, and knowledge production. The process strengthened community ownership while creating a robust knowledge base for future research and potential retro-innovation.

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HOW-TO
Develop participatory inventorying of textile Traditional Cultural Expressions (TCEs)

Transferable solution
Treat inventorying as a **social and cultural process**, not as data extraction. Organize participatory documentation initiatives in accessible community settings; record both material features and lived histories; anchor the process in a museum or cultural organization capable of ensuring continuity. Use the inventory to build shared understanding and legitimacy. This can facilitate future design or product development initiatives but also ensure the viability of living textile heritage.

6.3.2 Design briefs as tools for consent and responsible representation

The project first experimentation with this tool took place in the context of a study visit that would have allowed students from an Austrian school to visit textile communities based in Val Camonica and Valposchiavo, to obtain inspiration for their end-of-the-year collection design project, to be publicly displayed during a fashion show in Vienna. While the collaboration ultimately did not take place, exchanges were structured through a **carefully designed project brief**, which functioned not only as a pedagogical tool but also as a **governance mechanism**.

Rather than inviting open-ended “inspiration” from Alpine textile heritage, the brief explicitly framed how local practices, materials, and skills could be approached. The brief required students to:

- engage with documented practices and skills rather than generic Alpine imaginaries,
- situate design proposals within the social and material realities of the territory,
- reflect on how products and narratives would represent local communities.

By doing so, the brief operationalised **consent** in an indirect but effective way: it constrained the design space to prevent stereotypical or romanticised representations and aligned creative exploration with the expectations and sensibilities of local actors. In this sense, the brief acted as a preventive safeguard against misrepresentation, while still leaving room for interpretation and innovation.

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HOW-TO
Write designer brief for responsible heritage-based innovation

Problem

Designers often frame heritage as a source of visual inspiration detached from its social, material, and cultural conditions. This encourages clichéd representations, romanticized imaginaries, and design outcomes that fail to respect living practices or resonate with custodian communities. Designers may unknowingly reproduce misrepresentation or appropriation.

What we learned

Designer briefs developed within AlpTextyles when dealing with designers and fashion/design schools functioned as **mediating frameworks** translating ethical principles into operational guidance. By embedding contextual knowledge, representational constraints, and feedback mechanisms, briefs can enable creative exploration while avoiding misrepresentation.

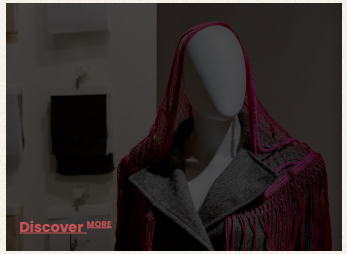
Transferable solution

Use the designer brief as a **governance device**, not just a creative prompt. Frame heritage as a living system of practices and skills; discourage folklorization explicitly; base briefs on documented inventories; and include moments for dialogue and feedback with communities or cultural intermediaries. Clarify from the outset whether outputs are exploratory, educational, or intended for further development.

Lace & Lineage
Students of Istituto Marangoni Milano

Garments as dialogue: weaving craft, code, and culture.
The pieces first showcased at Milano Unica are the result of a deep exchange between tradition and experimentation. Drawing from the **digital archives** of Polo Poschiavo (CH), ZRC SAZU (SI), and Stand Montafon (AT), students translated the visual and material language of the Alps into contemporary silhouettes. Crafted from a **hand-woven fabric from Tessitura di Valposchiavo developed exclusively for AlpTextyles**, made by blending yarns sourced from various Alpine regions, the garments express the underlying unity across borders and a commitment to sustainable making.

Traditional **Cantù lacework**, created by the Comitato per la Promozione del Merletto – Cantù (Cantù Lace Promotion Committee) in collaboration with designer Marco Fersino Ribeiro Amorim, adds a delicate yet resonant layer, bridging historic craftsmanship with forward-thinking fashion.



Tailoring | The Lab Srl
Lacework | Comitato per la Promozione del Merletto – Cantù

Istituto Marangoni Tutors
Irene Festa
Lukas Christ
Erisa Ibrahimi

Istituto Marangoni Students
Joao Pedro Anzolin
Anwita Chirravuri
Inci Dogan
Lavinia Mandl
Giulia Travaglini
Dana Sofia Trentin
Cahit Tuna Velioglu

©Photos: Courtesy of Istituto Marangoni

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YDC SCRAPBOOK

Cantù lacework intertwines with digitally-inspired silhouettes, using versatile handwoven textiles from Tessitura di Valposchiavo developed for AlpTextyles by blending Austrian and Italian yarns — a showcase of cross-border craftsmanship and narrative.

@ AlpTextyles at Milano Unica 2025.

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INTERTWINING CULTURES

YDC SCRAPBOOK

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Source: AlpTextyles (2025), Young designers' Collection Scrapbook. Available on the AlpTextyles website.

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Coat-turned-knitted dress
Shuzo Matsuhashi with Stand Montafon

Garments as journey: transforming from land to loom.
This garment transforms a structured coat into a fluid knitted dress — a symbolic shift that mirrors **the journey of Montafoner wool itself**: from heritage to reinvention. Designed by Shuzo Matsuhashi, the piece was created using Montafoner Tweed, a textile **developed specifically for AlpTextyles** by blending 50% Montafon Stone Sheep wool with wool from the Vorarlberg-based company Schöller. The fabric is woven in Höchst by Übelhör and spun and washed regionally in Tyrol, Austria — an entirely **Alpine and chemical-free production chain** rooted in sustainability and local craft.

Born in Tokyo and based in France, designer Shuzo Matsuhashi studied Textile Design at Tama Art University (JP) and Fashion Design at the University of Applied Arts Vienna (AT). His practice bridges traditional techniques and contemporary fashion, with recent experience at LOEWE under JW Anderson and the launch of his own brand in 2025.

This piece also **honors the historic Montafoner Loden** — an international staple now revived through a fully regional process using pure Montafon Stone Sheep wool. A nod to tradition, the resilience of local breeds, and the renewed vitality of a textile culture woven into the life of its land and people.

©Photos: Courtesy of Stand Montafon

Design
Shuzo Matsuhashi

Textile | Montafoner Tweed
50% Montafon Stone Sheep wool (weft)
50% Schöller wool, Vorarlberg (warp)

Weaving | Übelhör – Höchst, Vorarlberg (AT)
Spinning | Ferner – Unternberg, Tyrol (AT)
Washing | Regensburger – Ötztal, Tyrol (AT)

Doris & Harald "Verner's"
Alpine Culinary World (AT)
www.verners.at

Loden production | Kreutner Loden – Hart im Zillertal, Tyrol (AT)

Cleaning | Regensburger – Ötztal, Tyrol (AT)

Montafons
Galgenulerstrasse 37
6791 St. Gallenkirch, Austria

Martin Mathies | +43 664 5861214
Peter Kasper | +43 664 5137299
kontakt@montafon.at
www.montafons.at

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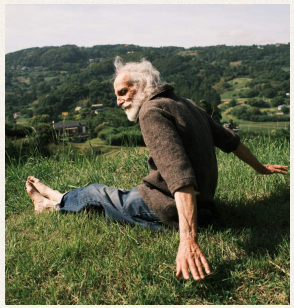
SCRAPBOOK



Crafted from Montafoner Tweed, this masterpiece transforms heritage textile into fluid contemporary fashion. Every stage — spinning, weaving, washing — occurred in the Alps.

@ AlpTextyles at Milano Unica 2025.

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SCRAPBOOK

Source: AlpTextyles (2025), Young designers' Collection Scrapbook. Available on the AlpTextyles website.

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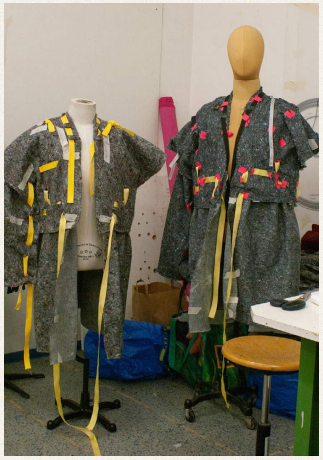
0
Bruno Motter with Stand Montafon

Garments as fabric of place, purpose, design.
0 - Zero begins with a question: what if a garment could be made **waste-and hands-free** but retain the full meaning of its textile? Developed by industrial designer Bruno Motter at FH Joanneum in Graz with the support of Stand Montafon, it explores automation and native wool at the **intersection of industrial design and alpine heritage**.

Central to the project is **Loden**, a traditional felted wool fabric whose unique properties make it **ideal for outerwear** and hands-free assembly. Its compacted surface allows **open seams** while providing insulation, water repellency, and natural odor resistance. Loden transforms necessity into opportunity, turning a durable, functional material into a medium for design innovation.

The project is part of Bruno's bachelor thesis, whose work investigates the connections between material, process, and human experience. Large geometric panels are joined with **a threading system of ropes and straps, transforming assembly into an expressive gesture** and functional constraints into defining design features.

The garment unfolds like a rhythm of Alpine architecture: overlapping rectangular panels that move with the body, sheltering and guiding its wearer. Beyond clothing, ***0* is wool in motion**, intelligence in structure, care made tangible — a continuous gesture linking body and landscape with craft.



©Photos: Courtesy of Bruno Motter

Design
Bruno Motter

Textile | Montafoner Stone Sheep Loden

Loden production | Kreutner Loden – Hart im Zillertal, Tyrol (AT)

Cleaning | Regensburger – Ötztal, Tyrol (AT)

Montafons
Galgenulerstrasse 37
6791 St. Gallenkirch, Austria

Martin Mathies | +43 664 5861214
Peter Kasper | +43 664 5137299
kontakt@montafon.at
www.montafons.at

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YDC SCRAPBOOK

Through 0, the act of wearing becomes an encounter with process itself: a reflection on production, efficiency, and the human gestures that persist even within automation.

Loden combines multiple aesthetic and physical qualities ideal for outerwear.

A waste-free jacket made from rectangular shingles of loden material, held together by self-assembled straps.

AlpTextyles
INTERTWINING CULTURES

YDC SCRAPBOOK

Source: AlpTextyles (2025), Young designers' Collection Scrapbook. Available on the AlpTextyles website.

6.3.3 Ethical codes and documentation as instruments of recognition

Within AlpTextyles, ethical codes were considered as **practical instruments to structure relationships** between heritage custodians and external actors involved in design, education, and product development. An ethical code, in this context, does not function as a legal contract or an intellectual property instrument. Rather, it is a **shared reference document** that articulates principles, expectations, and limits governing how living heritage practices may be engaged with, represented, and valorised.

Within AlpTextyles, this approach was exemplified by the experience of **Intrecci (Monno, Val Camonica)**. The Association originated as an informal collective of women artisans, initially known as the *Donne dei Fili*, whose practices revolved around weaving, wool work, and shared making within the public community space **Ca'Mon**. In its early phase, the group did not perceive heritage protection primarily as a legal or economic issue. What required safeguarding was not a set of isolated techniques, but **a way of "doing together"** grounded in hospitality, horizontal knowledge sharing, and collective care for a shared space.

As the group's activities expanded through collaborations with designers and schools, increased public visibility, and participation in regional and transnational projects, a shift occurred. Members progressively recognized that their textile knowledge carried **cultural, identity, and potential economic value**, and that external collaborations required clearer rules to avoid misunderstanding, misappropriation, or overload.

It is at this stage that the **ethical code** was co-created. It was conceived as a **negotiation tool**, designed to operate *between* informal practice and formal legal protection. Concretely, it served to:

- **Declare shared values**, including responsible creativity, living tradition, collective authorship, and care for relationships.
- **Clarify internal responsibilities**, acknowledging different skills while reinforcing collective decision-making.
- **Regulate access to knowledge**, specifying under what conditions techniques, models, and practices can be shared with external actors.
- **Set recognition and attribution criteria**, particularly in collaborations with designers, institutions, and enterprises.
- **Align collaborations with real capacities**, explicitly recognizing the voluntary and non-industrial nature of the group and refusing partnerships that would generate excessive organizational burden.

Importantly, the code does not claim ownership over techniques in a conventional intellectual property sense. Instead, it articulates a form of **collective custodianship**, consistent with UNESCO's understanding of living heritage and with WIPO-inspired approaches to collective and sui generis protection.

The Intrecci ethical code highlight that establishing formal organizations through participative processes is a first step into facilitating third party's responsible engagement with custodian communities.

By documenting values, limits, and expectations, the code:

- protects the group from extractive collaborations;
- provides a stable reference point for designers and institutions;
- and prepares the ground for future protection tools (collective marks, documentation systems, community protocols) when and if they become relevant.

For Alpine textile heritage communities, ethical codes can be understood as **lightweight but powerful governance devices**, adaptable to different stages of organizational maturity, and capable of translating global principles of consent, recognition, and shared value into locally meaningful rules.

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HOW-TO
Draft an ethical code for textile heritage communities

Problem

Heritage communities often engage with designers, schools, or companies without clearly articulated rules or shared expectations. This can lead to asymmetric collaborations, unclear attribution, unintended appropriation, or overload for small groups relying on voluntary engagement.

Additionally, third-parties often find it hard to identify who can ‘speak for the community’ when the community is not formally organized.

What we learned

The Intrecci experience in Val Camonica demonstrates that ethical codes can operate as **intermediate governance tools**. Co-developed within the community, the ethical code clarified values, limits, and conditions of access to knowledge, while remaining flexible and evolutive. Rather than claiming ownership, it articulated collective custodianship and provided a stable reference point for external collaborations.

Transferable solution

Develop an ethical code as a **collective self-definition exercise**. Start from shared values and practices; clarify what can be shared and under which conditions; make recognition and attribution explicit; and articulate acceptable forms of shared value. Treat the code as a living document that guides collaboration without freezing practices or requiring immediate legal formalization.

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Conclusions

This output started from a simple but demanding premise: **heritage-sensitive and circular textile products cannot be developed using the same logics that underpin conventional sourcing, design, and production models**. Working with local fibres, traditional knowledge, and living textile practices requires different points of departure, different sequences of action, and different forms of coordination between actors.

Across wool, flax and linen, and natural dye plants, AlpTextyles has shown that Alpine textile heritage should not be approached as a repertoire of symbols or narratives to be added downstream, but as a **structuring resource** that shapes material choices, value-chain configurations, and development processes from the outset. Practices historically rooted in parsimony, the use of local resources and by-products, short and cross-border value chains, and collective knowledge transmission are not relics of the past. They provide **operating logics** that remain highly relevant for contemporary sustainability challenges.

Rather than proposing a single model to be replicated, this document has articulated **transferable formats and development logics**. Material libraries, participatory inventorying, ethical codes, designer briefs, and cross-border matchmaking have been presented as modular tools that can be recombined and adapted to different territorial contexts.

What can be scaled is not the products themselves, but the way in which problems are framed and addressed: starting from material realism, embedding circularity upstream, and organising respectful collaboration with heritage custodians.

A central insight of this work is that **replicability depends on intermediaries**. Museums, cultural institutions, natural parks, clusters, design schools, R&D laboratories, and business support organisations play a decisive role in translating heritage resources into viable development pathways. They act as connectors between agriculture, craft, industry, and design; they reduce risk for SMEs; and they provide the governance infrastructures needed to balance innovation, safeguarding, and shared value.

Finally, this output has framed responsibility not as a constraint, but as a **condition of durability**. By adapting international principles on consent, recognition, and shared value to the specific realities of Alpine textile heritage, AlpTextyles demonstrates that responsible heritage-based innovation is both feasible and productive. When heritage is treated as a living system of practices, skills, and relationships, innovation becomes more grounded, more resilient, and ultimately more meaningful for territories and markets alike.

References

This output builds on several deliverables and reports developed by AlpTextyles partners, all available at the AlpTextyles website.

Other references inspiring this work include:

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- H. Deacon, D. Rinallo (2026). "Rethinking concepts of authenticity, repertoire and innovation: Building on the heritage-sensitive marketing and intellectual property strategies (HIPAMS) approach. In P. Bille Larsen and F. Graezer Bideau (eds.), *The Heritage, Creativity and Innovation Nexus: Critical Approaches and Interdisciplinary Perspectives*. Forthcoming.
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Polo Poschiavo · ZRC SAZU · em lyon business school · Razvojna agencija Sora d.o.o. · Regione Lombardia · smi Sistema Moda Italia Federazione Tessile e Moda · -/ BELLISSIMO Dal 1999

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