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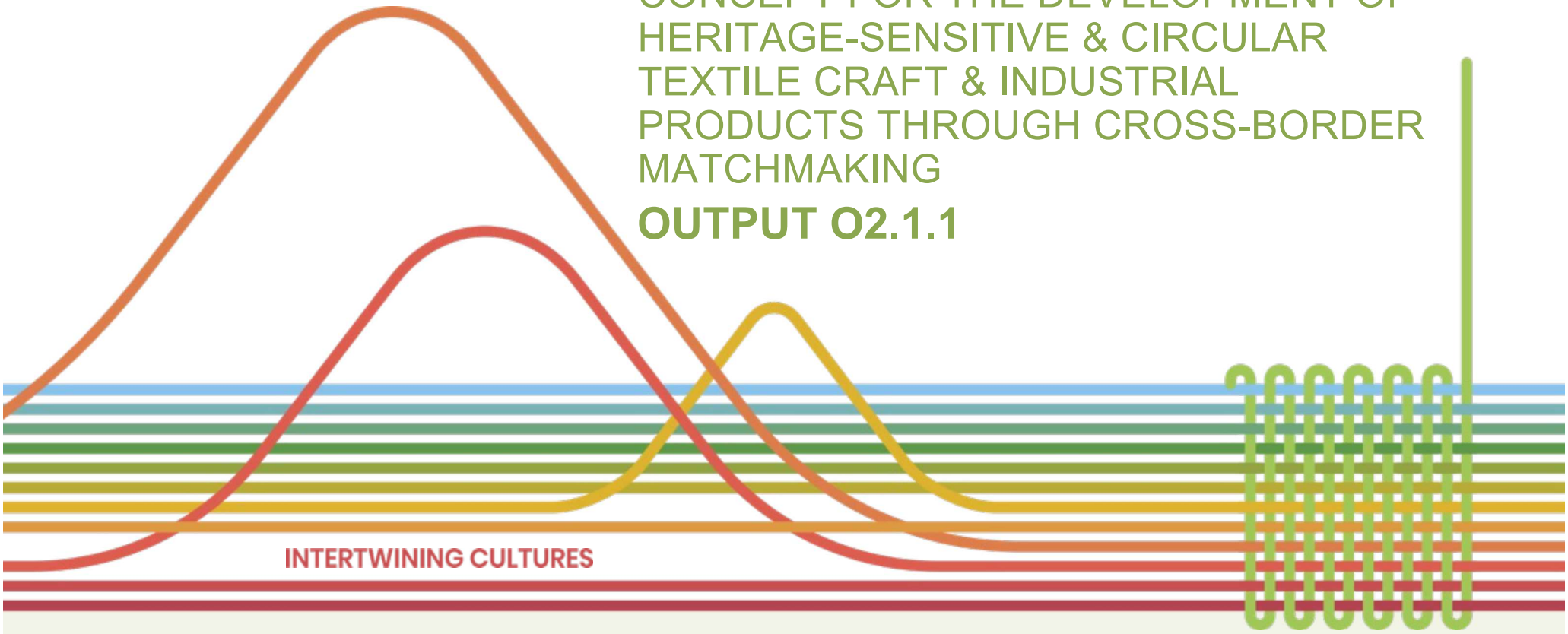
Interreg Alpine Space — Co-funded by the European Union

AlpTextyles

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

OUTPUT O2.1.1



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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:

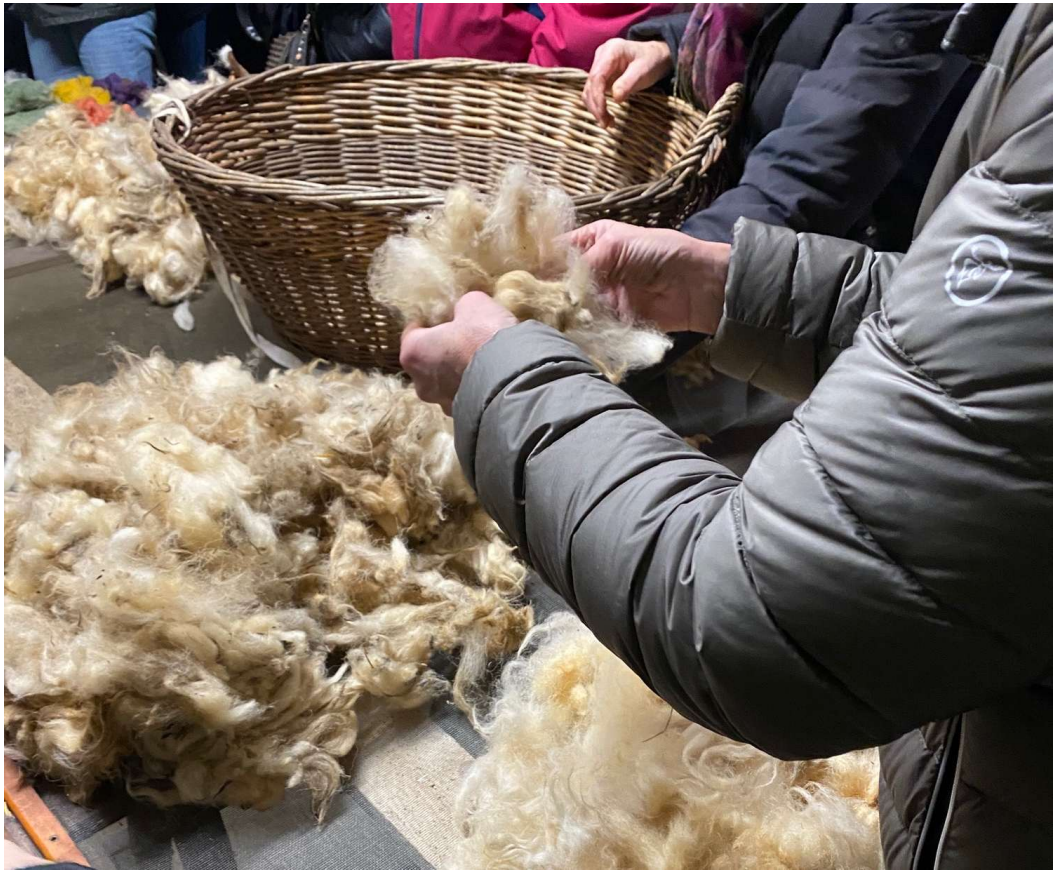
- **Heritage sensitivity**, centred on communities and practitioners as custodians of living heritage;
- **Material realism**, starting from the actual properties and constraints of local fibres and related techniques;
- **Circularity and sustainability by design**, embedded upstream in concept development 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.



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

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.

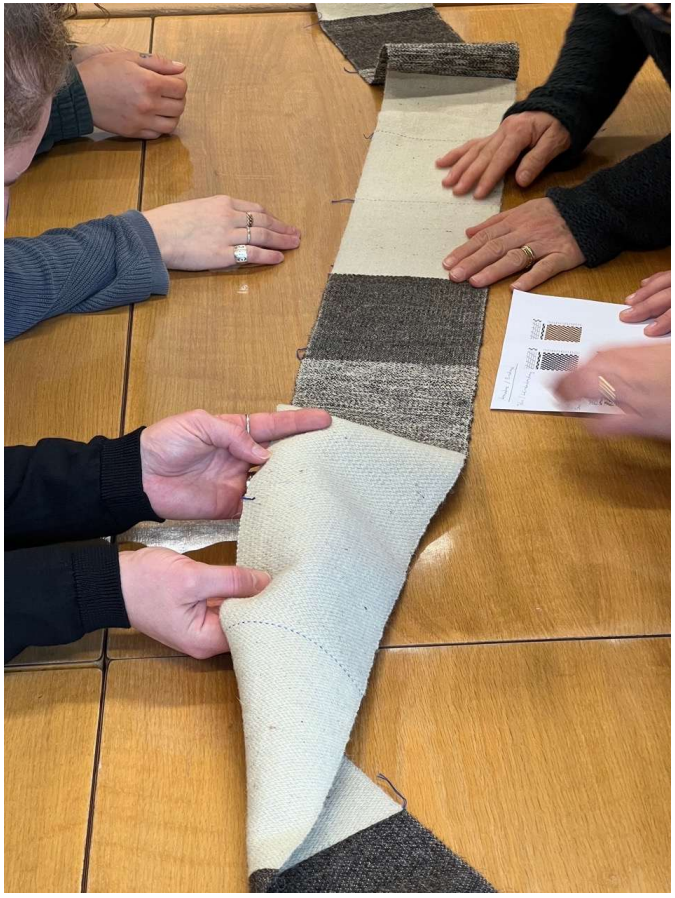
Chapter 1 examines why dominant textile development logics—based on acceleration, delocalisation, and cost minimisation—are ill-suited to heritage-sensitive and circular innovation.

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.

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-condititions 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

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
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

Recombined / extended skill repertoire (addition of design, scientific, industrial, market, or regulatory compliance skills)

Stable / traditional skill repertoire (skills largely embodied and practiced)

Continuity (forms, uses, typologies close to historical precedents)

Innovation (new forms, uses, applications, functions)

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).

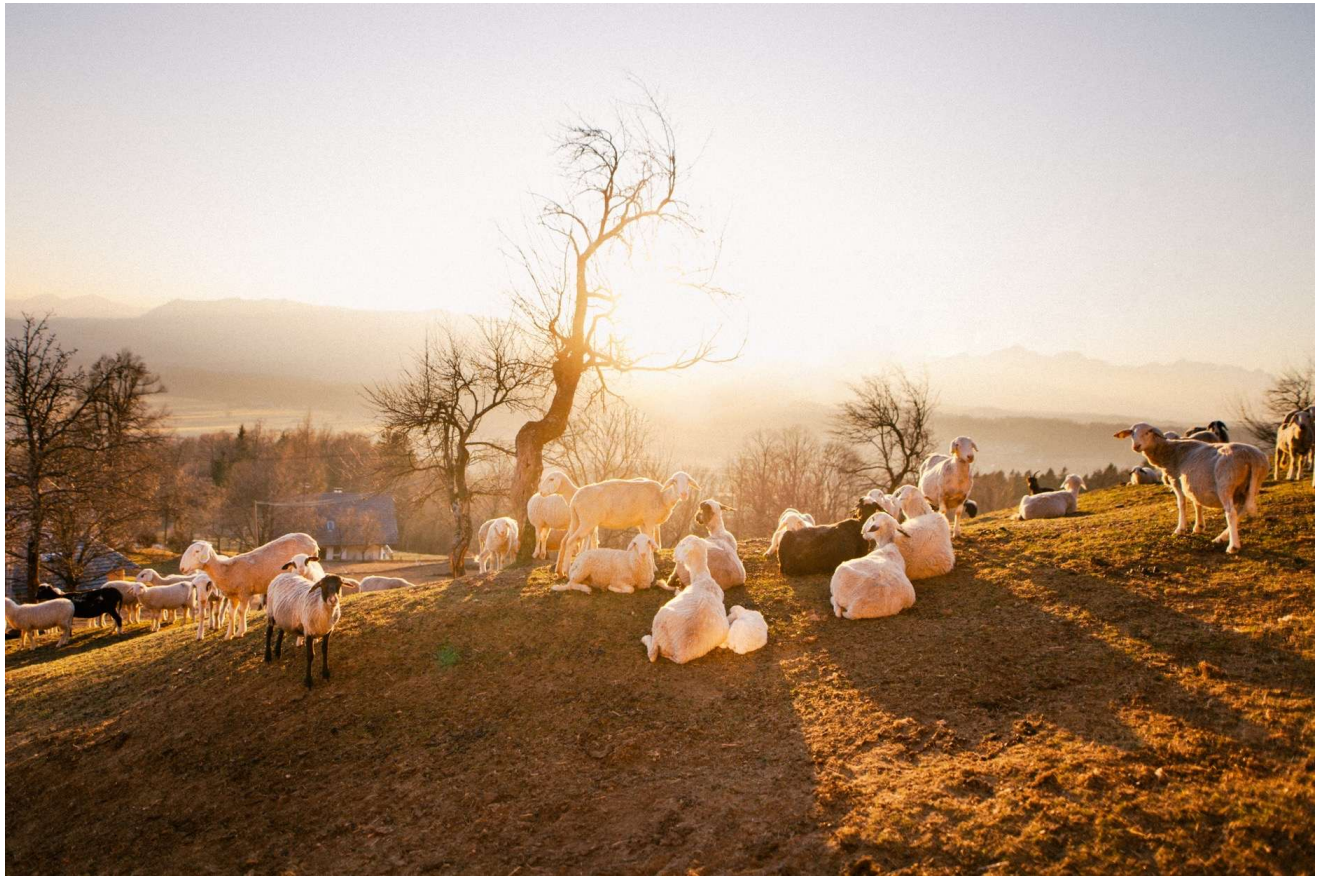
Using the pathways

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.



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