

WOOL AS A COMPLEX ECONOMIC, ENVIRONMENTAL, SOCIAL, AND CULTURAL SYSTEM

STRENGTHS, LIMITS AND OPPORTUNITIES IN ITALY'S INNER PERIPHERIES

VITTORIO GIANNETTI

Università della Campania Luigi Vanvitelli /

Università di Camerino

vittorio.giannetti@unicampania.it

Orcid 0009-0006-9253-2064

MARCO MANFRA

Università di Camerino

marco.manfra@unicam.it

Orcid 0000-0003-2909-8198

Copyright: © Author(s). This is an open access, peer-reviewed article published by Firenze University Press and distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.
Data Availability Statement: All relevant data are within the paper and its Supporting Information files.
Competing Interests: The Author(s) declare(s) no conflict of interest

DOI: <https://doi.org/10.36253/fh-3133>

Abstract

Wool has played a crucial role in the history of mankind for a long time, its versatility bringing together different cultures across the continents. A network of wool production, processing and trade flourished in inland and mountainous areas, fostering strong social, economic and environmental values associated with this raw material. However, the wool industry declined in the 20th century due to globalisation and competition from cheap synthetic fibres, reducing native wool to a by-product. Environmental challenges arose as wool was discarded or abandoned, and critical activities such as fleece washing ceased, exacerbating the crisis. Today, despite structural difficulties, initiatives aim to revive regional wool by creating small, independent systems that defy traditional production models. These projects focus on sustainable, short supply chains and systemic design, renewing the value of native wool through innovative, culturally significant products. This environmental movement involves the mobilisation of local resources and the promotion of sustainable co-existence between people and their environment. Through the analysis of case studies, this research seeks to explore how such initiatives can inspire future policies that promote a sustainable, holistic vision of prosperity, encompassing social, environmental and ethical well-being.

Keywords: *Wool, Rebirth, Prosperity, Sustainability, Social change*

INTRODUCTION

The progressive fragmentation of communities of inhabitants and of certain productive activities, which could be defined as collective entities for the construction, enjoyment and care of the living environment, is a significant factor in the qualitative decline of the territory. Here, the term “*territory*” is used to refer to a unitary and inseparable whole of natural landscapes, artefacts and human settlements. The current weakening of the sense of community – *a negative consequence of global processes of hetero-directional decision-making, information, production and trade* – reinforces practices of de-spatialisation and de-territorialisation that were initiated in the 20th century (Magnaghi, 2020). This is exemplified by the

weakening of proximity activities and conviviality relations, as well as the growing disruption to the circular links of co-evolution between human production and nature, resulting in a global exodus with a twofold impact. On the one hand, there is the depopulation of small towns, particularly in the region known as the “*Italy of the bone*” (Bevilacqua, 2018), which encompasses the Alpine and Apennine ridges, resulting in the subsequent abandonment of these areas, the decline of rural land management and the dissolution of local production networks. On the other hand, the exodus from rural areas to the suburbs of megacities has led to the homogenisation of urban environments and the dissolution of public spaces. In both cases, we observe the emergence

of phenomena of community disaffection and inattention towards the territory in question, which is no longer perceived as a common good and as a terrain open to new convivial, circular and proximity projects, particularly in terms of production.

Focusing on the initial issue, it is of no coincidence that wool processing in Italy's inner areas has also undergone a notable decline. In the past, these regions were home to a multitude of mills specialising in the processing of unwashed wool, which was used for a variety of purposes, including the production of clothing and mattresses. However, the advent of synthetic fibres and the market's preference for finer wools, produced mainly in Australia, New Zealand and China, has resulted in a progressive decline in demand for Italian wool, culminating in the 2008 economic crisis, which actually accentuated the difficulties of local economies (Pagani, 2022). European legislation in 2002 introduced further complications by classifying "greasy" wool as special waste, the disposal of which has become a cost for farmers, who have been forced into irregular disposal practices (European Parliament & Council, 2002).

Currently, sheared wool in Italian mountainous areas has only two routes: disposal, with related costs, or sale to textile subcontractors, now reduced to a few factories, located in the industrial areas of *Biella* and *Prato*, which can only meet the needs of large batches, leaving small producers behind. This context limits the possibilities of transforming local wool into high quality fabrics or other products and makes it difficult to compete with foreign wools, which are often finer than Italian wools, with fibres of medium thickness, around 30 microns.

The difficulties are exacerbated by the distance between processing plants and collection centres in mountainous areas, transport costs and the lack - or *disappearance* - of skilled artisans capable of processing these unique fibres. Washing plants also require significant investment and compliance with environmental regulations for water treatment, a heavy burden for small communities. Maintaining manufacturing facilities in these areas would require a constant supply of wool, which is difficult to guarantee. These factors make it difficult to preserve a tradition that is rooted in the social and economic fabric of the inner Alpine and Apennine areas, where the challenges of the globalised market and regulations

often penalise small local realities that were once fundamental pillars for the care of the territory.

It is clear that this scenario of progressive decline continues to create barriers and complexity for the sector, leading to the closure of historical activities that are fundamental to the short supply chain, such as the washing and processing of hides. This situation has created a significant production vacuum that has further aggravated the crisis, with particularly devastating effects on the inner areas of the country (Gaddi & Mastrolonardo, 2024). An emblematic example is the historic *Lanificio Merlino* in the *Aventino valley* of *Abruzzo*, once a model of quality production. Today, however, this local excellence has ceased its activities, leaving only traces of a precious past in the form of potentially functioning plants and abandoned buildings of high historical and cultural interest (Braccani, 2018).

The network of small Italian wool mills as a whole is therefore facing critical challenges that go beyond the mere decline in production. The loss of this sector of production also means a serious dispersion of artisanal knowledge and techniques, handed down over generations and rooted in specific territories. As mentioned above, landscape management practices closely linked to wool, such as the use of "sheep tracks" for grazing and the maintenance of green spaces, are also affected.

Without the care of the wool industry for the territorial balance, vast pastures and areas traditionally used for transhumance are increasingly abandoned, contributing to environmental degradation. The closure of workshops and wool mills, which were once the mainstay of these rural communities, has led to a crisis of employment which, among other things, has accelerated the phenomenon of depopulation. The disappearance of the micro-activities involved in wool processing not only deprives the territory of an economic resource, but also partly jeopardises the cultural and social fabric that once sustained it.

On the basis of this initial consideration, with regard to the inner areas, it is worth reiterating that in recent decades local development practices have often focused on the mere patrimonialisation of the historical and identity assets of territories. This traditionalist perspective has influenced local administrations, communities and planners, leading them towards initiatives such as ecomuseums, events linked to traditions and thematic routes.

Such interventions have often been limited only to tourist enhancement and musealisation, and thus ended up replicating stereotypical and homologising images, thus “*crystallising*” places into mere instantaneous aesthetic products, neglecting the potential for genuine community and productive regeneration (De Rossi, 2018). This approach, especially with regard to the reality of indigenous wool, has created a separation between the *formal dimension*, oriented towards immediate tourist fruition, and the structural dimension, fundamental for the long-term residential sustainability of the territory.

In this context, characterised by systemic difficulties and a lack of synergy between the various actors in the supply chain, there are attempts, albeit timid, to “*revive*” and valorise certain regional native wools. Today, some realities, located in the inner areas of the country, are then trying to reunite the *formal* and *structural dimensions*, inspired by regenerative models (Leclercq & Smit, 2023), trying to promote the recovery of craft skills and indigenous production networks.

Therefore, in an attempt to overcome the linear model of production and the paradox of patrimonialisation, real counter-stories are emerging, aimed at the regeneration of small, endogenous and independent supply chains, able to capture the entire value of wool, from material to cultural, recognising it as part of a complex system (Marino, 2022).

Through an initial mapping of case studies, united by the desire to adopt a systemic vision and to regenerate, from the bottom, a short and sustainable wool supply chain, the contribution aims to highlight the strengths, challenges and opportunities of these realities (Fig. 01). The case studies focus on small realities distributed along the Alpine arc and the Apennine hinterland, which, through innovation, revitalise autochthonous wool for the production of artefacts and related services. Today, respect for the environment means a commitment to mobilising local resources and promoting community re-identification, capable of undermining established hierarchies of value. It is a matter of designing new sustainable and prosperous metabolisms of social and productive relations, necessary to trace a renewed civilisation that reaffirms the synergy between inhabitants-producers and the quality of their *living worlds* (Manfra & Turrini, 2020).

The case studies were therefore selected through deliberate sampling, with the aim of highlighting innovation in three distinct but closely related areas. Firstly, process innovation, characterised by the introduction of new methods, technologies and practices that improve the efficiency, quality and sustainability of small-scale production. Second, product innovation, which involves the revival and rediscovery of indigenous Italian wools, adapting them to contemporary needs and extending their use beyond traditional clothing. Finally, service innovation, which aims to introduce new types of services aimed at improving the user experience and consolidating long-term loyalty relationships. In this context, innovation also generates a process of care and valorisation of the territory, promoting a closer link between production and the local environment (Fig. 02). The comparative analysis of these cases will provide important insights for rethinking the concept of prosperity, moving away from the economic dimension alone towards a more holistic vision that integrates social, environmental and ethical well-being (Moore et al., 2023).

PROSPERITY AND ECO-SOCIAL RESPONSIBILITY IN SMALL “PERIPHERAL” ITALIAN WOOL MILLS

The *Cooperativa Filo&Fibra* serves as a notable example of initiatives that combine tradition, innovation, and sustainability in a cooperative project based on the principles of the circular economy. Founded by a predominantly female community with the support of the *Comune di San Casciano dei Bagni*, the cooperative was able to realise its projects thanks to funding from the *Regione Toscana*, which facilitated the enhancement of a resource that is both precious and complex: Italian wool. In this context, local wool becomes both an underutilised material with untapped potential and, paradoxically, a waste product that is difficult to dispose of. This is particularly true for the wool from *Central Italy*, characterised by coarse fibres, low commercial value, and unsuitability for traditional textile processing. This challenge prompted *Filo&Fibra* to experiment with new uses and develop alternative products for revitalisation within the market. Among the most emblematic projects is the “*Cassetta di Cottura*”, a product that encapsulates the dialogue between tradition and innovation. Originally used by Italian soldiers

Wool as a resources of **prosperity and identity**

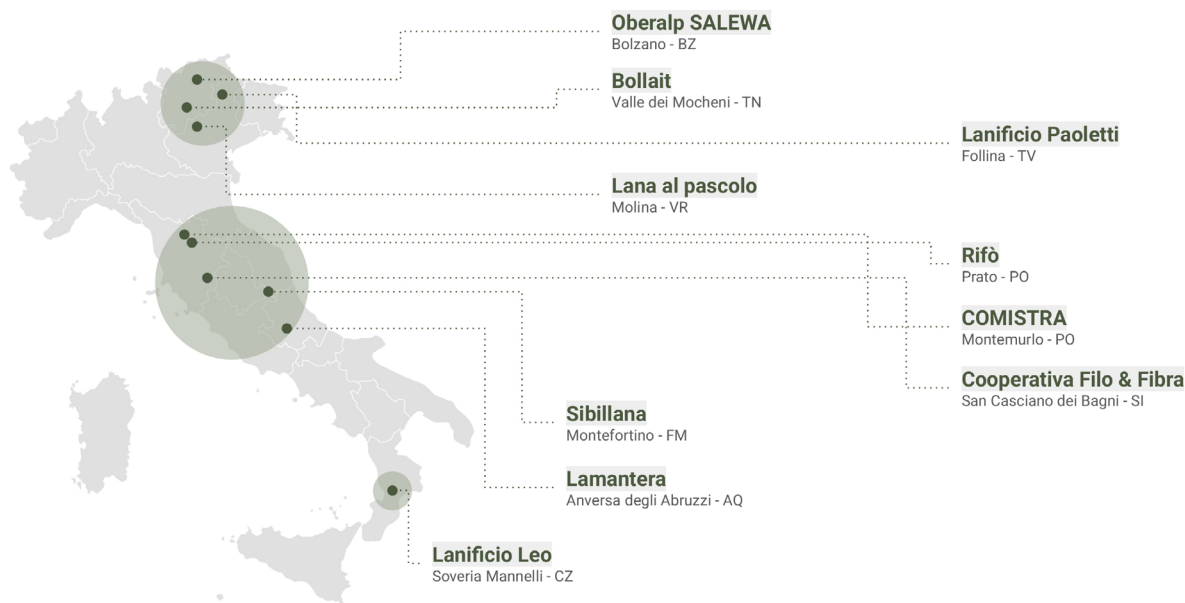


Fig. 01

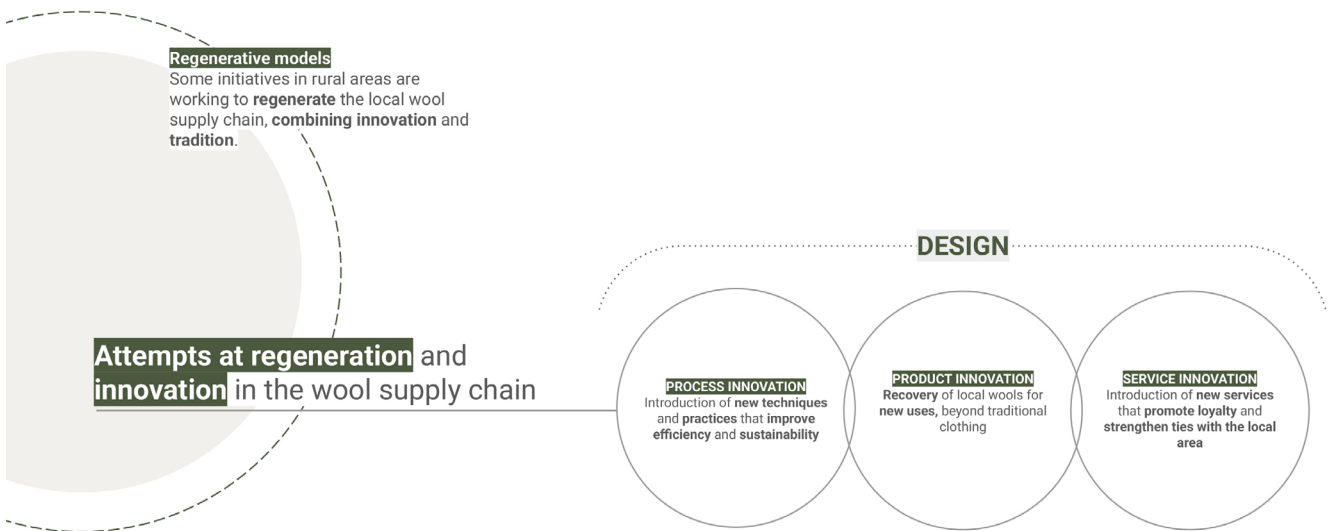


Fig. 02

in harsher times, it consisted of wooden boxes insulated with materials like straw or plant fibre, which were capable of maintaining a temperature of around seventy degrees to provide a hot meal even in cold climates (Cacace, 2022). Through the revival of this ancient low-energy cooking technique, today, the insulating properties of wool are harnessed to create a *slow-cooking tool*, which has also been awarded by the *Slow Food consortium*. The locally sourced wool, usually underused, is transformed in this initial example from waste into an everyday object, combining functionality and sustainability while also reviving an ancient practice tied to a specific region.

Consistently aligned with the principles of circular and distributed economy, and in addition to the focus on product innovation, *Filo&Fibra* also stimulates process innovation (Bompan & Brambilla, 2021), involving a network of small family-run businesses and other local cooperatives that collaborate in the collection and processing of wool. This model contributes to counteracting the depopulation of villages, while also creating job opportunities through a virtuous “*contamination*” of knowledge and skills. The cooperative’s approach is not only economic, but profoundly social and cultural, as it aims to preserve the historical memory of local traditions, recovering ancestral knowledge, and promoting an innovation that stems from the intertwining of people, territory and resources.

Similarly, the *Lamantera* project was born out of a disillusionment of founder *Benedetta Morucci* with the prevailing “*fast fashion*” industrial dynamics. It was in *Abruzzo* that she rediscovered wool as a resource for a renewed sense of community by setting up the *Lamantera* project. The already existing social and solidarity-based economies, short supply chains and deep and authentic human relationships, carried out by the *Cooperativa ASCA* in the *Sagittario valley* (AQ) since 1977, have welcomed *Lamantera* into a territorially sustainable community work model. While *ASCA* is concerned with both preserving the local heritage while avoiding a purely touristic purpose, and organically managing the production of cheese and meat, respecting the ecosystem and virtuous social relations, *Lamantera* is instead concerned with channelling wool waste, supplied by *ASCA* itself, activating artisanal networks dedicated to wool processing, an expression therefore of cultural resistance capable of encompassing almost

all production phases in the territory, except for washing, which is still necessarily carried out in the *Biella* textile district. The project’s ambition is to trigger, in the medium to long term, an indigenous and independent supply chain, from the collection of raw materials to spinning and natural dyeing, obtaining high quality yarns for a diversified range of products, such as handmade garments - *scarves, jumpers and hats* - and innovations that see wool applied to sectors such as padding and bio-building, certainly more consistent with the type of wool, which is medium to coarse (Coltr , 2024). Together with the “*Donne Rurali*” spillover, *Lamantera* participates in the co-design of events to spread knowledge of native wool and the traditional trades related to it, interweaving care of the land with the recovery of local practices for sustainable environmental management, such as maintaining flocks in undergrowth areas to preserve ancient transhumance routes, to safeguard areas from hydrogeological risks and to protect biodiversity. These, which can be counted as service innovations, introduced by *Lamantera*, represent a new economy for inland areas that ensures territorial prosperity capable of strengthening the social fabric and protecting environmental resources.

Sibillana, on the other hand, represents the excellence of the *Marche* region in the sector of *Sopravissana* wool, distinguishing itself for an authentically sustainable approach that enhances animal welfare and strengthens the link with the territory. The family-run company, located in *Montefortino* (FM), stands out in particular for the wool management of *Sopravissana* sheep, an ancient breed with “*Merinos derivation*”, born from the crossbreeding of *Marchigiana Vissana* sheep and French *Merinos Rambouillet* rams, distributed in the Papal farms during the 18th century (Guidetti et al., 2009). What makes *Sibillana* unique is its choice not to “*delocalise*” any phase of the production process, contrary to what, still necessarily, happens in other small realities of the sector, where the wool washing phase is often entrusted to external centres, such as those in *Biella*. Starting with the shearing of the fleece, always carried out with respect for the animal’s wellbeing, avoiding the trauma and suffering typical of intensive production (Pagliarino et al., 2016), *Sibillana* carries out the washing in *Montefortino*, carried out without the use of chemical additives in the company’s laboratory. In this phase, *Sibillana* uses a Marseille soap, chosen for its natural delicacy,

which allows the wool fibre to remain intact, eliminating impurities without altering its quality.

Sibillana's innovation, with regard to the process, also lies in the spinning and dyeing, which are carried out entirely by hand, using traditional methods that recall ancient knowledge, giving the final product an important symbolic and cultural value. As far as dyeing is concerned, *Sibillana* is distinguished by the use of guado and other natural dyeing plants, cultivated directly on site or gathered spontaneously from the surrounding area. These natural dyes, together with other aromatic and dyeing plants from the area, make it possible to obtain a wide range of colours without using chemicals, keeping the ecological footprint of the production process as low as possible. In this way, each stage of wool processing becomes an act of recovery and valorisation of local natural resources, transforming a traditional product into a symbolic element of sustainability, culture and territory. In addition to product quality, *Sibillana* is a model of circular economy, as the by-products of processing are reused for permaculture, demonstrating how each stage of the process is designed to minimise waste and respect the environment. The company also promotes local cultural events that tell the story of wool and the strength of an integrated production chain, showing how tradition, innovation and sustainability can be combined. With its vision, *Sibillana* re-educates the community in the valorisation of local resources, strengthening the link with the territory and proposing a responsible and environmentally friendly production model.

Increasing in scale, in terms of number of employees and quantity of raw material processed, *Lanificio Paoletti's* design choices, rooted in a centuries-old tradition, have also transformed wool into a resource of prosperity and identity, contributing to enhancing the territory and its traditions. Located in *Follina (TV)*, this wool mill with over two centuries of history represents one of the few realities that has been able to withstand the economic difficulties of the 20th century, preserving the precious know-how linked to the processing of wool from the *Alpago* sheep breed. This fibre, initially considered to be of poor quality and destined to be discarded, has been revalued and transformed into precious fabrics, giving life to unique products that tell the story of an entrepreneurship attentive to tradition and innovation. From the very beginning, the company has

maintained a strong link with the local community, supporting it economically and culturally. Significant was the contribution of *Antonio Paoletti*, who in 1865 participated in the foundation of the *Società di Mutuo Soccorso degli Operai* in *Follina*, offering economic and health assistance to workers. During the Second World War, the wool mill continued to support its employees by organising summer camps for their children and protecting workers from the risks of the front. An equally notable commitment was made to vocational training, passing on craft skills through collaborations with training institutes. In the 1980s and 1990s, the wool mill welcomed the first textile designer trained on the handloom, integrating refined technical knowledge that still today guarantees excellence in the production of carded wool yarns and fabrics. The handicraft and production know-how represents, for the company and the territory, a cultural heritage and a symbol of resilience, making wool a raw material and, at the same time, an element of identity. *Lanificio Paoletti* is therefore not only a commercial actor, but also a socially responsible one, capable of interweaving tradition and innovation in a perspective of cultural and territorial regeneration. Its history shows how a sustainable wool industry can promote valuable relationships, revitalising local resources and reaffirming wool as a symbol of shared prosperity, attentive to the territory (Franzo, 2022).

Finally, it is in the south of the Italian peninsula, in equally peripheral contexts, that *Lanificio Leo* represents a historic manufacturing enterprise that has made wool a valuable resource since its foundation in 1873. Located in the Calabrian hinterland, it combines tradition and innovation, ratifying the concept of a “*company museum*” (Grechi et al., 2023). Its cultural richness is expressed through vintage machines that are still in operation, symbols of craftsmanship and the historical processing of wool, from yarn to finished fabric. Today, *Lanificio Leo* maintains two production lines: one dedicated to traditional fabrics and the other, more innovative, which explores contemporary design, both aimed at continuing the tale of the history of the territory and the evolution of local craftsmanship, balanced between memory and modernity (Procopio, 2023). The *Lanificio* has also initiated numerous cultural projects, collaborating with renowned national and international architects and designers, transforming it into a creative centre, animated by events

and initiatives that celebrate wool as a cultural and productive resource. In addition to the valorisation of wool and its social, cultural, artistic and economic role, the company invests in the training of new employees, emphasising the importance of human skills for its continuity. The longevity and success of *Lanificio Leo* shows how prosperity can come from both material resources and the commitment and passion of the people working there, giving wool a cultural and lasting value.

The wool companies considered in this discussion, thus attempt to strike a balance between tradition and innovation - in terms of product, process and service - facing contemporary challenges through the valorisation of local resources and cultural heritage, without however falling into mere patrimonialisation. Located in the country's inland areas, they are now attempting to create short supply chains that transform indigenous wool into an opportunity that is not only economic, but also cultural, and that contributes to territorial rebirth and the broader care of the territory. Product, process and service innovation, developed synergistically by these realities, is also designed to respond to the constantly growing demand for authenticity and traceability. What the

case studies examined have in common is thus the ability to transform a resource often considered marginal, such as wool, into a vector of prosperity for inland areas through economic models oriented towards cooperativism and mutual aid, which not only generate economic value, but also strengthen local social and cultural ties over time. The recovery of such resources, and of the traditional knowledge inherent in them, is thus interwoven into production models oriented towards environmental and social preferability, with a strong commitment to animal welfare and the reduction of environmental impact.

CONCLUSION

In conclusion, the arguments outlined in the contribution reveal how design and innovation, oriented by a systemic vision and inspired by sustainability values, can transform wool from “*special waste*” to a thriving and sustainable resource, resistant to contemporary market pressures and able to respond to regulatory challenges. This approach not only promotes the revitalisation of the Italian wool industry but is also a tool capable of triggering a profound cultural

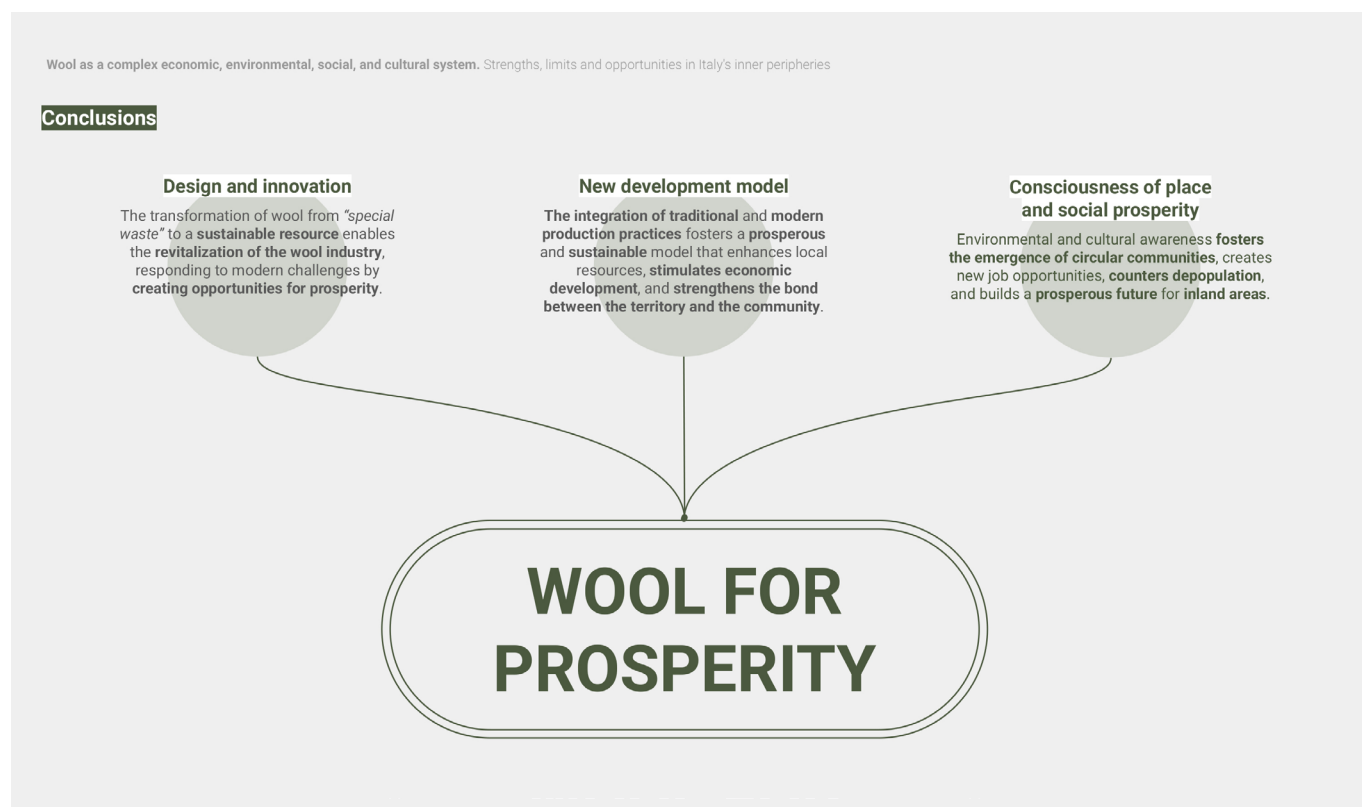


Fig. 03

renewal, strengthening the roots and history of the community and rediscovering the landscape, an essential element of the shared heritage.

The enhancement of the territory and its endogenous resources through new sustainable production practices and a design that knows how to integrate traditional knowledge with contemporary solutions becomes the foundation of a prosperous and lasting development model (Fig. 03). The creation of new synergies between integrated and complex supply chains not only redesigns the economic function of wool, but redefines the territory as a “*common good*”, configuring it as a central node of productive and social relations. Thanks also to design, capable of giving value to indigenous wool, the territory can thus be reactivated and cared for, contributing not only to the protection of the material and immaterial goods that reside there, but also to the recovery and valorisation of endemic practices in harmony with nature, often forgotten or marginalised.

In this framework, the central element becomes “*place consciousness*”, understood as awareness of potential and responsibility towards the environmental and cultural context. This consciousness contributes to countering depopulation, offering new work and settlement prospects that stimulate reverse migration to places that, thanks to the renewed productive and social fabric, become attractive to young people and professionals. This revitalisation also favours the emergence of “*ecological communities*” based on forms of collective participation, in which social capital is intertwined with circular productive practices and proximity relations that enrich conviviality and a sense of belonging.

ACKNOWLEDGMENTS

The paper is the result of a joint reflection by the authors. However, the paragraph “Introduction”, is written by M. Manfra, the paragraph “Prosperity and eco-social responsibility in small “peripheral” Italian wool mills” by V. Giannetti. The final paragraph “Conclusion” of this paper is the result of a collaborative reflection by the authors, based on the previous sections. The research and experience of Professor Gianni Montagna played an important role in introducing the topic and guiding the exploration of wool prosperity within the Italian context.

CAPTIONS

[Fig. 01] Mapping of the realities identified as virtuous case studies for a “wool for prosperity”; Credits: Giannetti Vittorio, Manfra Marco

[Fig. 02] Main attempts at regeneration and innovation in the wool supply chain from a design perspective; Credits:

Giannetti Vittorio, Manfra Marco

[Fig. 03] Schematisation “wool for prosperity”; Credits:

Giannetti Vittorio, Manfra Marco

REFERENCES

- Bevilacqua, P. (2018). L'Italia dell'osso. Uno sguardo di lungo periodo. In A. De Rossi (Ed.), *Riabitare l'Italia: Le aree interne tra abbandoni e riconquiste* (pp. 111–122). Donzelli
- Bompan, E., & Brambilla, I. N. (2021). *Che cosa è l'economia circolare*. Edizioni Ambiente.
- Braccani, D. (2018, March). “MERLINO”, L'ULTIMO LANIFICIO D'ABRUZZO PADRE DELLA TIPICA COPERTA CHE RISCHIA L'ESTINZIONE. *Virtù Quotidiane - Il Quotidiano Enogastronomico*. Retrieved from <https://www.virtuquotidiane.it/cronaca/merlino-lultimo-lanificio-dabruzzo-padre-della-tipica-coperta-che-rischia-lestinzione.html>
- Cacace, C. (2022, October). Cassetta di cottura, la riscoperta di una tradizione. *La Valdichiana*. Retrieved from <https://www.lavaldichiana.it/cassetta-di-cottura-la-riscoperta-di-una-tradizione/>
- Coltré, A. (2024, January). Lamantera, la storia poderosa della lana Made in Appennino. *Economia Circolare*. Retrieved from <https://economiecircolare.com/lamantera-lana-made-in-appennino-poderosa/>
- De Rossi, A. (Ed.). (2018). *Riabitare l'Italia: Le aree interne tra abbandoni e riconquiste*. Donzelli.
- European Parliament and Council. (2002). Regolamento (CE) n. 1774/2002 del Parlamento europeo e del Consiglio, del 3 ottobre 2002, recante norme sanitarie relative ai sottoprodotti di origine animale non destinati al consumo umano. *Official Journal of the European Union*. Retrieved from <https://eur-lex.europa.eu/legal-content/IT/TXT/PDF/?uri=CELEX:32002R1774>
- Franzo, P. (2022). Showing fashion production: Le nuove identità dei luoghi della manifattura in Italia. *AND Rivista Di Architetture, Città E Architetti*, 42(2). Retrieved from <https://and-architettura.it/index.php/and/article/view/589>
- Gaddi, R., & Mastrolonardo, L. (2024). Micro-reti locali per la transizione verde della filiera della lana. *Local micro-networks for green transition of the wool supply chain*. *AGATHÓN*, 15, 344–353.
- Grechi, D., Gjoka, A., Pavione, E., & Pezzetti, R. R. (2023). Musei d'impresa: sfide, opportunità e strategie per la preservazione e valorizzazione del patrimonio industriale e imprenditoriale. *Economia Aziendale Online*, 14(4), 911–931.
- Guidetti, R., Dioguardi, L., Beghi, R., Belli, M. F., & Bonalume, V. (2009). Il ruolo dell'ingegneria nella valorizzazione dei prodotti tipici montani. In *IX Convegno Nazionale AIIA 2009* “Ricerca e innovazione nell'ingegneria dei biosistemi agro-territoriali”. *Doppiavoce*. Retrieved from <https://air.unimi.it/bitstream/2434/67154/1/9-7.pdf>
- Magnaghi, A. (2020). *Il principio territoriale*. Bollati Boringhieri.
- Manfra, M., & Turrini, D. (2020). Towards a new resilience culture: Relational design and workshops of social innovation for fragile areas in central southern Italy. In F. Tucci & C. Sposito (Eds.), *Resilience between mitigation and adaptation* (pp. 334–349). Palermo University Press.
- Marino, G. (2022, October). Let's re-design the fashion system. *Renewablematter*. Retrieved from <https://www.renewablematter.eu/en/lets-re-design-the-fashion-system>

Moore, H. L., Davies, M., Mintchev, N., & Woodcraft, S. (2023). *Prosperity in the Twenty-First Century: Concepts, models and metrics*. UCL Press.

Pagani, V. (2022, April). Lana italiana: una filiera da riscoprire in ottica circolare. *Renewablematter*. Retrieved from <https://www.renewablematter.eu/lana-italiana-una-filiera-da-riscoprire-in-ottica-circolare>

Pagliarino, E., Cariola, M., & Moiso, V. (2016). *Economia del tessile sostenibile: la lana italiana*. Franco Angeli.

Procopio, S. (2023). Calabria industriale. *Lune Elettriche*, 5, 28–29.

Smit, M., & Leclercq, E. (2023). *Circular communities: The Circular Value Flower as a Design Method for Collectively Closing Resource Flows*. TU Delft OPEN.