

Integrated Supply Chain Models in Italy. Cases Study of Circular Economy in the Italian Textile and Fashion Field

Filippo Maria Disperati¹ and Maria Antonia Salomè²

¹Università degli Studi della Campania “Luigi Vanvitelli”, Dipartimento di Architettura e Disegno Industriale, Aversa, Italy

²Università degli Studi di Firenze, DIDA Dipartimento di Architettura, Firenze, Italy

ABSTRACT

The contribution aims to investigate integrated supply chain models in Italy. Through the analysis of some case studies, it aims to provide an initial mapping of territories where the involvement of communities in the production chains of local companies has generated sustainable circular supply chain models. In addition to the need to take action on carbon emissions (Coccia, 2022), there is a clear need to focus attention on a local dimension of textile and fashion production, capable of conceiving its own processes as part of a totality in which all the living beings that belong to a specific territorial ecosystem operate; all understood as a set of relations between an environmental system and a human society, which, organised also with evolved urban structures, finds in that environmental system most of the fundamental resources for life, developing culturally and producing a system of relations, symbols, knowledge. The concept of territorial ecosystem becomes fundamental for practising the concept of human settlements' sustainability (Saragosa, 2001). By shifting the focus to the creation of a virtuous system capable of including and revitalising local endeavours (Vaccari & Vanni, 2021) by building a new system (Fletcher, 2013), new value can be generated, which can overcome not only the climate crisis but also the cultural crisis in which contemporary society finds itself. The research aims to build the foundations for starting a mapping exercise of those Italian territories, with a focus on central regions such as Tuscany and Marche, where a strategic scenario emerges made up of entrepreneurial realities in which the chain of processes and operations is collectively distributed among the various players. Starting with the raw material and ending with the finished product, the territorial manufacturing assets are distributed among the various actors who manage the various stages of the chain independently. Among these, a virtuous example is Re.Verso™, a collaborative circular economy programme in Tuscany, focused on the reuse, recycling and reduction of textile waste through the construction of a participative community. The programme aims to build an integrated, transparent, traceable and certified supply chain divided into three phases: sourcing and selection of post-consumer materials, mechanical transformation of these raw materials, and development of a new product through the production of yarn, fabric and finishing accessories. The research aims to investigate a model of innovative practices, which are expressed in participative design dynamics, relations with the territory, new narratives and synergies between people and communities (Franzo, 2020). This means investigating these realities, located in a varied geographical context, which have chosen to work together, to make and create a new system, aimed at the survival and recovery of their economy, to bring the places back to life by preserving skills and knowledge. It is a pervasive revolution that is changing the whole of society, not just the industry, so much so that people started talking first about enterprise 4.0 and then about supply chain 4.0 up to ecosystem 4.0 (Iadevaia, Resce, 2019).

Keywords: Territorial ecosystem, Collaborative circular economy, Territorial heritage integrated, Supply chain models, Manufacturing, New materials

INTRODUCTION

The paper aims to illustrate integrated supply chain models in Italian territory, in particular to shed light on this issue through a mapping principle of those virtuous cases located in central and northern Italy. In the structure of the paper we chose to carry out a qualitative analysis, selecting three case studies, which differ in the approach they use in the management of the supply chain: the processing of pre- and post-consumer waste (Re.Verso™), the creation of a network of companies for the sustainable management of the production chain (Filo d'Oro), and the activation of a credit to support SMEs in Italian manufacturing (Progetto C.a.s.h.). Specifically, the article aims to contribute in a proactive manner to the academic knowledge of companies that in their 'provincial' reality contribute to nurturing a new sustainable dimension of making Made in Italy. In order to understand territories, production districts and these new realities, we must start by reading the city as an ecosystem because it allows us to understand the concept of environmental sustainability applied to human settlements (Saragosa, 2001). Working in this direction, we can enter the dimension of the territorial ecosystem, that is, that set of relations between an environmental system and a human society, which, organised also with evolved urban structures, finds in that environmental system most of the fundamental resources for life, developing culturally and producing a system of relations, symbols and knowledge (Saragosa, 2001). In this dimension of sustainability, it also becomes important to support those aspects that are not strictly linked to production, but which refer to the relationship between individuals and the territory, between the different generations of individuals and between individuals, businesses and tradition, the guardian of that knowledge that constitutes the value at the basis of the Made in Italy product. Aspects, therefore, that represent a strong impact on health in relation to the degree of humanity's connection with nature and lifestyle choices (Seymour, 2016). By involving the communities, the territory and their cultural potential, it is possible to generate sustainable circular supply chain models. Doing so is not only a perfect chance to reduce carbon emissions¹, but it also becomes necessary to bring attention to this local dimension of textile and fashion production as the result of a totality in which living beings move, live, produce.

COMMUNITY AND TERRITORIAL ECOSYSTEM

The notion of the territorial ecosystem (Saragosa, 2001) proves fundamental to practising the concept of sustainability of human settlements. In this sense, when speaking of the territorial ecosystem, it becomes important to understand the dimension of the urban ecosystem, composed of the city and its environment, and that the territorial ecosystem contains the entire city ecosystem and its input and output environments, i.e. that space (defined, delimited, concluded) with which the urban ecosystem can perform all its vital functions. This space is not only composed of elements of the

¹Coccia, E. (November 2, 2022). 18.11 - The Human-Nature Relationship, Vogue.com <https://www.vogue.com/article/the-human-nature-relationship-talk-photovogue-festival-2022>

physical-biological environment, but also includes the built and man-made environment. Dealing with sustainability issues using the concept of territorial ecosystem implies the need to understand and implement a new form of relationship between the city and the territorial context (Saragosa, 2001).

From the point of view of the definition of territorial ecosystem, every individual's behaviour influences (positively or negatively depending on the action performed) the relationships between man and the environment that are pre-established, generating from time to time consequences that may or may not compromise these relationships. It is in this dimension that the concept of sustainability must be considered, thus applying an overall vision, a systemic look at the territorial context and the relationships built. It is through this vision that one can understand what action to initiate (or interrupt) so that the ecosystem does not suffer negative alterations and the relationships are not compromised. As Barbera and Membretti (2020) explain, inhabiting a territory is much more than having residence (or domicile) in that place, but it is (also) the way in which the rights linked to the status of "resident" become ways of "being or doing" that construct people's well-being as citizens. Saragosa (2001), quoting Mumford, reminds us that the centre of human communities is the region and that a region made up of humans constitutes a complex of geographical, economic and cultural elements. Not existing as a finished product in nature, not being merely a figment of human will and imagination, the region, like the city, is a collective work of art" and as such, it becomes necessary to "learn to live in place" (Berg, Dasmann, 2014) even (and especially) in those areas that have been destroyed and wounded by the exploitation of human activity in the past. The pandemic crisis, together with the first steps taken in the ecological and digital transition, have led to a redefinition of the pre-existing dynamics between design and manufacturing (Conti, Franzo, 2020) and at the same time have paved the way for new possibilities for traditional production districts to be reconfigured precisely by virtue of this new way of re-inhabitation (Berg, Dasmann, 2014) of territories.

The sustainability of these new territorial ecosystems is only possible by developing a virtuous system that includes and brings back to life small local realities through the construction of an ecosystem based on circularity values capable of developing long-term relations and sustainable growth - as David Clementoni states - it's work that must be done on a daily basis but that becomes particularly complex in an articulated and complex territorial structure where it is also difficult to find openness towards new and possible opportunities (Conti, Franzo, 2020). Through the new possibilities provided by technological advancement, individual manufacturing units can be valorised and included in new production networks capable of ensuring a more sustainable future for the current fashion and Made in Italy system by linking industrial innovation, creative conception, tradition and craftsmanship. In order to be able to transform these aspirations into concrete facts, the formation of a new entrepreneurial class aware of the value of the territory in which it chooses to operate (Conti, Franzo, 2020) becomes a priority so that new value can be generated in a sustainable and gentle manner. Because, as we should remember, after all, humans can be more precise than machines,

through their knowhow, and can learn to do so because perfection is a process that can be achieved through practice, not a state.²

This study, therefore, intends to build the basis for starting a mapping of those Italian territories, with a focus on those entrepreneurial realities that build synergies by transforming the production chain into a value chain, in which processes and operations are collectively distributed among the various actors, who independently manage the various stages of the chain.

CASE STUDIES

The enterprise-territory relationship unfolds in a complex set of structures from which the vital dynamics of individuals, families and organisations develop in the multiple contexts of the economy, environment and society. The research investigated this relationship by identifying a number of realities, selected according to qualitative criteria, that deal with sustainability in territories and communities, creating a virtuous system that includes and supports small local realities, protected and strengthened by the construction of a dynamic system oriented towards participation. The productive realities covered by the research are: the Re.Verso™ collaborative circular economy programme, the Filo d'Oro supply chain, and C.a.s.h., OTB's supply chain financial support programme.

Re-Verso™

Re.Verso™, is a brand that identifies a supply chain composed of several actors, including the companies Green Line, Nuova Fratelli Boretti, Filpucci, Mapel and Antica Valseschie. It represents, on Italian territory, an interesting reality when talking about integrated production chains, through a circular economy production system for high quality wool and cashmere, pre-consumer and take-back. Re.Verso™ offers several companies the opportunity to donate their textile waste and become part of a virtuous circuit. The brand's integrated supply chain processes items that are no longer worn, or 'post-consumer waste'³; the company can guarantee maximum reuse of materials, offering brands the opportunity to create new collections with regenerated fabrics, which are used by many brands, including luxury ones⁴. The Re.Verso™ integrated chain is divided into three phases: the first phase consists of the procurement, selection and sanitisation of post-consumer fabric (fully transparent and certified by the Global Recycle Standard, or GRS⁵). The second phase, managed by the company Nuova Fratelli Boretti, hand-selects and mechanically processes the post-consumer material in order to

²Scuola Holden. (2022, December 1). Chiara Valerio racconta Patrizia Cavalli [Parte 1] - IN GENERAL [Video]. Youtube. <https://youtu.be/h0Nzmb7MfVw?t=439>

³<https://www.re-verso.com/processo/> [Last access: May 4, 2023]

⁴Among the companies using the services of Re.Verso™ are brands such as Stella McCartney, Eileen Fisher, Patagonia, Ferragamo, Gucci and All Saints.

⁵The standard recognises the importance of recycling for the growth of a sustainable production and consumption model, with the aim of encouraging the reduction of resource consumption (virgin raw materials, water and energy) and increasing the quality of recycled products. <https://icea.bio/certificazioni/non-food/prodotti-tessili-biologici-e-sostenibili/global-recycle-standard/>

produce a useful material for the basis of new products. In the third and final phase, the useful material is transferred to other companies that transform it into a product: Filpucci is responsible for yarn development, A. Stelloni of Mapel is responsible for fabric development, and finally Antica Valserschio is responsible for the development of fashion accessories. “Ours is a local supply chain composed of five strong and historical partner companies in the Italian textile district”, says Marco Signorini, marketing manager of Re.Verso™. “Each partner has its own vertical capabilities, from the collection of textile waste to the production of yarns and fabrics; ultimately, we do not have suppliers, but an integrated system.”⁶

Re-Verso™ also introduced *Takeback*, a take-back programme that allows brands to rework materials from their previous collections to create new textile fibres season after season. The last two major customers to join the programme are the Danish company Pure Cashmere and the German company Unger Fashion. It is important to note that, unlike pre-consumer materials, garments taken back from the end consumer provide the collecting company with pre-existing knowledge of the quality of the garments. The Re.Verso™ take-back programme is an innovative and cost-effective collection that engages consumers, stimulates traffic and in-store sales, and encourages consumers to use garments in a more sustainable way, showing how they can make a difference in their communities. US brand Ralph Lauren has just unveiled a new cashmere recycling programme in partnership with Re.Verso™ that allows consumers⁷ of the brand to request a printable postage-paid label on Ralph Lauren’s website to send unwanted 100% cashmere garments of any brand for recycling. Ralph Lauren will have no exclusive or proprietary rights to any of the reclaimed materials produced from cashmere from the programme.⁸ Re.Verso™ has been recycling ‘pre-consumer’ cashmere - i.e. waste material collected from clothing factories - for almost a decade, but this programme will be the first to come directly from a brand’s consumers.

Clerici Tessuto: Filo d’Oro Network

Since 2013, the company Clerici Tessuto has been a co-founder and member of the Filo d’Oro supply chain, a network of companies and a fashion micro-factory within the Como textile district that has since expanded to include companies in the Prato and Treviso areas. Belonging to this network allows the company to benefit from the skills, reliability and flexibility of the other companies involved in the project, as they specialise in all phases of textile production, from processing to the finished product: warping, weaving, finishing, dyeing and printing. One of the first initiatives of Filo d’Oro was the

⁶WWD editorial team, (2022), *Fashion’s Many Lives, Re.Verso’s innovative Take Back Program transforms Made in Italy culture and tradition into beautiful, zero waste materials*, WWD Women’s wear daily, <https://wwd.com/feature/reverso-sustainability-takeback-1234857401/>

⁷Programme reserved for customers from the United States, Great Britain and the European Union.

⁸Elizabeth Paton, (January 24th, 2023), *Who Will Take Your Old Cashmere. Ralph Lauren is underwriting a new recycling program as it ramps up its sustainability efforts. Will consumers use it?* The New York Times, <https://www.nytimes.com/2023/01/24/fashion/ralph-lauren-cashmere-recycling-program.html>

creation of a chemical laboratory that carries out research on dyeing, as well as investigation and development aimed at product innovation. Filo d'Oro is a business network that enables the creation of a true micro-factory of silk products, capable of responding to all customer needs thanks to an integrated production chain certified by the individual skills of the links that make it up.⁹ Each of the companies belonging to the network retains its own history and identity, but at the same time the collaboration between the different realities - scattered between Como, Prato, Biella and Treviso - allows the entire production and distribution system to be covered. Also linking the entrepreneurs of Il Filo d'Oro is the focus on ecology, sustainability and traceability. Over the years, the companies present in the consortium have strongly believed in the value of transparency, and have lent themselves to a study on energy consumption, industrial waste, and research into new products, such as fluoride- and formaldehyde-free water repellent treatments resistant to dry cleaning; this is thanks to the consortium research laboratory created and supported by the business network.¹⁰

OTB: C.a.s.h. Project

The C.a.s.h project (standing for Credit facility - Suppliers' Help) is the financial support programme for the production chain launched in July 2013 by Staff international, a company of the Veneto-based OTB (Only The Brave) group founded by the entrepreneur Renzo Rosso, which allows its best suppliers' early payment of supplies and access to credit on favourable terms.

OTB Group CEO Ubaldo Minelli said in an interview with mffashion.com in February 2020: "The programme was born in 2013, at a difficult time for credit. In these six years, the volume of payments under the C.a.s.h. programme has exceeded EUR 210 million, of which 50 million in 2019 alone. This is a significant figure that confirms how it has become a fundamental aid to the economic and financial sustainability of many small and medium-sized companies in the sector, and more generally of 'Made in Italy'".¹¹ The programme is accessible to all players in the Italian production chain and also to selected foreign suppliers of the group (suppliers of raw materials of fabrics and accessories, suppliers of commercialised products, façon laboratories, dye-shops, laundries, ironing factories), classified as virtuous on the basis of a rating defined by OTB. The rating is based on three objective and transparent parameters, updated on a six-monthly basis: performance & quality, (compliance with ordered quantities, delivery times and conformity to quality standards); partnership (reliability of documentation and

⁹They include the weaving mills A. M. Tadorelli and Clerici Tessuto & C., the Saraink. printing company, the Ongetta spinning mill, the G.T. 2000 warping mill, the Ambrogio Pessina, Comofil, Filati Portichetto di Como, Iride Tessuti, Neon 1872 srl dye works, the Iltep dye works, the T.o.t. commercial company, which deals with the marketing of stock service yarns and finally the Tessilbiella company from Biella, which specialises in the production and marketing of fabrics.

¹⁰Luca Meneghel, (October 15, 2019), Resilience of the supply chain: the power of team working, Tess Como Style. https://www.ilfilodoro.co.it/gallery/36/TESS_2020.pdf

¹¹Tommaso Palazzi, (February 4, 2020), *Ubaldo Minelli, ceo OTB: "Con il progetto C.a.s.h. salviamo il Made in Italy"*, mffashion.com, <https://www.mffashion.com/news/ubaldo-minelli-ceo-otb-con-il-progetto-c-a-s-h-salviamo-il-made-in-italy-202001311549211273>

information management); compliance & sustainability (environmental and social certifications and implementation of specific sustainability projects). The topic of circularity - on which OTB is also working together with other Italian brands - is one of the group's priorities for action, together with traceability. Sara Mariani, chief sustainability officer of OTB said: "The idea is to create a platform for traceability of the supply chain beyond tier 1.96 per cent of the group's environmental impact is due to raw materials, including transport: that is why we want to favour local materials".¹²

CONCLUSION

The examples analysed in this research represent models of innovative practices, which are expressed in dynamics of participatory production, but also of relations with the territory, offering the possibility of establishing new narratives and synergies between people and communities (Franzo, 2020). In a geographically varied context such as the Italian one, these enterprises have chosen to work together, to make and create a new system, aimed at the survival and revitalisation of their economy, they have chosen to revive places by preserving skills and knowledge, through the development of virtuous chains linked to product recycling, the systematisation of the supply chain, but also through forms of credit to help small and medium-sized enterprises.

As pointed out by Franzo (2020), it becomes important to analyse the signs of transition towards new production practices that take place within the national context, as they allow Made in Italy to take shape as an innovative concept, ready for dialogue with a global contemporaneity. Shifting the focus on the creation of a virtuous system capable of including and reviving local realities (Vaccari, Vanni, 2021), working with the intention of building a new system (Fletcher, 2013), in which the business-territory relationship can generate new value and promote the exchange of ideas, methods and processes aimed at the creation of sustainable textile and fashion products through new processes that favour the improvement of human wellbeing and are oriented towards the protection and respect of ecosystems by integrating human, artificial and natural.

ACKNOWLEDGMENT

This work is part of a research for a project funded under the National Recovery and Resilience Plan (NRRP), Mission 4 Component 2 Investment 1.3 - Call for tender No. 341 of 15/03/2022 of Italian Ministry of University and Research funded by the European Union – NextGenerationEU, Award Number: PE00000004, Concession Decree No. 1551 of 11/10/2022 adopted by the Italian Ministry of University and Research, CUP B83C22004890007, MICS (Made in Italy - Circular and Sustainable). Spoke 2 Eco-Design strategies: from materials to Product Service Systems – PSS.

¹²Marta Casdei, (September 28, 2022), *OTB presenta il bilancio di sostenibilità e annuncia acquisizioni nella filiera*, Il Sole 24 Ore, <https://www.ilsole24ore.com/art/otb-presenta-bilancio-sostenibilita-e-annuncia-acquisizioni-filiera-AEjL813B>

REFERENCES

- Barbera, F., Membretti, A., (2020) Alla ricerca della distanza perduta. Rigenerare luoghi, persone e immaginari del riabitare alpino, Archalp, Rivista internazionale di architettura e paesaggio alpino / Revue internationale d'architecture et de paysage alpin / Internationales Alpine Architektur und landschaft Zeitschrift / Revija za alpsko arhitekturo in pokrajino. No. 4, pp. 27–33, <https://doi.org/10.30682/aa2004c>
- Berg, P., Dasmann, R. (2014). “Reinhabiting California” in: *The Biosphere and the Bioregion*, Routledge (Ed.). pp. 65–70.
- Conti, G. M., Franzo, P. (2020). “Distretti produttivi virtuali. La transizione del Made in Italy nella moda” in: *Remanufacturing Italy. L'Italia nell'epoca della postproduzione*, Mimesis (Ed.). pp. 124–143.
- Fletcher, Kate (2013) “Design for Sustainability in Fashion and Textiles” in: *The Handbook of Fashion Studies*. Bloomsbury, Oxford, UK, pp. 557–574. ISBN 9780857851949.
- Franzo, P. (2020). Talking Hands: Ripensare il Made in Italy nella prospettiva del fashion futuring, MD JOURNAL, No. 9, pp. 186–199.
- INAPP, Iadevaia V., Resce M., (2019) “Ecosistemi territoriali 4.0: modelli e approcci per lo sviluppo del valore del lavoro e la circolazione delle competenze”, Inapp Symposium, Rome, IT. <https://oa.inapp.org/xmlui/handle/20.500.12916/497>
- Saragosa, C. (2001). “L'Ecosistema Territoriale e la sua base ambientale” in: *Rappresentare i luoghi: metodi e technique*, Alinea Florencia, pp. 55–138.
- Seymour, V. (2016). “The human–nature relationship and its impact on health: A critical review” in: *Frontiers in public health*, 260.
- Vaccari, A., Vanni, I. (2021). Fashion Futuring. Rethinking sustainable fashion design, proceedings of Cumulus Symposium, Rome, IT.