

# Orange Fiber's growth path in the sustainable fashion industry

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# Opening\*

Enrica – one of the founders of Orange Fiber – feels the need to evolve, end the company’s transition phase to push consolidation and growth; she confronts with her close friend Francesca, who also works at Orange Fiber, while walking along the Playa in Catania on a sunny October day.

Enrica, who oversees the company’s business development, manifests a veiled optimism, given the growing interest in Orange Fiber’s yarns and fabrics, but she is eager to confront with her friend and colleague about challenges ahead.

“Last year we closed with a turnover of around 80,000 €, this year I am confident that we will reach 150,000 €. We have new orders from Marinella, Candiani Denim, Alemas from Australia and, fingers crossed, we will start a collaboration with a meanswear Italian brand thanks to Tesuti di Sondrio: they are interested in our fabrics for trousers and in our yarn to make the jersey of the piquet polo shirts.”

“Happy to hear that, it seems that the momentum has arrived” says Francesca who wants to help Enrica to depict future scenarios and set a clear strategic direction for the company.

Enrica: “Yes, I agree, but there are several challenges ahead...”

Enrica’s concerns are first related to financial needs to sustain the company’s growth: “We are in a transitional phase: we are not a startup anymore, but we are not a scaleup either. We are somewhat stuck in the middle. Our future depends on whether we will be able to identify what we need to grow”. “After the 650K we raised in equity crowdfunding in 2019, now we need additional resources to fuel our scaling up...”

Francesca: “I don’t understand, investors always complain about the lack of investment opportunities and now that the market is starting to recognize what we are doing...”

Enrica: “The world of Italian Venture Capital is not focusing on innovative materials and our performances look like we are not ready yet for attracting that kind of investment. In our industry, being a company with 10 years of applied R&D is common, but it is not in other startup segments!”

Francesca: “Are there public resources or funding programs we can apply to?”

Enrica: “There are some resources available for startups, but we already passed that stage, and now that we are an innovative small medium-sized enterprise (SME) there seems to be less options available for us. That is, there are several initiatives to support larger companies, but for an

\* Some information and identities in this case have been disguised. The case is developed solely as the basis for class discussion. Cases are not intended to serve as endorsements, sources of primary data, or illustrations of effective or ineffective management.

innovative SME that has not yet managed to scale up we could not find a leverage of public finance support that matches our need. There might be initiatives at the European level we can aim at, but I am not aware of specific support available at the national level for our growth stage”.

“Furthermore, our experience with national funding programs is full of ups and downs, as you know. First, it’s difficult to match the company’s level of innovation, its financial solidity, with the right typology of grant available. Second, the startup has timelines and investment needs that are often incompatible with the pace of bureaucracy and documental needs, which might become a burden on the company execution timeframe and cash flow. Third, these funds are normally meant to be a reimbursement upon expenditures and not upfront payments – with the concessional part that is usually no more than 50-70% of the total investment required (net of VAT): therefore, one always needs to have own or private financial resources to start investing for the execution plan. In summary, if you want to apply for funding at the national level, first you need to have the right resources and information to apply (e.g. commercial offers for the machineries and a proper business plan), and then you need your own resources to match the amount funded in case your proposal gets approved. All this requires very careful planning ahead and during the execution stage. This, at least, is our experience with national grants; maybe the ones available at the European level are managed differently. In any case, participating requires a capital of credibility and maturity that startups rarely possess.”

Francesca: “Hence, if I understand correctly, to gain access to funds, we need to have a solid financial position. However, if we did, why should we look for funds in the first place? I find this completely nonsensical! Speaking about European programs, do you think we are ready and capable to develop a good proposal?”

Enrica: “I think that applying for a European grant on your own if you are a newly formed startup, is a titanic task. On the other hand, specialized consulting companies know the ins and outs of the system, they know how to write the proposal, and they can advise you.”

Francesca: “What do you think the alternatives are?”

Enrica: “I am convinced that, for our type of business, the way to scaleup is through open innovation, i. e. putting together two, three, five companies operating in adjacent sectors and deciding to invest resources to foster a common growth path. Our system is very different from the American system, where you fundraise to scale fast and do everything yourself because you must deliver and be the first in the market.”

“Our ecosystem is embedded in a tightly connected manufacturing network: therefore, some steps can be taken together. We can rely on local partners, for example subcontractors: with them, occasionally, collaborative relations can be established that go well beyond simple economic transactions. If these players – I’m talking in our case of spinning mills, weaving mills or even

brands – would take the one step forward and choose our material, we can grow together. There are successful examples that confirm the effectiveness of this model: Renewcell, a Swedish textile recycling innovator, and H&M Group have entered a multi-year partnership to replace virgin fibers with recycled fibers from textiles in fashion products. Becoming part of a large supply chain would be especially useful for us to define our scale-up path, both at the banking level and at the fundraising level. It would confer on our business the credibility it so desperately needs in this transition phase.”

Francesca: “I fully agree. The product is ready: we started with a very thin yarn, as we took the peculiar properties of silk as the reference for the type of attributes that our fabric should have. Recently, however, we have developed yarns and fabrics to accommodate all the different requests, and we are also further investing in the product to lower its price without compromising quality, by producing a thicker or less twisted yarn. We are heavily investing in product development to try to reduce the current price gap. This allows us to offer a range of fabrics that today comprise more than 70 variations, ranging from alternative to silk, to shirting and Denim, t-shirt Jersey, home, lace, etc. However, we are continuously facing skepticism from the finance and banking world.”

Enrica: “We started generating revenues again last year (2022 Ed.), after the first product we launched with Ferragamo in 2017, as in between we focused on improving the technology to scale. What we have done with the product is remarkable and the partnership with Lenzing allows us to cope with the production limit we previously had. We will close the current year with a likely turnover of 150,000€. This turnover, unfortunately, is not high enough to cover fixed costs, and it is not enough yet for banks and investors to think of us that we are scaling up. Technically speaking, in fact, we have been in business for 10 years, and for a company with our history our current turnover is not interesting.”

Francesca: “Ok, but what is our long-term goal? We should be ambitious if we want to disrupt the sector...”

Enrica: “Today our goal is to replace up to 10 percent of the import of silk from China, as there hasn't been any silk produced in Europe for over 50 years. 10 percent of the current imports is worth more than 20 million euros, not an impossible target. Furthermore, we offer a fully traceable product which is 100% made in Europe – and most of it in Italy, hence we can define our plan as being even conservative, in a way. However, as far as the market is concerned, the challenge in our industry lies in the price more than in the product itself. Our price is not competitive today; however, things are going to radically change in a remarkably interesting way. There is a whole new set of European-level regulations regarding the textile industry that will soon come into effect and will radically disrupt the sector. I am talking about at least 14 new regulatory packages on

textiles that will cover Intellectual Property Rights and extended producer responsibility and circular textiles. We are in a situation of overproduction, with textile waste being produced in huge quantities. The current state tax from the sale of a €2 t-shirt will never be enough to cover the community cost of its disposal. Consequently, prices will increase. Another regulatory package will concern wood that is being used for textiles, which will need to be certified. Increasing regulations will reduce quantities produced and increase the prices of many products, making life tougher for the fast-fashion industry and for a business model based on over production at low costs.”

“In any case, this is the near future. Now, we do business in a competitive environment where fabrics might cost down to €1 per meter to the end brands, while ours costs 20 times as much... Hence, our problem today is not quality and not even quantity, because at our current prices we can only sell up to the high-end market.”

“The sector, in addition, is very slow to react to innovations. We learned that the big customers (the most established brands) have an extremely challenging time changing suppliers because the existing commercial agreements are very rigid, and furthermore there is the widespread habit of relying on practices that have always worked well in the past. They are afraid to make risky changes, and they prefer to postpone buying from us to first make sure the quality we provide is at least comparable to the quality they get from current suppliers.”

Francesca: “Who do you fear most? Who are our competitors?”

Enrica: “It depends on the angle from which we look at the competitive landscape. For instance, in the field of traditional materials, we now assist to a blossoming of certifications, with the results that “certified cotton” means twenty different things and consequently twenty different prices. The same occurs for silk and wool. In addition to that, there is the fast-growing industry of innovative materials: as of today, there are more than 120 so called “next generation” materials, which are all of course advertised as sustainable alternatives for some dimensions related to sustainability.”

“In other words, the world of innovative materials is overcrowded and confusing. On the one hand, consumer brands want all available certifications to avoid accusations of green washing; on the other hand, they are confronted with over one hundred different companies offering several different references, among which the choice can be extremely difficult. The problem of choosing the right material and the right supplier for a brand is compounded by the fact that if a brand chooses to switch to a next generation material, it needs to communicate it to its customers for the choice to impact on its brand image, which means investing in dedicated campaigns, events, etc. Hence, the investment amounts to much more than just buying the materials. In the overcrowded sector of next generational materials, our main point of strength is that our material is all produced in Europe. Even our more direct competitors, those operating in the world of fruit-based materials like Pinatex, producing fabric from pineapple, or Bananatex, producing yarn from banana waste, process the raw material in the Philippines and then market it in Europe. On

the contrary, our supply chain is short, in the sense that we make everything in Italy except the fiber, which is produced in Austria. In addition, our entire supply chain is transparent. There is no dark secret behind Orange Fiber and certainly that is a distinguishing feature that carries with it several values.”

Francesca: “Are all our current customers in the high-end market?”

“Yes, but because our supply chain is entirely located in Italy, and those who produce in Italy do not belong to the fast fashion industry. However, the fast fashion industry has made important investments in companies that do materials innovation. For example, Zara just announced a 70 million offtake agreement with Cycora, which is a company that has a technology to recycle polyester. Being the industry that is the most under scrutiny, fast fashion is also the most interested in investing in sustainable materials.”

Francesca: “What is your perception on the consumer side?”

Enrica: “The customer is very confused at this point. I mean, consumers are increasingly involved in environmental issues and want to try to have influence through their consumption choices. However, there is too much information out there and too many different options to choose from. In the end, evaluating what product is best is an almost impossible task, because the issue is extremely complex and technical. There is also another issue: brands fear talking too much about materials because the moment they claim that one of their materials is sustainable, the implicit inference that customers will make is that all other materials are not. The closer you bring the consumer to becoming knowledgeable about the materials contained in your final product, as opposed to the intangible value of your brand, the more the consumer will start asking questions, and she might not be aware of the other costs related to design, create, produce, and market a product. Anyway, consumers nowadays want to make themselves useful for the environment, although at times this desire conflicts with more selfish desires (“polyester is stinky, polyester pollutes the sea, however I don’t need to iron it”) In this respect, European regulations will be very useful because they will render the impact of consumers’ choices much more transparent and understandable than it is today. Finally, there is one, extraordinarily compelling argument for which nobody has an easy solution: as long as we keep pushing consumers to buy and consume more and more, there is an underlying paradox, even if the products purchased are more sustainable.”

Francesca: “I would like to add that on top of that we are also currently facing organizational issues.”

Enrica: “Beyond our financial troubles, we also lack professional managerial skills. To properly manage the scaling up phase, we would need for example to hire a CEO, but even for that we need resources that we currently don’t have. That of human resources is a relevant bottleneck: at the start, everything seems easy: there’s enthusiasm, energy, strong emotional attachment to the

mission, and willingness to make sacrifices that appear normal because, simply, you do not think of anything else. The team at the beginning is very cohesive and there is no division between private and professional life: however, as you start to attract resources from the outside you realize that this type of organizational structure does not work anymore. For me, personally, one of the most difficult things is to find the right balance between giving a clear direction, assigning tasks, being manager and at the same time maintaining team cohesion. The dual role of sanctioning or otherwise bringing things back to order kind of clashes with the friendly and informal mood of the team. On the contrary, someone external coming from some HR department would know how to deal with these issues. To conclude, we are in Sicily, a region that lacks specific technical skills because there is no textile district.

“In other words, we lack a large ecosystem of private companies that we can draw from, hence the personnel we are able to find is personnel who come from very small work environments, whereas to grow we would need experienced people and managers who are used to scaling processes and structures because they have already experienced it in larger companies.”

The two friends, finally tired of the long conversation, continued their stroll in silence, while listening to the sound of the sea and thinking about how far they went from the beginning of the adventure, but also fearing the long journey ahead.

# Orange Fiber

Orange Fiber is a startup born in 2014 from the idea of two Sicilian girls, Enrica Arena and Adriana Santanocito. The two women chose to establish its headquarters right in Catania to contribute to the growth of their homeland.

The idea that launched Orange Fiber is to bring agribusiness waste back to life, by reusing it to produce clothes under the banner of sustainability and the search for a circular economy. The fruit that represents wellness and health to everyone, in fact, carries more than 50 percent of its weight in the form of a by-product to be disposed of after industrial pressing.

The goal of this brand's corporate policy is to return value to the residual fraction of food consumption.

Orange waste is a raw material that is not at all conventional in the clothing industry and it requires an original processing; in fact, Orange Fiber was the first company to patent the process (patent filed in 2013) of transforming an agricultural by-product into textile.

In Italy alone, what is normally called orange "waste" amounts to a total of 700 thousand tons per year, a huge and cost-free pool from which to draw resources and raw materials. In addition, the fashion industry, one of the most fast-evolving sectors, is also one of the most polluting, considering that the textile industry alone causes 10% of total industrial pollution, 4% of greenhouse gas pollution, 35% of pollution of the seas: in addition to these already frightening data, only 50% of workers are paid minimum wage. It is precisely from the need to turn a problem into a solution that the idea of Orange Fiber was born, focusing on both market sustainability and the quality of the final product.

The initiative of this innovative small business coincides with a moment of prominence of sustainability issues and the food sector thanks to the 2015 Expo in Milano. Approximately two years passed from conception to actual founding, in which the business plan for processing and setting up the plant is consolidated, and the final product is tested for what will be the first appearance of the product to the public. Fundraising was split between the public and private sectors through a crowdfunding campaign that collectively raised about 650,000 euros from more than 350 investors, who have now become partners, the best known of which are Angels4Women, E. Marinella and Candiani Denim. Instead, the incorporation that took place in 2014 was financed by Francesco Virlinzi, Antonio Perdichizzi and Corrado Blandini, who took over the corporate structure through an investment of 135,000 euros as initial capital.

Subsequently, the company raised another 500,000 euros over the following years, funds that were justified by the collaborations and results achieved in the market. The first exposure of the product to the public took place in 2017 thanks to the collaboration with Salvatore Ferragamo, who, approving the initiative, created the first fashion collection of the Orange Fiber brand, acquiring the



rights for exclusivity. Following the company's growth and thanks to the funding from private investors, governance was redefined, and the production facility modernized. Technically speaking, seeds, leaves and orange peels are transformed through a process called upcycling. The result is that of a fine silk-like fabric. The process begins by treating the remains from industrial pressing called "pulp," from which citrus cellulose suitable for spinning is then extracted and then transformed into yarn and fabric that will be used to make the actual garment. At the same time, thanks to recent developments in nanotechnology, citrus essential oil is encapsulated within the yarn.

The process innovation was made possible through a partnership with Lenzing, a world class company excelling in the processing of special textile fibers and in developing technologies concerning cellulose extraction in textile mills. The partnership took shape from a union of intentions in terms of product traceability, quality, and sustainability, to actively contribute to the ecological transition in the fashion industry. It was again thanks to the partnership with the Lenzing Group that a new line of special textile fibers called lyocell – composed of orange fiber and wood cellulose – was launched in 2021. This further product innovation represented an opportunity for Orange Fiber to stabilize the production process, making it scalable and enabling it to offer a product at the forefront in terms of quality to meet high-end market demands.

Their focus on green stems from a feasibility study conducted together with the Politecnico di Milano regarding the feasibility of the creation of a textile material from citrus waste. From that, the company pursued its mission to become more known in the fashion industry, accompanied by the increased attention of brands on polluting less and less. World textile fiber production in 2017 amounted to about 100 million and is expected to increase to an estimated 125 million by 2025. On the other hand, compared to the previous year, in 2018 alone a 66 percent increase in "sustainable fashion" keywords within search engines was measured.<sup>1</sup> Orange Fiber espouses the cause of the global fashion agenda, a pact made to try to change one of the world's most polluting industries and do justice to the vast number of underpaid workers to redefine the concept of growth and decouple it from focusing on economic achievements alone.

1. "2022 State of The Industry Report: Next-Gen Materials", 2023 Material Innovation Initiative.

# New materials and market trends

The fashion industry is facing an unparalleled transformation due to the increased sensitivity of consumers to sustainability issues. We identify some of the current market trends:

- **Circular Fashion:** The concept of circular fashion is based on reducing waste by extending the lifespan of clothes. Both brands and environmentally conscious consumers are focusing on recycling, upcycling, and reusing materials to create new garments, while also promoting repair and maintenance to keep clothing in use for a longer time.
- **Eco-friendly Materials:** The use of sustainable materials is a cornerstone of sustainable fashion. Hemp, organic cotton, Tencel, and recycled fibers are gaining increased popularity due to their lower environmental impact compared to traditional materials like conventional cotton or synthetic fabrics.
- **Transparency and Ethical Practices:** Consumers are increasingly conscious about social issues concerning workers' exploitation and therefore demand more transparency from fashion brands. Brands are responding by providing detailed information about their supply chains and by adopting fair labor practices.
- **Slow Fashion:** the Slow fashion concept developed around the idea of promoting quality and durability over quantity. It encourages consumers to invest in high quality, durable garments as opposed to buying fast fashion items that quickly go out of style, wear out easily and contribute to environmental pollution.
- **Rent and Resale Market:** The rise of marketplaces where consumers can easily rent and resale garments is reducing the pressure towards constant purchasing. Many consumers are opting to rent high-end fashion items for special occasions or buy second-hand clothing, contributing to a more sustainable approach to fashion consumption.
- **Local and Artisanal Production:** Supporting local artisans and smaller, local fashion businesses is gaining traction. This not only reduces the carbon footprint associated with long-distance transportation but also promotes unique, handcrafted pieces.
- **Green Packaging:** Brands are increasingly using sustainable and eco-friendly packaging materials, reducing the environmental impact of packaging and shipping.
- **Technology and Innovation:** Sustainable fashion is benefiting from technological advancements. For instance, 3D printing and digital design are being used to create clothing with minimal waste, and blockchain technology is helping to verify the authenticity and origin of products.

- **Vegan and Cruelty-Free Fashion:** There is a growing interest in vegan and cruelty-free fashion, where no animal products are used in clothing or accessories. This includes alternatives to leather and fur.
- **Upcycling and DIY:** DIY fashion and upcycling encourage consumers to get creative with their existing wardrobes, giving new life to old pieces and reducing the need for new purchases.
- **Regenerative Agriculture:** Some fashion brands are exploring regenerative agriculture practices to offset their environmental impact by restoring ecosystems and sequestering carbon through their supply chain.
- **Sustainable Fashion Events:** Fashion events and shows are increasingly incorporating sustainability and ethical fashion themes, raising awareness, and promoting sustainable practices in the industry.

These trends are already heavily impacting industry and driving paramount changes in consumers' habits regarding fashion. However, big challenges lie ahead if the fashion industry wants to meet its ambitious sustainability goals. More specifically, a major transition towards more environmentally friendly and sustainable materials is warranted, and that requires huge investments in innovation. Global fiber production sky-rocketed in 2021 after a slight decline due to COVID-19 in 2020. Given this growth of the overall fiber and materials market and its devastating impacts, it's increasingly important to rethink the whole value chain in the direction of diminishing the use of resources. However, the global fashion industry was entirely built on fossil fuels, meaning that the whole infrastructure supporting the industry was conceived and developed in the "old world". All the traditional fabrics, whether synthetic, vegetal, or animal-based, traditionally required preparation and pre-processing operations that now would need to undergo a radical transformation.

Start-ups often provide innovative bioengineering solutions, but the whole process must scale up to meet a rising global demand. "Brands need solutions that are not only sustainable, but that also perform well, scale quickly, and are cost competitive," said Stephanie Downs, founder of next-gen leather startup UNCAGED Innovations.<sup>2</sup> The bottleneck, hence, seems to lie in the passage from innovative, small-scale solutions to their large-scale applications in a cost-effective and timely manner.

In short, the fashion industry can gradually transition to a more sustainable and eco friendly business model. However, this will require the concerted efforts of brands, consumers, governments, investors, and various stakeholders to drive this transformation quickly and successfully.

2. "2022 State of The Industry Report: Next-Gen Materials", 2023 Material Innovation Initiative.