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The development of a new agro-industrial value chain in Tunisia

LESSONS LEARNED FROM THE CASE OF
THE ORGANIC PRICKLY PEAR SECTOR



MINISTRY OF AGRICULTURE,
WATER RESOURCES AND FISHERIES



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The development of a new agro-industrial value chain in Tunisia

Lessons learned from the case of the organic prickly pear sector

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1. THE DEVELOPMENT OF NEW AGRO-INDUSTRIAL VALUE CHAINS

The value chain approach is widely used in economic development projects. An extensive body of literature demonstrates its effectiveness and its role in positioning promising and dynamic sectors. However, there are few documented success stories involving value chains initially considered to have low value-creation potential.

Projects that support agro-industrial value chains generally tend to focus on sectors that have already gained a degree of national or even international importance. This strategy typically reduces the risk of failure. Yet it may unintentionally favor well-established companies, leaving more vulnerable producers in underperforming sectors behind. Conversely, projects targeting marginalized and barely developed agro-industrial value chains face a higher risk of not achieving their objectives.

This publication aims to share best practices and guiding principles for developing an emerging agro-industrial value chain, illustrated by the success story of Tunisia's prickly pear, a product once regarded as the "fruit of the poor."



Photo : Prickly pears in season in Kasserine.

Thanks to targeted technical assistance interventions, Tunisia's cactus sector has experienced significant growth over the past decade. The number of processing companies has increased fourteenfold and cosmetic products made from Tunisian prickly pear are now exported across all five continents.

2. THE CACTUS VALUE CHAIN IN TUNISIA : STARTING POINT

Although Tunisia ranks fifth globally in terms of cultivated land for prickly pear cactus, the country's agro-industrial cactus sector was virtually non-existent until recently. In many cases, prickly pear cacti were planted as natural fencing for agricultural fields. The prickly pears were also used as livestock feed or sold as summer fruits at very low prices.

Back in 2013, there were only five processing companies in Tunisia, all focused on producing bulk organic prickly pear seed oil, a cosmetic ingredient with anti-aging properties. Although still relatively unknown to consumers, the oil appeared to hold a certain potential in export markets. At the same time, the cactus value chain presented promising opportunities for socioeconomic development in disadvantaged Tunisian regions, particularly in terms of women's inclusion, job creation, and environmental sustainability.



Photo : Sorting of dried prickly pear seeds using the traditional method.

The United Nations Industrial Development Organization (UNIDO) began supporting the cactus sector in 2013 through the Project for Market Access of Typical Agro-Food Products (PAMPAT), funded by the State Secretariat for Economic Affairs of the Swiss Confederation (SECO). In

order to develop the agro-industrial prickly pear value chain, UNIDO worked closely with various Tunisian public institutions under the Ministry of Agriculture, the Ministry of Industry, and the Ministry of Trade. The PAMPAT project will end in 2026.

3. THE INTERVENTION APPROACH

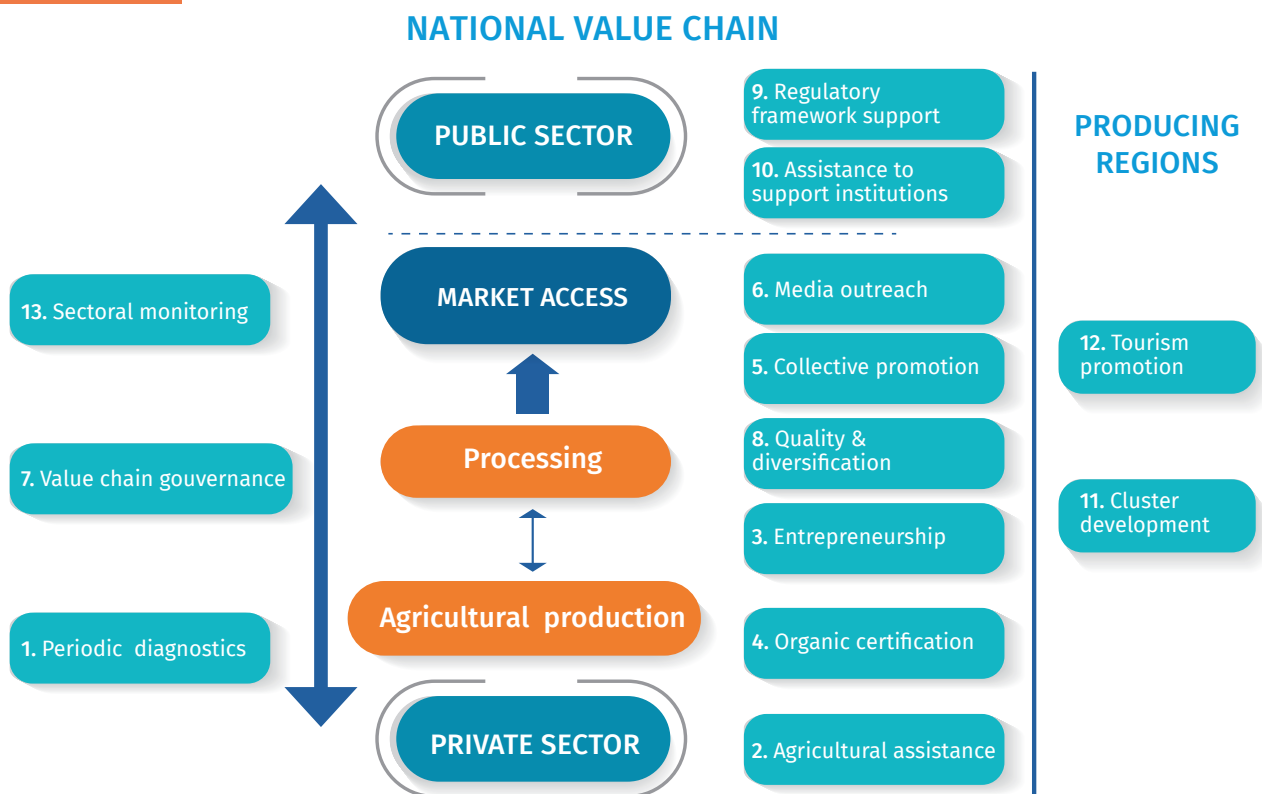
UNIDO adopted a holistic approach to support the development of the emerging agro-industrial prickly pear value chain. The project supported both the agricultural and processing links of the chain, providing assistance to existing support institutions, established companies, and aspiring entrepreneurs alike.

At the core of the project’s strategy was the creation of structured linkages among stakeholders and the promotion

of collaboration across the entire value chain. The aim was to spark genuine economic dynamism driven by collective efficiency, economies of scale, and spillover effects.

The types of support evolved over time, in line with the value chain’s stage of development and the ever-growing number of actors involved year after year. Nevertheless, the main areas of intervention can be grouped into thirteen components, as illustrated below.

ILLUSTRATION 1 - AREAS OF INTERVENTION



The following chapters aim to follow, as much as possible, a roughly chronological order to facilitate understanding and readability. However, it is important to highlight that most types of intervention were implemented simultaneously,

and many support activities were often closely interconnected. Box 1 summarizes the main results achieved between 2013 and 2024.

Box 1 - Key achievements at a glance (2013-2024)

- 2013 : 5 companies in Tunisia → 2024: 73 companies
- 51% of companies are managed by women
- 1,430 new jobs created (80% held by women)
- 75% of companies now export
- 92% of companies offer certified organic products
- 400% increase in certified organic cactus farmland
- More than 2,300 farmers (men and women) have improved their production techniques
- 122% increase in the wages of female agricultural workers
- World first: publication of the technical standard for prickly pear seed oil
- Prickly pear seed oil has become the flagship product of Tunisia's cosmetics sector
- Tourism promotion initiatives showcasing the prickly pear



Photo : Advertising board for Tunisian prickly pear seed oil.

4. INTERVENTIONS AND LESSONS LEARNED

4.1. Value chain diagnostic

UNIDO's work in the prickly pear value chain began with a comprehensive diagnostic study. This participatory analysis brought together a wide range of stakeholders. While it focused mainly on Tunisia's main production region, Kasserine (see below), it also included established companies from other governorates. The joint public-private assessment provided a detailed picture of how the sector was

structured and led, in 2014, to the preparation of the first participatory value chain action plan. Additional nationwide diagnostic studies were conducted in 2018 and 2023. These provided a clearer picture of how the sector's production structure had changed as a result of the interventions.

Lesson learned :



A value chain diagnostic study is not only useful at the start of a project. The structure of an emerging value chain can change rapidly. Even when development projects have a solid monitoring system in place, it is important to repeat the diagnostic process after a few years. Periodic analysis of the value chain offers the opportunity to step back, measure progress and make decisions based on an objective assessment.

4.2. Supporting agricultural production

The governorate of Kasserine, the center of Tunisia's cactus production, covers nearly 100,000 hectares, of which 25,000 hectares are cultivated for commercial purposes. In 2013, good agricultural practices were still rare, as producing summer fruits for mass markets or livestock feed did not require high quality standards.

Over the years, the PAMPAT project has trained more than 2,300 men and women farmers in improved techniques for the production and handling of prickly pear fruit. The adoption of these best practices has been a key driver of higher prices. In Kasserine, the sales price of bulk, conventionally grown seasonal prickly pears increased from 0.150 dinar/kg in 2013 to 0.500 dinar/kg in 2023.

As industrial demand for cactus-based products increased, UNIDO also trained female agricultural workers to select and prune cactus pads for food and cosmetic processing,

and to harvest cactus flowers using best practices for the preparation of teas and nutritional supplements.



Photo : Members of the Agricultural Development Group "Hindi Zelfen" in Kasserine during the prickly pear harvest.

Lesson learned :



Supporting farmers is essential to improving agricultural productivity and increasing incomes. In addition, providing technical assistance at the primary production stage is necessary to ensure that processing companies can readily access the high-quality inputs they need to accelerate the sector's growth.

4.3. Supporting entrepreneurship

To expand the cosmetic cactus processing sector, one of UNIDO's first initiatives was to identify young aspiring entrepreneurs interested in creating businesses to produce prickly pear seed oil. Over the years, the project supported dozens of investors in preparing their business plans. Since banks were initially reluctant to finance entrepreneurial projects in this emerging industry, UNIDO also conducted targeted outreach to financial institutions to raise awareness and build confidence in this new sector.

Today, the sector counts 73 companies, compared with just 5 in 2013. Of these new enterprises, 86% were established with UNIDO's support. Between 2016 and 2024, the sector attracted investments worth €8 million and generated 1,430 new permanent and seasonal jobs. The importance of women's entrepreneurship in the value chain is highlighted in Box 2.

Once entrepreneurs had officially established their companies, they became eligible to access the full range of support offered to new businesses. UNIDO provided tailored technical assistance in areas such as branding,

marketing, e-commerce, cost calculation, and regulatory compliance.

In parallel, the project encouraged agricultural entrepreneurship activities to professionalize input production. Since individual farmers lacked the financial resources to set up post-harvest processing facilities or supply large crop quantities, UNIDO supported the creation of cooperatives in Kasserine. These organizations now group 178 male and female producers.



Photo : The founder of the company Biozelfene, together with actress Chekra Rammeh, at a sectoral promotional stand during a trade fair.

Lesson learned :



Promoting entrepreneurship is key to the success of a development project focused on a still-emerging value chain. Entrepreneurship support requires targeted interventions and should be an integral part of the overall project strategy. In a nascent sector, it is essential to combine the value chain approach with active promotion of entrepreneurship.

4.4 . Supporting organic certification across the value chain

From the outset, UNIDO made it a priority to promote organic certification throughout the prickly pear value chain, from production to processing. Helping the once-marginalized “poor man’s fruit” shed its old image and position its products in niche markets required, at the very least, promoting its full potential through a recognized quality label.

To expand Tunisia’s organically certified production area, UNIDO pursued two strategies: first, encouraging collective certification for farmers organized into producer groups; second, supporting new prickly pear seed oil processing companies to adopt organic production practices, sign supply contracts with farmers, and cover certification costs. As a result, organic prickly pears now sell for twice the price of conventional fruit.

The expansion of organic certification has upgraded the entire value chain and contributed to its professionalization.

In Kasserine alone, the organically certified area has increased fivefold over the past decade. Nationwide, 67 agri-food companies now offer organic prickly pear products, and 10 of them also hold COSMOS certification for organic cosmetics.



Photo : Organic-certified prickly pears produced by the Zelfen SMSA in Kasserine after receiving technical assistance from UNIDO.

Lesson learned :



Large-scale adoption of a quality label such as “organic” can facilitate the repositioning of a value chain. However, the spread of organic certification always depends on the existence of clear and tangible market demand. From the outset, farmers should establish direct contact with companies interested in purchasing organic fruit, while processing companies need to build relationships with potential national and international clients seeking certified products

4.5. Supporting collective promotion and market access

To enhance the visibility of organic prickly pear seed oil, the sector’s flagship product, it was essential to encourage collective promotion. Creating consumer demand was a priority to secure market access for the many newly established companies.

With UNIDO’s support, companies in the value chain jointly developed the collective logo “Organic Cactus Seed Oil - Origin

Tunisia” and, in 2017, launched a sector-wide promotion program. Within this framework, the project facilitated the joint participation of companies in trade fairs, exhibitions, and other events under this umbrella brand. All certified organic companies had the opportunity to participate subject to a financial contribution. Over the years, 58 companies have taken part in these initiatives.

To sustain sales growth and encourage market diversification, UNIDO also organized numerous matchmaking activities and several B2B events both in Tunisia and in export markets. In addition, UNIDO commissioned clinical studies in an international laboratory to provide Tunisian companies with strong sales arguments regarding the benefits of prickly

pear seed oil. The tests scientifically demonstrated the oil's anti-wrinkle, anti-spot, and anti-dark circle properties. These results significantly strengthened the companies' negotiation capacity. Today, 55 Tunisian companies are exporting.

Lesson learned :



A joint promotion plan is essential to raise awareness of the still little-known products of an emerging value chain. This approach allows companies to share costs and implement ambitious, high-impact promotional activities. These interventions should be complemented by market access support measures to help companies capitalize on the increased visibility of their products.



Photo :Promotional stand featuring the "Organic Cactus Seed Oil – Origin Tunisia" logo at trade fairs in Tunisia.



Photo :Promotional stand featuring the "Organic Cactus Seed Oil – Origin Tunisia" logo at trade fairs in Germany.

4.6. Media outreach on the prickly pear value chain

In parallel with traditional promotional activities, UNIDO made significant efforts to secure broad media coverage in Tunisia and abroad. As a result, Tunisian prickly pear seed oil has been spotlighted by media such as Agence France Presse, the specialized cosmetics press, and lifestyle magazines like Elle. In 2013, Google searches on the Tunisian prickly pear value chain returned negligible results; today, they yield nearly half a million entries in multiple languages.



Photo : The founder of the company Nakawa during an interview with a television channel at a sectoral promotional event in a shopping mall in Tunis.

Lesson learned :



Media outreach is essential for raising awareness of an emerging value chain. Unlike traditional advertising, the publication of articles or appearances in broadcast media are generally free, since developing a new value chain of national significance is considered a matter of public interest. At the international level, ensuring product availability in target markets is an essential condition for a successful media campaign.

Box 2 - Supporting women's empowerment along the value chain

The Tunisian prickly pear value chain plays a key role in promoting women's economic inclusion. While in 2013 female entrepreneurship in the sector was non-existent, by 2024, 51% of businesses in the value chain were owned by women, a share five times higher than the national average in Tunisia. 90% of women-led companies offer a wide range of cosmetic products. In addition, 86% of these women entrepreneurs are engaged in exports. To help achieve these remarkable results, UNIDO implemented targeted efforts to promote women's entrepreneurship and frequently applied affirmative action criteria.

In terms of employment, the gender dimension is also highly significant. Since 2016, 80% of the new jobs created in processing companies are held by women. In addition, women account for 90% of the agricultural workforce in the value chain, particularly in Kasserine. Between 2014 and 2024, the daily wage of women working in prickly pear fields in Kasserine rose by 122%. The technical skills required for agricultural work on certified organic fields, combined with rising labor demand in a rapidly expanding value chain, have enabled rural women to negotiate higher wages.

Moreover, with the rapid increase in the number of prickly pear processing companies, female agricultural workers who previously worked only as day laborers or unpaid on family farms were able to secure additional jobs in factories. UNIDO supported this development by providing women workers with specialized training on various post-harvest best practices tailored to the needs of the companies.

In parallel, UNIDO also supported rural women in Kasserine in establishing eight new agricultural development groups, comprising 525 women members. These groups are engaged in a variety of income-generating activities. They ensure the collective organic certification of their members' land, develop artisanal processing activities, and coordinate the collective marketing of prickly pear products.

Today, women's prominent role in the value chain has become a genuine selling point for export-oriented companies. It facilitates their access to the niche markets of natural, ethical, and sustainable cosmetics, where the customer base is predominantly female.



Photo : The founder of the company Herbeos and her team.

4.7. Structuring the value chain and strengthening governance

Fostering collaboration across the value chain was at the core of the project's approach and underpinned most of its achievements. Over the years, the project focused on building trust among stakeholders, strengthening cooperation between different links of the value chain, and promoting public-private partnerships. The continuous involvement of a professional UNIDO facilitator, who mediated between stakeholders and built consensus around shared goals, proved vital to the development of this emerging sector.



Collaboration under the umbrella brand “Organic Cactus Seed Oil – Origin Tunisia” soon appeared to be a major strength for the value chain. In 2018, companies took a step forward and created the National Cactus Development Association (ANADEC) with UNIDO's support to address the sector's strategic challenges. Today, ANADEC serves as the sector's advocate in forums, conferences, and media engagements. It also acts as the official representative of the value chain vis-à-vis public authorities and contributes to the organization of promotional activities.



Photo : The founder of Barbary Nature at a joint promotional stand set up by ANADEC during a trade fair in Tunis.

4.8. Improving production and diversifying the product range

A key focus of UNIDO's interventions has been supporting enterprises to progressively improve production techniques, optimize quality, and meet market requirements. Over the years, the project has provided tailored advisory services to 63 companies, enabling them to expand production lines, establish new manufacturing facilities, develop new processing methods, and obtain internationally recognized certifications. As a result, 15 companies now hold quality management system certifications, including ISO 22716, the standard for good manufacturing practices for cosmetics.

UNIDO's support has also helped improve the sector's average yield of prickly pear seed oil. In 2013, Tunisian companies needed 30 kg of seeds to produce a single liter of oil; by 2024, this figure had dropped to just 23 kg.

Beyond bulk prickly pear seed oil, the project has placed strong emphasis on product diversification. This meant

encouraging companies to explore new ways of processing cactus into value-added products through practical training,



Photo : Product self-inspection process carried out by the founder of Biovalley, which was ISO 22716 certified with the support of the PAMPAT project.

tailored technical advice, and close collaboration with universities. By 2024, the number of new cactus-based agri-food, parapharmaceutical, and cosmetic products

available on the market had risen to 398. Today, 62 companies offer cosmetic lines that require specialized expertise.



Lesson learned :



Improving quality and productivity, along with ensuring compliance with regulatory requirements, must be part of the intervention strategy from the outset. A lack of competitiveness can quickly become a barrier to the development of an emerging value chain. Equally important is fostering product range diversification to boost value addition and make the most of agro-industrial by-products by applying circular economy principles. Promoting innovation also enables each company to develop its own unique selling proposition, hence reducing direct competition with other enterprises.

Box 3 - Promoting entrepreneurship : key elements of the approach

Within a decade, the number of active enterprises in Tunisia's prickly pear sector increased fourteenfold. UNIDO contributed to this entrepreneurial dynamism by :

- Delivering highly targeted support to aspiring entrepreneurs
- Helping to lower barriers to entry into this emerging sector
- Promoting the development of the entire value chain to create favorable conditions for investment

A major challenge for development projects that support entrepreneurship is not only to establish new businesses, but also to ensure they later become economically sustainable. Success depends not only on the performance of individual entrepreneurs but also on the ecosystem in which they operate. When an industry is new, as was the case with Tunisia's cactus value chain in 2013, it is essential to build a thriving ecosystem from the ground up.

The key elements underpinning the success of UNIDO's approach are listed below :

- **Development of the supply chain** : The creation of agricultural cooperatives supplying the market with certified organic inputs enabled new enterprises to focus exclusively on processing. This significantly reduced barriers to entry into the organic sector.
- **Development of market demand** : UNIDO invested considerable efforts to promote value chain products, increase their visibility, and create market opportunities for a growing number of companies.
- **Facilitation of business and subcontracting relationships along the value chain** : UNIDO helped aspiring entrepreneurs reduce investment costs and risks by promoting collaboration with other companies. This included subcontracting certain production steps to avoid having to purchase all the machinery or producing on behalf of other Tunisian exporting firms without having to secure foreign clients in their first year of operations.
- **Support for the development of effective business models** : UNIDO provided targeted assistance to new investors to design economically viable business models. Full valorization of the cactus and minimization of production waste require expertise in two very different fields that a single entrepreneur is unlikely to master alone from the start: cosmetics and agri-food.
- **Facilitation of access to finance** : The progressive development of the entire value chain and the market-access approach initiated by UNIDO helped reassure banks that new enterprises would be able to secure clients and, in turn, to repay their loans.



Photo : Production line of a new silage developed for small ruminant feed by the company Sodeva in Kasserine, with technical assistance from UNIDO.

4.9. Strengthening the regulatory framework

As the prickly pear value chain grew in importance, the need to regulate processing activities became increasingly pressing. With support from UNIDO, a collaborative public-private initiative was launched to develop a technical

standard for prickly pear seed oil. In 2021, Tunisia became the first country in the world to officially standardize the characteristics of this oil; a milestone that underscores the sector's rising strategic significance.

Following the publication of this voluntary standard, and in response to a request from the private sector represented by ANADEC, the Ministry of Industry began drafting a ministerial decree that will make compliance with the standard mandatory.

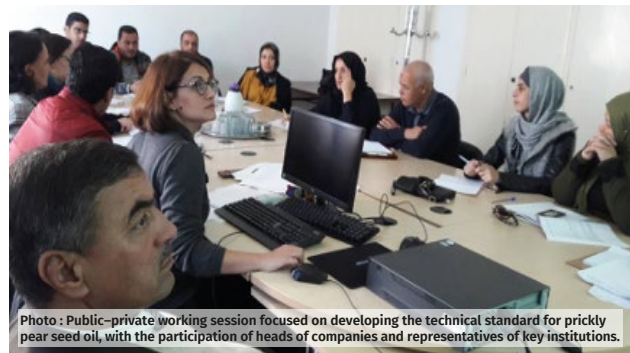


Photo : Public-private working session focused on developing the technical standard for prickly pear seed oil, with the participation of heads of companies and representatives of key institutions.

Lesson learned :



Typically, the level of development of the regulatory framework governing a given value chain in a country is proportional to the economic importance of that sector. For this reason, emerging value chains cannot rely on a regulatory framework that meets their specific needs. It is therefore important for development projects to incorporate regulatory support into their intervention strategies.

4.10. Institutional support for the value chain

In the early years of the project, public support for the prickly pear value chain was minimal. This began to change as the cactus sector expanded and its economic potential became increasingly evident. From the outset, UNIDO focused on raising awareness among support institutions about the private sector's needs and on fostering linkages between enterprises and public actors in areas such as agriculture, industry, research, exports, and promotion, etc.

UNIDO played a key role in helping the Tunisian Export Promotion Center organize institutional pavilions at international cosmetics trade fairs. It also supported public institutions in expanding promotional activities around the prickly pear. Furthermore, UNIDO assisted the Tunisian Agricultural Extension and Training Agency in developing the curriculum for a certified training program on this crop.

Today, the strategic importance of the cactus value chain in Tunisia is widely recognized. Public commitment to supporting this national asset is also evident in efforts to combat the cochineal, a pest that has affected prickly pear

crops in recent years. In 2023, the Ministry of Agriculture launched a national public-private strategy for integrated pest management and has already begun supporting the multiplication of cochineal-resistant cactus varieties.



Photo : Vergers de Tunisie's stand within the Tunisian pavilion, organized by the Tunisian Export Promotion Center, at the In-Cosmetics Europe trade fair in Paris (France).

Lesson learned :

With public resources being limited, institutions are compelled to set priorities and direct support toward dynamic sectors with strong potential for growth and socio-economic inclusion. However, it is sometimes difficult to demonstrate the potential of nascent value chains. Development projects must therefore work to raise awareness among support institutions about the potential impact of these emerging sectors and propose assistance services that can be offered without requiring substantial funding.

4.11. Supporting regional cluster development

Beyond promoting the national value chain, UNIDO also adopted a local cluster development approach in specific cactus production regions, particularly in Kasserine, one of Tunisia's most marginalized governorates. UNIDO defines a cluster as a geographical concentration of producers, enterprises, and support institutions engaged in the same productive activity and facing shared challenges and opportunities.¹

However, the mere geographical concentration of producers in the same sector does not automatically ensure strong economic performance. In 2013, with only a single cactus processing company operating in Kasserine, the agricultural cluster was still far from becoming a vibrant agro-industrial ecosystem.

Thanks to targeted interventions in the governorate, the prickly pear value chain has since grown into the most dynamic agro-industrial sector in the region. Today, Kasserine is home to 13 enterprises, including the country's leading company in the cactus sector. These businesses employ, on average, more workers than those in other regions, as they cover the full range of cactus-related agro-industrial activities, from peeling prickly pears to formulating finished cosmetic products. Since 2016, permanent and seasonal jobs created by companies in Kasserine have

accounted for 36% of total employment in the sector nationwide. In addition, in 2024, the turnover generated by Kasserine-based businesses represented 37% of the sector's national total.

UNIDO has also made efforts in Kasserine to position the region's flagship product as an ancestral fruit rooted in tradition. To this end, support was provided to protect the unique characteristics of the local prickly pear, known as Hindi Thala, through the registration of a geographical indication.



Photo : The Governor of Kasserine and the President of the ANADEC association during the 3rd edition of the Prickly Pear Festival in Kasserine.

Lesson learned :

To effectively boost a nascent value chain at the national level, it is often crucial to foster the development of at least one strong regional economic hub. Such a hub can help drive progress across the entire sector nationwide. A national value chain development approach and a local cluster development strategy can be applied in a complementary way to accelerate growth.

¹ More information on UNIDO's cluster development methodology can be found here : https://hub.unido.org/publications?field_section_target_id=All&field_publication_types=All&combine=cluster+development

4.12. Promoting alternative tourism around the prickly pear

Starting in 2022, a collaboration was established between UNIDO and several departments of the Ministry of Agriculture, the Ministry of Tourism, and the Ministry of Cultural Affairs to develop a new tourism offer around the prickly pear and other local products in the Tunisian governorates of Nabeul and Kairouan.

In both regions, UNIDO began supporting agro-food and cosmetics producers, tourism and gastronomy companies, cultural stakeholders, and artisans, with the goal of jointly

showcasing the intangible cultural heritage linked to local flagship products, particularly the prickly pear.

Tourists now have the opportunity to visit local producers of prickly pear seed oil, take part in practical soap-making workshops using this oil, enjoy special dishes made with prickly pear in restaurants and guesthouses, try prickly pear sorbet in pastry shops, explore locally crafted ceramics featuring prickly pear designs, and purchase a variety of local prickly pear-based products in participating tourist venues.

Lesson learned :



Promoting specific production regions as tourist destinations within a national agro-industrial development project offers several advantages. This approach allows the value chain to project an image grounded in biodiversity, authenticity, and local traditions. It also attracts the interest and involvement of economic stakeholders from various sectors, thus reinforcing the value chain's socio-economic importance.



Photo : An award-winning pastry shop owner from Kairouan presents her new prickly pear sorbet.



Photo : The founder of Organica (third from the right) standing in front of her sales outlet during a visit by representatives of German travel agencies.



Photo : Participatory workshop on massage oil production for tourists at the company Bahja Cosmetic



Photo : Ceramic plates with a cactus motif

4.13. Establishing a sectoral monitoring system

As the prickly pear value chain evolved, the need for a comprehensive sectoral monitoring system became increasingly evident. Therefore, efforts were made to develop a framework that would complement and extend the standard tracking mechanisms typically employed in cooperation projects. In fact, for this emerging agro-industry, sector-specific statistics were either virtually non-existent or not regularly updated, making effective monitoring all the more crucial.

Over the years, data collection led by UNIDO contributed to shaping a clearer understanding of this emerging agro-industrial sector. It clearly demonstrated its growing significance to the Tunisian economy and provided a valuable basis for informed decision-making by future investors, existing businesses, and institutional stakeholders. The data collected by the project were used as a key reference by private-sector actors preparing business plans, as well as by institutions and journalists seeking to analyze and understand sectoral trends.

Lesson learned :



When a value chain is in its early stages and sector statistics are virtually non-existent, the monitoring conducted by a cooperation project can sometimes become the most reliable source of data. The establishment of an appropriate monitoring system should be planned from the outset.

5. CONCLUSION

The support activities implemented to promote the development of the prickly pear value chain may be relevant to other agro-industrial sectors, both in Tunisia and beyond. Ultimately, the basic structure of a value chain is largely similar across sectors, and each link requires targeted support to improve its performance.

In particular, the activities carried out in Tunisia hold valuable lessons for development projects focused on emerging agro-industrial value chains. While the Tunisian success story may not be directly replicable without contextual adaptation, the insights gained may offer a meaningful source of inspiration.

The development of a nascent agro-industrial value chain requires careful consideration of several key factors. Priority areas include: establishing new processing companies, promoting agro-entrepreneurship, rapidly diversifying

product lines, promoting selected flagship products, developing demand in domestic and international markets, creating public support mechanisms, and fostering collaboration among value chain actors. Additionally, the substantial efforts and investment of time and resources needed to achieve early tangible results must also be carefully factored into the planning of future technical assistance projects.

Once initial challenges are overcome, emerging value chains hold significant potential. They can become drivers of rural development in disadvantaged regions, support sustained economic growth, and establish a strong presence in export markets. The dynamism of a new value chain can also stimulate job creation, improve income opportunities, and play a meaningful role in advancing inclusive industrial development.



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