Behaviour change in agri-food systems transformation: a review of past initiatives in Tunisia

Guillaume Lestrelin, Rahma Jaouadi, Houssem Braiki, Dhia Hamrouni, Veronique Alary, Zied Idoudi, Mourad Rekik & Aymen Frija

December 2023

Contents

Behaviour change in agri-food systems transformation: a review of past initiatives In Tunisia

This country brief is an output of the Agroecology Initiative's Work Package 5, which focuses on understanding and then influencing behaviour change and actor agency in pursuit of these goals. It builds upon an inventory of agroecology-related initiatives and key informant interviews to generate learnings from past initiatives in Tunisia, by assessing their approaches to behaviour change, actor motivations, theories of change, and the successes and failures the initiatives encountered.

Introduction

Agri-food systems in Tunisia face many challenges related to production levels, sustainability, and food access. Tunisia is a middle-income country with a land area of 164,000 km², mostly characterized by arid climatic conditions. The population is 11.7 million and growing at a rate of 1.2% per year, with 69% concentrated in the urban and industrialized coastal regions. The agriculture and fishing sector is significant, contributing over 10.4% to the GDP, ensuring food security and accounting for 16% of national employment (WFP 2018). Yet, the country relies heavily on cereal imports. Regional disparities and a stagnant economy impact purchasing power and the ability of vulnerable people to maintain nutritious diets. Agricultural systems also face challenges related to unsustainable practices, including the non-sustainable exploitation of soil and water resources (ONAGRI 2016). Soil degradation and erosion pose a clear threat to the country's arable land, with an estimated potential loss of up to 50% by 2050 (UNFCC 2014). Additionally, climate change exacerbates these issues, with expected reductions in orchard areas and the potential decline of irrigated cereal production (Gafrej 2016).

In order to address these challenges, a wide range of initiatives have been targeting cereal-livestock systems, tree-based (olive) systems, and smallholder farming systems to try and enhance sustainability, conserve natural resources, improve soil health, diversify production, and promote ecological balance in Tunisian agriculture. Among these initiatives is the CGIAR Agroecology Initiative (AE-I), which is working in eight countries with diverse agri-food systems, including Tunisia, to transform how food is produced, processed, transported, sold, and consumed, in pursuit of greater sustainability and social equity. In Tunisia, AE-I activities are focused on Siliana and Kef governorates, in which multi-stakeholder Agroecological Living Landscapes (ALLs) have been organized to co-design agri-food system visions and appropriate innovations.

This country brief is an output of the Initiative's Work Package 5, which focuses on understanding and then influencing behaviour change and actor agency in pursuit of these goals. As a first step in this process, the brief aims to generate learnings from past initiatives in Tunisia that focused on agroecology (AE) and associated topics by assessing their approaches to behaviour change, actor motivations, theories of change, and the successes and failures the initiatives encountered. As such, the brief presents the findings from (1) an inventory of agroecology-related initiatives in Tunisia and (2) key informant interviews conducted with proponents of selected initiatives. Thus, this document draws on quantitative and qualitative data from both the inventory and the case studies. In addition to sharing direct evidence from the collected data, the brief offers analysis and insights from the country research team around past initiatives to provide guidance for AE-I moving forward.

Methodology

First, we compiled an inventory of agroecology-related initiatives that have been active over a period of 20+ years, from 1999 to the present day. To do so, we relied on both Google searches (using keywords such as "agroecology", "conservation agriculture", "Tunisia", "projects" ...) and informal discussions with AE-I team members, national partners and informants from national research and development institutions. Twenty-six initiatives were identified through this process. In order to characterize these initiatives, we conducted a review of grey literature (i.e. project documents and evaluation reports), published scientific papers, and electronic resources found on project/organization websites. A total of 31 different information sources were retained (cf. Annex). Using these sources, we documented initiatives' funding sources, implementing partners, years of operation, target areas, primary activities, and what type of initiative (project, program, social movements, etc.) each represented. This information was then used to identify which agroecological principles (HLPE, 2019) each initiative addressed.

Building upon the inventory results, a sample of seven initiatives was selected for in-depth review. This sample was representative of different trends and approaches over the studied time period – especially the five primary intervention domains identified during the inventory (cf. Results section). In addition, initiatives were prioritized that involved current partners of the AE-I and initiatives that have been / are active in the target ALLs. For each initiative, key informant interviews were then conducted with one central-level coordinator and, whenever possible, one knowledgeable technical staff involved in implementation at the local level. These interviews addressed initiatives' approaches, assumptions behind these approaches, factors contributing to success and failure in achieving behaviour change, and efforts related to diversity, equity and inclusion.

Results

Overview of AE initiatives in inventory

Out of the twenty-six initiatives covered, only five initiatives actually make clear, specific mention of agroecology as key domain for intervention (Table 1). In the other initiatives reviewed, various AE related concepts are addressed such as (by order of prevalence) conservation agriculture (6), sustainable agricultural and agri-food systems (5), agroforestry (2), agricultural innovation systems (2), adaptation to climate change (2), organic agriculture (1), permaculture (1), landscape management (1) and sustainable value chains (1). The AE principles that were most frequently addressed by the different initiatives are recycling, input reduction and soil health (100% of initiatives), biodiversity (92%) as well as synergy and economic diversification (85%). The consistent focus on recycling, input reduction, and soil health principles reflects that soil degradation was systematically put forward as a key (discursive) argument for the initiatives inventoried. The less frequently addressed principles are connectivity (8% of initiatives) and animal health (23%). Overall, 50% of the initiatives make reference to at least 10 different AE principles, and one initiative referred to all of the 13 principles.

Most initiatives identified (73%) are projects or programs implemented by regional or national agencies (agricultural services predominantly) with foreign financial and technical assistance. A smaller number of initiatives have emerged from the civil society, piloted by non-governmental organisations (23%), while only one initiative was identified as a grassroots or community-based enterprise (i.e. the EcoHazoua project). Finally, although the bibliographic material available does not allow identifying very precisely the location of interventions, 54% of the initiatives target the governorate of Siliana and 35% target the governorate of Kef where the ALLs are being implemented.

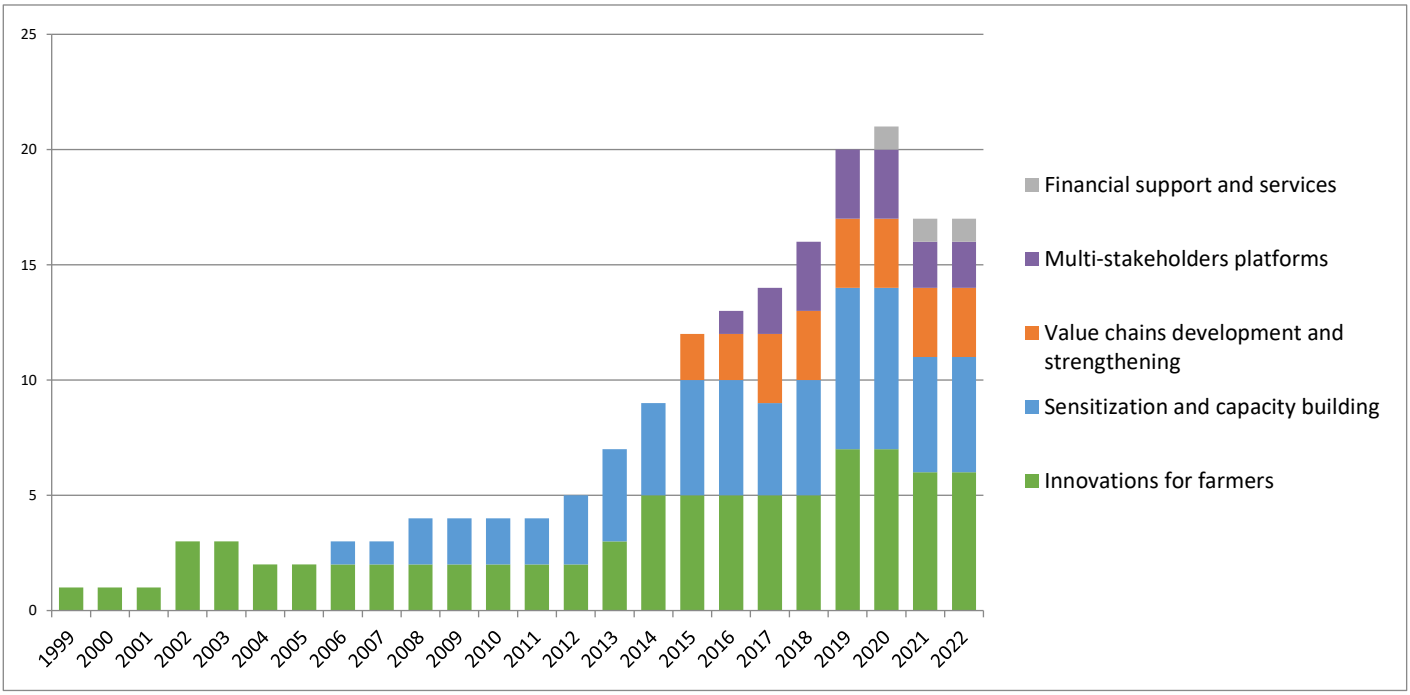
Discussion of noticeable trends

The approaches initiatives took to addressing AE principles fall into five broad categories: (1*) promoting innovations for farmers*, including R&D and demonstration activities, the provision of equipment, technical advice and support to farmers..., (2) *sensitization and institutional capacity building*, including communication and advocacy campaigns at local and national levels, dissemination of training material and organization of training courses for farmers and institutional service providers…, (3) *value chains development and strengthening*, including dialogue facilitation between value chain actors, coaching services for production, processing and marketing projects, establishment of public-private partnerships…, (4*) multi-stakeholders platforms*, including collaborative networks for information exchange and knowledge co-production, facilitation of participatory activities…, and (5) *financial support and services*, including the setting up of credit and funding facilities for private sector actors and producer organizations, etc.

Building upon these categories, we can observe a fairly significant diversification of approaches from the mid-2010s onwards (Figure 1). While early initiatives were exclusively focused on R&D, demonstrations, and technical support to farmers, sensitization and capacity building approaches started to emerge after the mid-2000s (with a strong contribution from social movements / non-governmental organizations in this specific domain). The mid-2010s then witnessed the emergence of

initiatives centered on value chains development and strengthening, structuring of multi-stakeholder platforms and, even more recently, establishment of credit and financial facilities.

Figure 1. Number of active initiatives, per year and primary intervention domain



Looking at the evolution of the principles addressed by initiatives (Figure 2), it appears that recycling, input reduction, soil health and synergy have remained key considerations since the early 2000s. In contrast, connectivity and animal health have generally been poorly addressed during the past two decades. In alignment with the growing focus on value chain development, multi-stakeholder platforms, and finance mechanisms, several principles appear to have gained increasing attention in recent years, especially fairness, co-creation of knowledge, land & natural resource governance, participation, as well as social values and diet.

Figure 2. AE principles considered for different project inception periods (expressed in % of initiatives considering each principle)

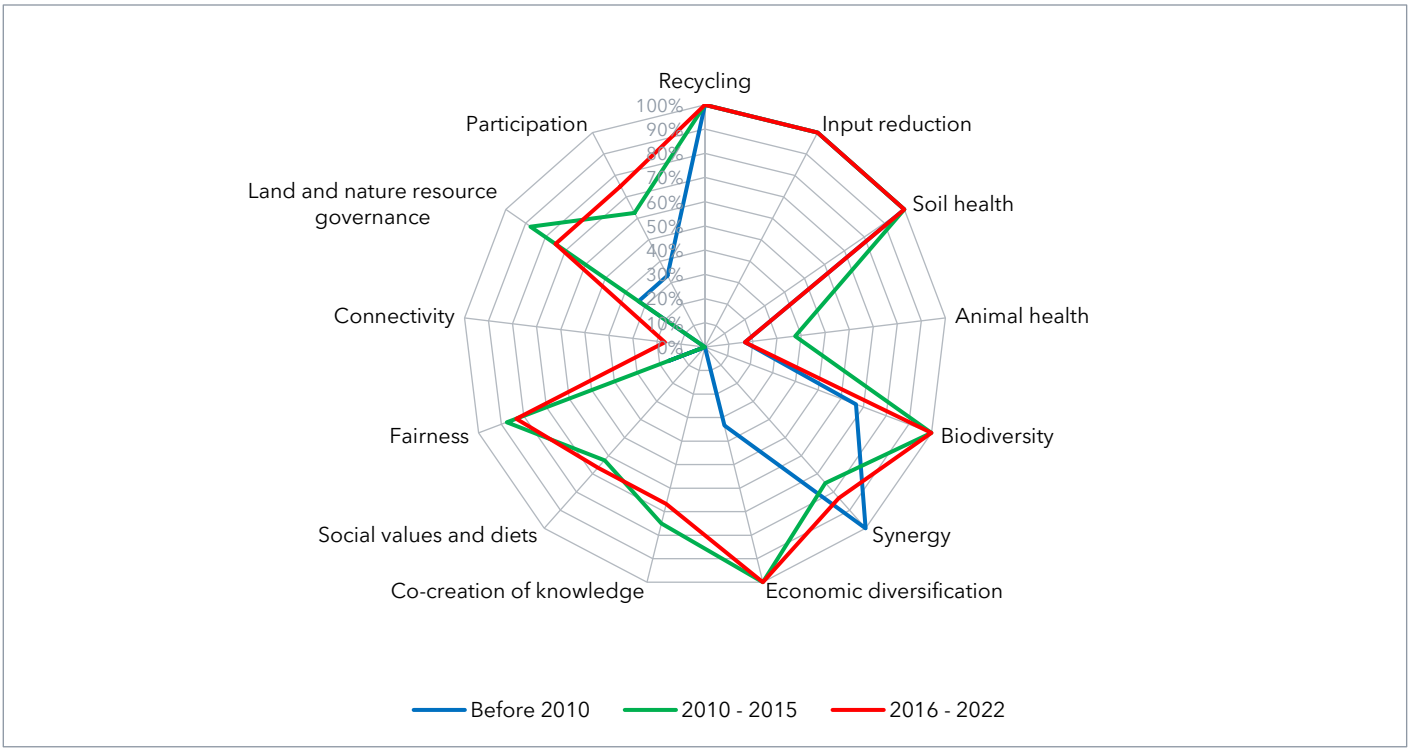


Table 1. Overview of AE initiative inventory in Tunisia, 1999-2023

		Frequency
Key focus of initiatives	With mention of agroecology	19%
	With mention of conservation agriculture	23%
	With mention of sustainable agricultural/agri-food systems	15%
Initiative type	Project/Program	73%
	Community based/grass roots initiatives	4%
	Collective action	0%
	Social movement	23%
Implemented in ALL target sites	Siliana	54%
	Kef	35%
	N/A	11%
AE principle addressed	Recycling	100%
	Input reduction	100%
	Soil health	100%
	Animal health	23%
	Biodiversity	92%
	Synergy	85%
	Economic diversification	85%
	Co-creation of knowledge	54%
	Social values and diets	50%
	Fairness	69%
	Connectivity	8%
	Land and nature resource governance	69%
	Participation	62%
Number of AE principles addressed	1-6	19%
	4-9	27%
	10 and more	54%
Activities implemented to address AE principles	Innovations for farmers (demonstration and technical support)	42%
	Sensitization and capacity building	31%
	Value chains development and strengthening	12%
	Multi-stakeholders platforms	12%
	Financial support and services	4%

Drawing on insights from the in-depth case studies, we can connect these trends to a series of paradigmatic shifts – or rather a gradual superimposition of different paradigms – expressed at different levels. Initiatives of the late 2000s appear very much influenced by a 'transfer of technology' perspective with research and extension agents providing technical training and support to farmer leaders, setting up experimentations and demonstration sites on model farms, and supplying equipment adapted to targeted innovations. The expected behavioural model of target beneficiaries can be conceptualized as *farmers as recipients of innovations*.

The early 2010s then witnessed the emergence of initiatives inspired by an 'agricultural entrepreneurship' perspective. Emblematic activities included organizing farmer business schools, establishing value chain forums, and promoting farmer-to-business contracts and public-private partnerships. Economic diversification and fairness emerged as important AE principles in this period. The expected behavioural model associated with these initiatives can be conceptualized as *farm entrepreneurs connected to the market*.

Starting in the late 2010s, new intervention modalities and new activities started to emerge inspired by a 'knowledge-based economy' perspective. Knowledge hubs or multi-stakeholder platforms were set up (involving farmers, extension agents, researchers, policymakers…) to undertake co-design and co-experimentation activities, and some initiatives started to engage with digital solutions for farm advice and management. Participation and co-creation of knowledge emerged as key AE principles in the related initiatives. The expected behavioural model of beneficiaries can be conceptualized as *farmers as co-creators of knowledge and innovation*.

Finally and most recently, emerging initiatives suggest another shift towards a more liberal economic perspective. This is reflected in calls for innovative proposals integrating social and ecological selection criteria (e.g. women and youth inclusion, contribution to animal wellbeing, waste reduction, etc.) and co-financing mechanisms mixing project grants and bank credit solutions for individual farmers and SMEs. The expected behavioural model of target beneficiaries can be conceptualized as *farm entrepreneurs competing to access public funding for innovation*.

Table 2. Summary of AE initiatives reviewed in detail

	1	2	3	4	5	6	7
Name of initiative	Conservation Agriculture Development Support Project (PADAC-II)	Promotion of Sustainable Agriculture and Rural Development in Tunisia, Phase-II (PAD-I)	Innovations for Agriculture and Agrifood (IAAA)	Use of conservation agriculture in crop-livestock systems in the drylands for enhanced water use efficiency, soil fertility and productivity (CLCA-II)	Climate change adaptation program for vulnerable rural territories of Tunisia (PACTE)	Soil Protection and Rehabilitation of Degraded Soil for Food Security (ProSol)	Support for Sustainable Development in the Agriculture and Artisanal Fisheries sector in Tunisia (ADAPT)
Type of initiative	R&D project	Development program	Development project	R&D project	R&D program	Development project	Development program
Goal and objectives	Promoting the integration of soil health perspectives in farmers' decision making processes through on-farm experimentations of crop rotations and biomass management practices	Supporting the sustainable development of local value chains, integrating aspects of sustainable development into training, extension and accompanying measures for small scale farmers and contributing to the elaboration of a national strategy for sustainable development	Promoting a business-oriented mindset among small scale farmers and supporting the development of more sustainable, profitable (dairy and potato) value chains	Designing and piloting integrated crop-livestock management solutions based on conservation agriculture principles and strengthen interactions between producers, experts and researchers to improve agricultural production and limit its environmental impacts	Integrating AE co-design and co-evaluation activities into a broader territorial planning process to enhance dialogue between farmers, agricultural services and researchers and promote innovative practices based on crop rotation, inter-cropping, limited tillage and improved biomass management	Protecting and rehabilitating soils and improving food security through (1) financial and technical support of field-based initiatives and (2) advocacy and capacity strengthening at the central and regional levels	Supporting food system actors' shift towards more resilient production, marketing and consumption practices and services through the setting up of financial and credit mechanisms
Location	Northwest and central Tunisia	Northwest and central Tunisia	Northwest and central Tunisia	Latin America & North Africa, with activities Northwest and central Tunisia	Northwest and central Tunisia	Northwest and central Tunisia	Nationwide, with cereal component in Northwest Tunisia
Years of implementation	2007-2012	2013-2016	2015-2025	2018-2022	2018-2024	2019-2025	2020-2028
Ag system(s) targeted	Medium to large scale cereal farming	Small and medium scale tree-based and livestock systems	Small scale potato and dairy farming systems	Small scale crop-livestock systems	Small scale crop-livestock systems	Small and medium scale crop-livestock systems	Small and medium scale cereal farming, aquaculture and fisheries
AE principles supported	Recycling Input reduction Soil health Synergy	Recycling Input reduction Soil health Biodiversity Economic diversification Social values and diets Fairness Land & NR governance	Recycling Input reduction Soil health Animal health Biodiversity Synergy Economic diversification Social values and diets Fairness Land & NR governance	Recycling Input reduction Soil health Animal health Biodiversity Synergy Economic diversification Co-creation of knowledge Fairness Land & NR governance Participation	Recycling Input reduction Soil health Biodiversity Synergy Economic diversification Co-creation of knowledge Fairness Land & NR governance Participation	Recycling Input reduction Soil health Animal health Biodiversity Synergy Economic diversification Co-creation of knowledge Social values and diets Fairness Connectivity Land & NR governance Participation	Recycling Input reduction Soil health Biodiversity Economic diversification Social values and diets Fairness Land & NR governance
Most important innovation(s)	Model farms Farmer field schools and networking Facilitated access to adapted equipment	Dialogue among value chain actors Facilitated access to adapted equipment	Farmer-to-business contracts Value chain forums Various technical innovations	"Knowledge hubs" involving farmers, extension agents, private sector and researchers Co-design and introduction of forage seeds mixes and small machinery	Farmer field schools and networking Co-conception workshops with farmers and agricultural services (facilitated by researchers)	Multi-stakeholder sensitization and dialogue Trainings on communication about soil degradation and conservation	Calls for innovative proposals by farmers and value chain actors Financing mechanisms involving collectors
Target beneficiaries	Large/medium scale farmers	Small/medium scale farmers Farmer associations Small and medium enterprises	Small scale farmers Small and medium enterprises	Small/medium scale farmers	Small scale farmers	Agricultural service officers Small/medium scale farmers Farmer associations Small and medium enterprises	Small/medium scale farmers Farmer associations Small and medium enterprises
Number of target beneficiaries	40-60	800+	15,400	3,000	20+	n.a.	10,000
Marginalized groups targeted	None	Women and youth	Women and youth	Women and youth	Women and youth	n.a.	None

Analysis: theories of change and behaviour change

Designers of initiatives: motives and interests

All initiatives studied in depth involved co-design efforts with departments and/or offices of the ministry of agriculture. The PADAC project was designed by the National Institute of Field Crops (INGC) and national agronomic research institutions (IRESA). The PAD, IAAA, and ProSol initiatives were co-designed by a foreign development agency (GIZ) and various departments and offices of the ministry of agriculture. The CLCA project was co-designed by researchers from CGIAR centres (ICARDA and CIMMYT), national agronomic research institutions (IRESA and INRAT) as well as agencies of the ministry of agriculture (INGC and OEP). The PACTE initiative involved co-design by one department of the ministry of agriculture (DG/ACTA), foreign research organisations (CIRAD and INRAE) and two national agronomic research institutions (INAT and INRGREF). Finally, the ADAPT initiative was designed by a foreign development agency (AICS), a consortium of national agronomic research institutions (IRESA), two offices of the ministry of agriculture (APIA and INGC) and the Central Bank of Tunisia. In all cases, implementation then involved the ministry of agriculture and its decentralized services.

Regarding the motives and interests of these different actors, key informants provided fairly generic answers, referring to the goals and objectives of their projects or programs and stressing the significance of the latter as responses to the national development challenges. Beyond generic answers, a number of assumptions can be made regarding more specific motives and interests. These relate to: (i) access to additional resources, including funding and expertise, for national development actors, (ii) academic strategy, networking, and access to financial resources for international and national research organisations, and (iii) geopolitical strategy for international development organisations.

Targeted behaviour and relationship changes

Selected initiatives focused on *innovations for farmers* (such as PADAC and CLCA) have generally sought to generate changes in farmers' perspective on biomass and natural resource (soil, water, and biodiversity) management at the plot, farm, and/or landscape scale. By combining different mechanisms, such as technical trainings, demonstration activities, and input/equipment provision as well as structured interactions between farmers, experts, and researchers, these initiatives are expected to enhance the willingness and capacity of farmers to manage their land more sustainably.

Initiatives involved *in sensitization and institutional capacity building* (such as ProSol) are generally seeking to maximise outreach by providing technical and organisational training, expertise, equipment (including new technologies) to agricultural service providers. In particular, with extension services more capable of disseminating good practices, these initiatives are expected to generate change in farmers' behaviour and practices towards improved farm productivity and sustainability.

Initiatives focused on *value chains development and strengthening* (such as IAAA) as well as some of those related to multi-stakeholders platforms (such as PAD) are seeking to make farmers adopt a more business-oriented mindset and to reinforce connections and collaborations between agri-food system actors. By combining different mechanisms, such as interactive and technical trainings, multi-stakeholder workshops and forums, and by promoting farmer-to-business agreements, these initiatives are expected to strengthen the capacity of farmers to become sustainable farm entrepreneurs, negotiate with value chain actors, and adapt to changing (market and environmental) conditions.

Other initiatives centred on *multi-stakeholders platforms* (such as PACTE) target more specifically the relationship between farmers and agricultural services. Through co-conception workshops and field schools facilitated by researchers, the initiatives seek to establish a trusting relationship and productive dialogue between farmers and agricultural agents in order to generate collective learning and agroecological innovation.

Finally, initiatives focused on *financial support and services* (such as ADAPT) are seeking to strengthen the financial capacity of farmers to innovate and to incentivize collaboration and partnership between agri-food system actors (e.g. farmers, middlemen, service providers, input suppliers, etc.). Through national calls for ecologically and socially innovative projects, co-financing solutions, and individualized technical advice and support, these initiatives are expected to generate a wide range of new, sustainable production models that meet the challenges of climate change, promote agroecological transition, etc.

Factors contributing to success

Successful initiatives commonly involve co-designing and funding technical innovations, along with providing innovative equipment to farmers that facilitated uptake of promoted practices. Utilizing demonstration sites and model farms has also proven effective in showcasing the productive potential and economic benefits of new innovations, above training and

awareness-raising alone. According to several key informants interviewed, establishing and maintaining trusting relationships and sustained dialogue between project partners and value chain actors, including farmers, is also crucial. In four initiatives studied in-depth, this was achieved by establishing and facilitating multi-stakeholder forums, platforms or 'knowledge hubs'. Finally, the engagement of key private sector actors can also play a significant role in supporting and disseminating innovations, as seen with the CLCA project's forage seeds mixes. In this case, engaging non-farmer actors along the value chain allowed for sustained supply of inputs that supported ongoing behaviour change.

Factors contributing to failure

A common reason for failure identified by key informants is the risk-averse behaviour of smallholder farmers, who are often hesitant to change long-standing practices. This behaviour, often combined with an absence of specific risk management strategies from the part of the initiatives and the relatively short duration of project's field implementation, did not allow for generating behaviour change on a large scale. Excessive bureaucracy and poor coordination between R&D partners or state agencies were also reported as leading to slow implementation and farmer disengagement. Similarly, the lack of legislative outputs and the absence of specific, long-term support from state agencies, allowing for an institutionalisation of technical and/or organizational innovations introduced by various initiatives, are considered as key contributing factors to failure. Finally, fluctuating markets, unstable commercial relationships, and an excess of intermediaries in the value chain have been reported by several key informants as factors that can discourage farmers' engagement.

Addressing the needs of marginalized groups

To address the needs of marginalized groups, specific activities aimed at including women and youth equally were implemented in four out of seven selected initiatives studied. These activities included gender-differentiated workshops, field trips and organizational training, and establishing women-led farming organizations (i.e. 'Women Agricultural Development Groups'), along with the design of technical innovations tailored for women, like hand-held seeders. Specific indicators were also set to measure women and youth participation in these activities and their membership in production structures.

For a majority of key informants interviewed, a major challenge is the prevailing patriarchal culture in Tunisia, limiting women's roles primarily to housekeeping, child-rearing and certain farming tasks, thus making it hard for most women to participate fully in the initiatives. Best practices for addressing these challenges include flexible planning and implementation of activities, like allowing women to bring children during training, and publicly demonstrating the economic benefits of innovations led by women.

Conclusions

Over the last two decades, the intervention strategies of AE initiatives in Tunisia have evolved significantly. Initially, these initiatives broadly focused on supporting (medium to large-scale) farmer leaders with a one-size-fits-all, technology transfer strategy. However, recent initiatives have shifted towards targeting a wider range of agri-food system actors – thereby attempting to address more structural constraints on behaviour change. They also shifted towards prioritizing collective structures, such as farmer groups and small enterprises – in order to create more inclusive and effective risk management conditions for smallholder farmers. In view of this broad evolution and of the success/failure factors identified above, key strategies for AE-I implementation in Tunisia include:

1. **Systems perspective:** Moving away from a one-size-fits-all, technology transfer approach, AE-I should account for the variable contexts of not only farmers but also other agri-food system actors, and design adapted strategies. In other words, each actor (e.g. farmer group, small enterprise, service or input provider, consumer, etc.) along targeted value chains should be considered as operating within a wider system of governance structures, social dynamics, and environmental conditions. Tailored approaches to behaviour change should be designed accordingly.

2. **Inclusivity:** The recent trend towards a liberal economic perspective, exemplified by initiatives like the ADAPT program, raises concerns about inclusivity. While calling for innovative proposals, it is crucial to ensure that the AE-I approach doesn't just benefit powerful actors and well established organizations but also poorer farmers, smallholder groups or community initiatives. In addition, employing gender transformative and youth-friendly approaches appears essential for improving inclusion in activities. This involves planning strategies that specifically address the challenges posed by the prevailing patriarchal culture in Tunisia (e.g. flexible planning and implementation of activities, publicly demonstrating the benefits of innovations led by women and youth, etc.) and setting up instruments (e.g. microcredit schemes, digital advisory services, etc.) specifically targeted at women and youth.

3. **Extensive and inclusive co-design processes:** Engaging a diverse range of actors, including stakeholders that do not benefit directly from AE-I support, is essential for identifying potential inconsistencies of agroecological innovations with the territorial reality. Elders, community leaders, local councillors but also collectors, retailers and consumers are just a few examples of stakeholders that may provide valuable insights for designing agroecological innovations that are suited to the local cultural, sociopolitical and market conditions. Co-design may also help transforming the behaviour of both agricultural officers (from a prescriptive stance) and local actors (from a stance of mistrust). Long-term facilitation and concerted planning processes can help build trust and engage these stakeholders in collaborative efforts.

4. **Leveraging multiple intervention modalities:** Implementing several successful intervention modalities simultaneously, such as training, demonstrating, and facilitating the establishment of stable relationships (e.g. farmer-to-business contracts, public-private partnerships, etc.) with key private sector actors, can also enhance the effectiveness of AE-I initiative.

5. **Expanding focus on under-addressed AE principles:** Finally, to enhance AE-I implementation, it appears essential to broaden the focus to include principles like connectivity and animal health. These aspects are often overlooked but are crucial for ecosystem resilience, sustainable resource management, nutrient cycling, integrated pest management and livelihood diversification. They also constitute key entry points for knowledge exchange and collaboration among stakeholders.

References cited

Gafrej R. 2016. Avec le changement climatique, quel avenir de l'agriculture en Tunisie ? CIHEAM Watch Letter 37.

ONAGRI. 2016. La conjoncture agricole de la campagne 2017/18. Observatoire National de l'Agriculture, Tunis.

UNFCC. 2014. Tunisia's Third National Communication as part of the United Nations Framework Convention on Climate Change. Ministère des Affaires Locales et de l'Environnement, Tunis.

WFP. 2018. Tunisia country strategic plan (2018–2022). Executive Board report. World Food Programme, Rome.

Annex: AE initiatives and references reviewed

Name	Type	Location	Links for additional information
Transversal Agroecology Program (PTA)	Project	Specific sites in northwestern Tunisia (governorates of Bizerte, Beja, Jendouba, El Kef and Siliana)	AFD (2017). Transition agroécologique aux changements climatiques : les défis de l'agriculture tunisienne, synthèse de la conférence, cité des sciences, Tunis, Tunisie, 27 septembre 2017, 8p. APAD, ATAE et INGC (2016). Le semis direct en Tunisie : situation actuelle et perspectives. Etude réalisée dans le cadre du projet " Agriculture de conservation au Maghreb (FERT) ", 66p. Deygout P. (2014). "Agroécologie : évaluation de quinze ans d'actions d'accompagnement de l'AFD " - l'appui AFD-MAE-FFEM au semis direct en Tunisie, Rapport d'évaluation, 32p.
Project for the development of agro-ecology and carbon storage in tropical and Mediterranean agriculture - Support for direct seeding in Tunisia (PAMPA)	Project	Specific sites in northwestern Tunisia (governorates of Bizerte, Beja, Jendouba, El Kef and Siliana)	AFD (2017). Transition agroécologique aux changements climatiques : les défis de l'agriculture tunisienne, synthèse de la conférence, cité des sciences, Tunis, Tunisie, 27 septembre 2017, 8p. APAD, ATAE et INGC (2016). Le semis direct en Tunisie : situation actuelle et perspectives. Etude réalisée dans le cadre du projet " Agriculture de conservation au Maghreb (FERT) ", 66p. Deygout P. (2014). "Agroécologie : évaluation de quinze ans d'actions d'accompagnement de l'AFD " - l'appui AFD-MAE-FFEM au semis direct en Tunisie, Rapport d'évaluation, 32p.
EcoHazoua project	Grass roots initiative	District Hazoua at Tozeur governorate	Sghaier M. and Neffati M. (2017). Report on agroecology. Agroecology: Adapting to climate change in semiarid areas for a sustainable agricultural development and food security and nutrition, Tunisia, report commissioned by FAO, 42p. Ressources found on the organisation website : http://ecohazoua.org/
Dream in Tunisia	Social movement	Female farmers of arid and semi-arid regions of Tunisia	Ressources found on the organisation website: http://dreamintunisia.tn/
Conservation Agriculture Development Support Project (PADAC-II)	Project	Specific sites in northwestern Tunisia (governorates of Bizerte, Beja, Jendouba, El Kef and Siliana)	AFD (2017). Transition agroécologique aux changements climatiques : les défis de l'agriculture tunisienne, synthèse de la conférence, cité des sciences, Tunis, Tunisie, 27 septembre 2017, 8p. APAD, ATAE et INGC (2016). Le semis direct en Tunisie : situation actuelle et perspectives. Etude réalisée dans le cadre du projet " Agriculture de conservation au Maghreb (FERT) ", 66p. Deygout P. (2014). "Agroécologie : évaluation de quinze ans d'actions d'accompagnement de l'AFD " - l'appui AFD-MAE-FFEM au semis direct en Tunisie, Rapport d'évaluation, 32p.
Concerted action program for oases in the Maghreb and in the Saharan zone - phase I to III (PACO)	Social movement	Saharian zone of Tunisia	Ressources found on the organisation website : https://www.raddo.org/Qui-sommes-nous/Nos-projets
Acacias for all	Social movement	Female farmers of arid and semi-arid regions of Tunisia	Ressources found on the organisation website: http://acaciasforall.tn/
Integrated crop-livestock conservation agriculture for sustainable intensification of cereal-based systems in Central and West Asia and North Africa (CLCA-I)	Project	National Agricultural Research and Extension Systems (NARES), Policymakers and resource-poor farmers from 3 districts at governorate of Siliana (El Krib, Makthar and Bou Arada)	ICARDA (2018). Integrated crop–livestock conservation agriculture for sustainable intensification of cereal-based systems in Central and West Asia and North Africa: Grant results sheet, 4p.
Promotion of Sustainable Agriculture and Rural Development in Tunisia (PAD-I)	Program	Central-west and north-west regions of Tunisia (Jendouba, Beja, Kef, Siliana, Kairouan, Kasserine and Sidi Bouzid)	GIZ (2017). Project Brochure, Promotion de l'Agriculture Durable et du Développement Rural (PAD), 2p. GIZ (2017). Project evaluation: summary report, Tunisia:

			Promotion of sustainable agriculture and rural development in Tunisia, 11p.
Conservation Agriculture in the Maghreb (ACM)	Project	Farmers' groups and mutual societies of agricultural services (SMSA) at 4 districts from northwestern Tunisia (El Krib, Fernana, Laaroussa and Tahent)	APAD, ATAE et INGC (2016). Le semis direct en Tunisie : situation actuelle et perspectives. Etude réalisée dans le cadre du projet " Agriculture de conservation au Maghreb (FERT) ", 66p.
Agropastoral development and promotion of local initiatives program for the South-East - Phase II (PRODESUD-II)	Program	7 districts at Tataouine governorate and 2 distrcits at Kebili governorate	FIDA (2018). Évaluation de la stratégie et du programme de pays (ESPP) du FIDA en République tunisienne, 173p.
Agro-pastoral development project and associated sectors in the governorate of Médenine (PRODEFIL)	Project	Mednine governorate (3 districts)	FIDA (2014). Projet de développement agro-pastoral et des filières associées dans le gouvernorat de Médnine, Rapport de conception finale, pp. 213. FIDA (2019). Agropastoral value chains project in the Governorate of Médnine, Mid-term review, pp. 116. FIDA (2021). Tunisie, Projet de développement agropastoral et des filières associés dans le Gouvernorat de Médnine, Rapport de supervision, pp. 137.
Innovations for Agriculture and Agrifood (IAAA)	Project	Central-west and north-west regions of Tunisia (Jendouba, Beja, Kef, Siliana, Kairouan, Kasserine and Sidi Bouzid)	GIZ, MARHP and APIA (2015). Project brochure - Innovations pour l'Agriculture et l'Agro-Alimentaire (IAAA): Des innovations au service des petits agriculteurs et des petites et moyennes entreprises du secteur agricole et agro-alimentaire en Tunisie, 6p.
Tunisian association of permaculture	Social movement	Tunisia, whole country	Ressources found on the organisation website: https://permaculturetunisie.org/
Promotion of Sustainable Agriculture and Rural Development in Tunisia, Phase-II (PAD-II)	Program	Central-west and north-west regions of Tunisia (Jendouba, Beja, Kef, Siliana, Kairouan, Kasserine and Sidi Bouzid)	GIZ (2022). Evaluation centrale de projet - synthèse, Promotion de l'agriculture durable et du développement rural (PAD II), 8p.
Siliana territorial development value chain promotion project (PROFITS)	Project	Siliana governorate (5 districts)	FIDA (2018). Évaluation de la stratégie et du programme de pays (ESPP) du FIDA en République tunisienne, 173p.
Integrated landscapes management in lagging regions project (PGIP)	Project	Beja, Jendouba, Kef, Siliana, Kairouan, Kasserine, Sidi Bouzid and Bizerte	PGIP (2017). Project appraisal document : Tunisia Integrated Landscapes Management in Lagging Regions Project, 125p. PGIP (2022). Report on a proposed project restructuring of Tunisia Integrated Landscapes Management in Lagging Regions Project, 22p.
Collective of Actors for Planting and Environmental Transition (CAPTE)	Social movement	3 governorates: Bizerte, Mannouba, Siliana	Ressources found on the organisation website: https://capte.io/
Territories Committed to Oasis Resilience (TERO)	Social movement	Young people (Saharian zone of Tunisia)	Ressources found on the organisation website : https://www.raddo.org/
Use of conservation agriculture in crop-livestock systems in the drylands for enhanced water use efficiency, soil fertility and productivity in NEN and LAC countries (CLCA-II)	Project	Tunisian districts / governorates (Chouarnia / Siliana ; Saouaf, Fahs and Jougar / Zaghouan ; Testour / Beja)	Cheikh M'hamed H., Bahri H., Annabi M., Frija A. and Idoudi Z. (2022). Historical review and future opportunities for wider scaling of conservation agriculture in Tunisia, Conservation Agriculture in Africa (Mkomwa S. and Kassam A. eds), p.137-150. ICARDA, CIMMYT, INRAT, IRESA, ITGC and Fondacion Proinpa (2019). Use of conservation agriculture in crop-livestock systems (CLCA) in the drylands for enhanced water use efficiency, soil fertility and productivity in NEN and LAC countries, Project progress report year 1 - april 2018 to march 2019, 63p. McLeod, R., Massaoud, A. and Aguilera, J. (2021). Mid-Term Evaluation of the IFAD Crop Livestock Conservation Agriculture (CLCA) Project, Report Commissioned By ICARDA, September 2021, 73p.
Climate change adaptation program for vulnerable rural territories of Tunisia (PACTE)	Program	Specific sites in northwestern and central Tunisia (governorates of Bizerte, El Kef, Siliana, Kairouan and Sidi Bouzid)	Baastel (2022). Evaluation à mi-parcours du programme d'adaptation au changement climatique des territoires ruraux en Tunisie (PACTE), Rapport d'évaluation, 101p. Cirad (2018). Plateformes de concertation territoriale

			pour la définition, la mise en stratégie et la planification des investissements physiques et institutionnels du PACTE et le suivi-évaluation des impacts, Annexe n°1 - Proposition technique PACTE-Plateformes, 36p.
Capacity building and support for the implementation of the national climate change adaptation policy in Tunisia (Adapt-CC)	Project	Tunisia	GIZ (2020). Project brochure: Renforcement de capacités et appui à l'exécution de la politique nationale d'adaptation au changement climatique en Tunisie «Adapt-CC», 2p.
Rural innovation and water in the southern Maghreb territories (Massire)	Project	2 Governorates (Kebeli and Mednine) ; young women and men from small family farming	MASSIRE (2019). Grant design document: Co-constructing sustainable water governance at local level to strengthen the resilience of North Africa's oases
Economic, Social and Solidarity Project (IESS-Kairouan)	Project	7 districts at Kairouan governorate (EL Alâa, Hajeb El Ayoun, Oueslatia, Sbikha, Haffouz, Ain Jloula and Chbika); families in need and with limited income, small farmers and small breeders in hilly areas	IFAD (2019). Economic, Social and Solidarity Project (IESS-Kairouan): Project Design Report, 400p.
Soil Protection and Rehabilitation of Degraded Soil for Food Security (ProSol)	Project	Governorates of northwest and central Tunisia (Béja, Jendouba, Kef, Seliana, Sidi Bouzid, Kairouan, Kasserine)	GIZ (2021). SEWOH - Initiative spéciale " un monde sans faim ", Programme global " protection et réhabilitation des sols pour la sécurité alimentaire - ProSol ", Etude de Scoping sur l'agroécologie - composante pays : Tunisie, 81p.
Support for Sustainable Development in the Agriculture and Artisanal Fisheries sector in Tunisia (ADAPT)	Program	1. Family farm (EAF) 2. Small and Medium Enterprises / Industries under Tunisian law (PME/PMI) 3. Mutual Societies of Agricultural and Fishing Services (SMSA/SMSP)	ADAPT (2022). Project brochure. ADAPTation est le mot clé du futur, 16p.

Guillaume Lestrelin, CIRAD, guillaume.lestrelin@cirad.fr
Rahma Jaouadi, INAT, rahma.jaouadi@gmail.com
Houssem Braiki, CIRAD/ACCORD, houssem_braik@hotmail.fr
Dhia Hamrouni, INAT, hamrouni.hd@gmail.com
Veronique Alary, CIRAD/ICARDA, v.alary@cgiar.org
Zied Idoudi, ICARDA, z.idoudi@cgiar.org
Mourad Rekik, ICARDA, m.rekik@cgiar.org
Aymen Frija, ICARDA, a.frija@cgiar.org

CGIAR is a global research partnership for a food-secure future. CGIAR science is dedicated to transforming food, land, and water systems in a climate crisis. Its research is carried out by 13 CGIAR Centers/Alliances in close collaboration with hundreds of partners, including national and regional research institutes, civil society organizations, academia, development organizations and the private sector. www.cgiar.org

We would like to thank all funders who support this research through their contributions to the CGIAR Trust Fund: www.cgiar.org/funders.

To learn more about this Initiative, please visit this webpage.

To learn more about this and other Initiatives in the CGIAR Research Portfolio, please visit www.cgiar.org/cgiar-portfolio

CGIAR | INITIATIVE ON Agroecology