



Food and Agriculture
Organization of the
United Nations

The food system in Tunis in the face of crises: fragility or resilience?



Introduction

Over the last ten years, the city of Tunis has experienced several crises. Changes in climate are recurrent and local authorities and citizens are used to them. Today's food system is based on the constraints related to the 2011 revolution, which led to ongoing political and economic instability, followed by the COVID-19 health crisis and the Russo-Ukrainian war. While the health

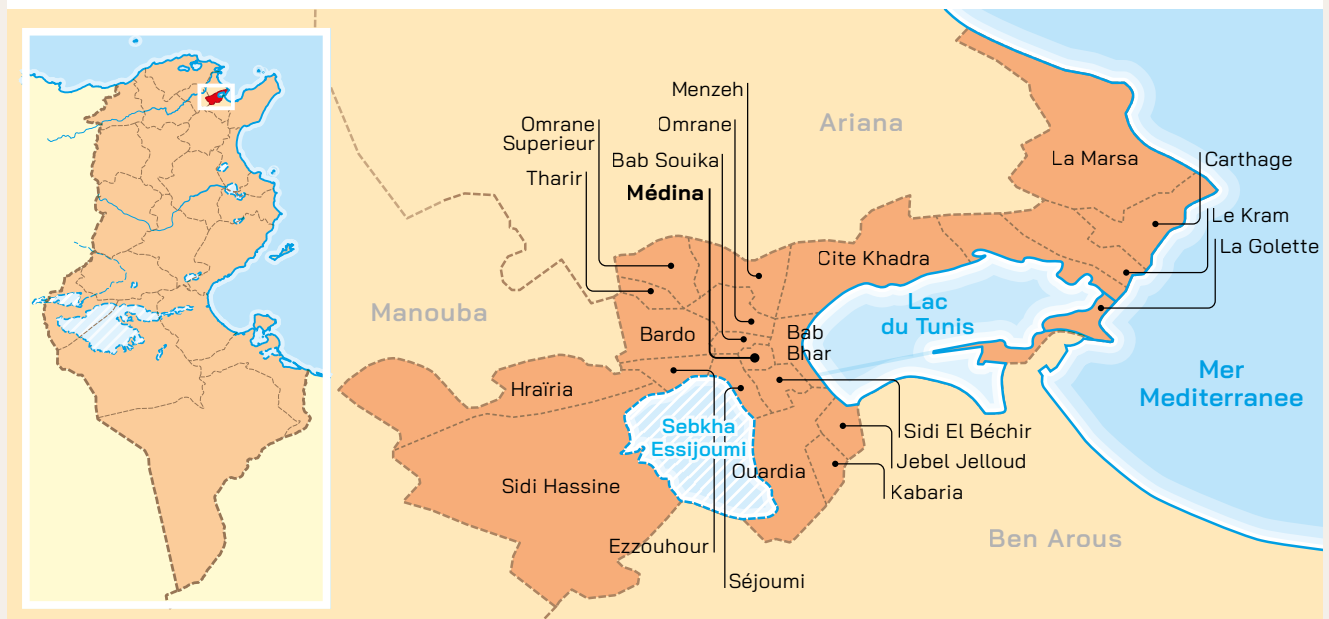
crisis has temporarily destabilized the food system, the latter has been severely impacted by the war, and the food security of citizens is now an acute issue. Looking at recent developments through this diagnosis and the responses to the various shocks- are they sufficient? How can we make them more effective?

Tunis: A diversified and open food system governed by the state

The municipality of Tunis is in the heart of the capital¹ and extends to the south-east of Greater Tunis (Figure 1). It is the country's largest consumer center with 638 845 inhabitants² (24 percent of Greater Tunis) and a growth rate of 1.4 percent. It boasts many restaurants, hotels and fast-food restaurants. The driving force behind its food system remains the agri-food industry and commercial services.

Tunis is characterized by its relatively higher quality of life compared to other cities and its socio-economic variability. However, a proportion of the population is vulnerable, with a high unemployment rate (18.5 percent compared to 15.3 percent nationally) and the poverty rate representing 5.3 percent of the population³. This situation reflects inequalities in access to quality food according to income, with some exposure to junk food⁴.

Figure 1 Map of the boundaries and districts of the Municipality of Tunis



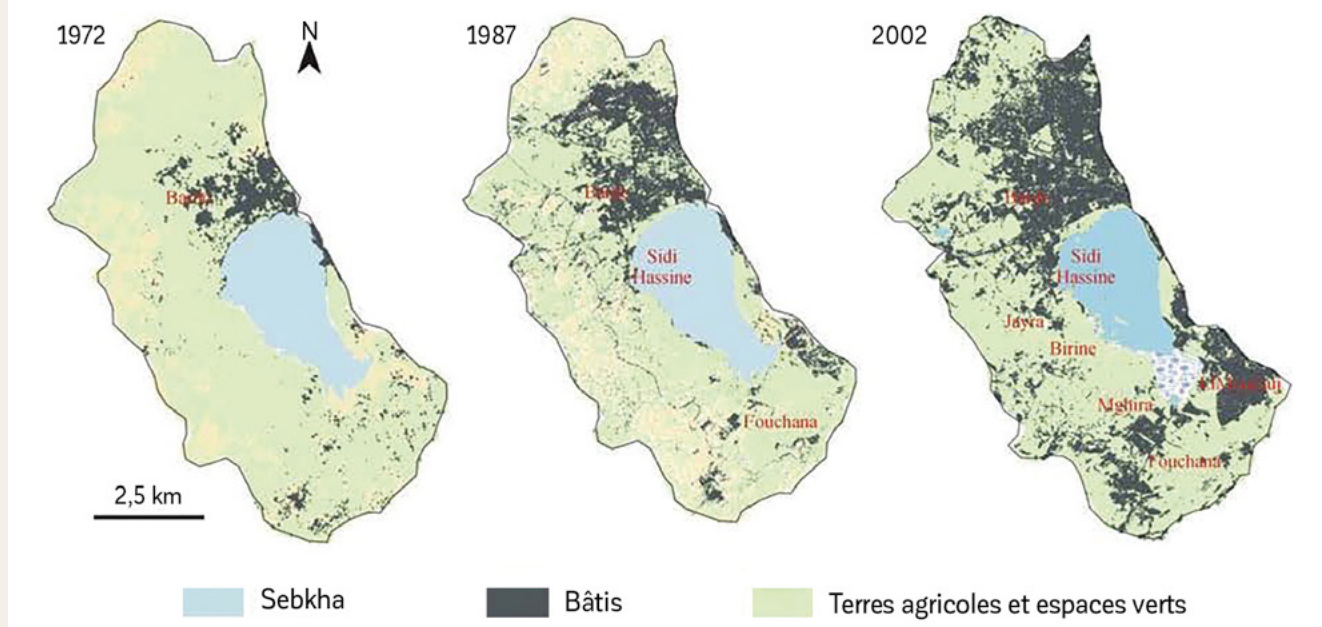
Source: Regional Commission for Agricultural Development

- 1 The city of Tunis is the oldest commune, founded in 1858, and is one of the capital's eight municipalities.
- 2 INS, 2014. General Population Census.
- 3 INS, 2014. General Population Census
- 4 The prevalence of obesity has reached 27% on average of the population in the Tunis district linked to the nutritional transition. Republic of Tunisia, Ministry of Health, National Institute of Health, 2019. The health of Tunisians: results of the 2016 survey.

Local agriculture is poorly represented whereas it was once in symbiosis with the city. Some 1160⁵ farms have been identified, located in a contrasting landscape of informal settlements, home to rural and unemployed

populations. Urban sprawl (residential, industrial, administrative) constitutes a threat to this peri-urban agriculture (Figure 2).

Figure 2 Evolution of urban sprawl in Sebkhia Essijoumi



Source: Chouari W. (2013)⁶

Farming is essentially family-based, characterized by smallholdings that have become increasingly fragmented because of inheritance. Nearly 85 percent of farms are smaller than 10ha⁷. Given their financial difficulties and lack of access to credit, farmers often have a secondary activity to supplement their income.

Rainfed crops (cereals, arboriculture, and forage) cover 98 percent of farmland. Production methods are not very innovative. As this is a small-scale, undiversified agricultural sector, with insufficient land and water resources, and limited potential for irrigated farming (4.4 percent of the total area), its capacity to adapt to climate change remains limited. This explains why 50 percent of producers are more inclined towards off-farm dairy cattle rearing.

Benefiting from a good road and port infrastructure for the circulation of products, Tunis is a commercial crossroads. It boasts a wholesale market and several retail markets⁸, livestock markets, slaughterhouses, and agri-food industries, including large, integrated, competitive industrial firms capable of regularly supplying diversified, quality products (dairy, cereal, poultry, canned goods and so on). The city boasts many wholesale and retail outlets⁹. Despite the development of supermarkets, small local shops¹⁰ are still the preferred source of supplies.

Despite the diversification of products consumed, the food system is marked by an excessive consumption of cereals (reaching 50 percent of energy intake for the poorest)¹¹ which are subsidized by the state and imported at a rate of 60 percent of requirements. Paradoxically, they are subject to high levels of

5 CRDA Tunis, 2021. Preliminary results of the General Agricultural Census

6 Chouari Walid, 2013. Environmental problems related to contemporary urbanization in the Essijoumi endoreic system (northeastern Tunisia). *Revue Géographie, Physique et environnement*, vol. 7/ 2013.

7 CRDA of Tunis, 2021. Preliminary results of the General Agricultural Census.

8 A market of national interest in Bir el Kasaa (for fruit, vegetables and fish) and 22 retail markets. The weekly markets, at reasonable prices, are closest to working-class neighborhoods and can be served directly by farmers from all regions of the country.

9 4 985 wholesale outlets, 31 009 retail outlets.

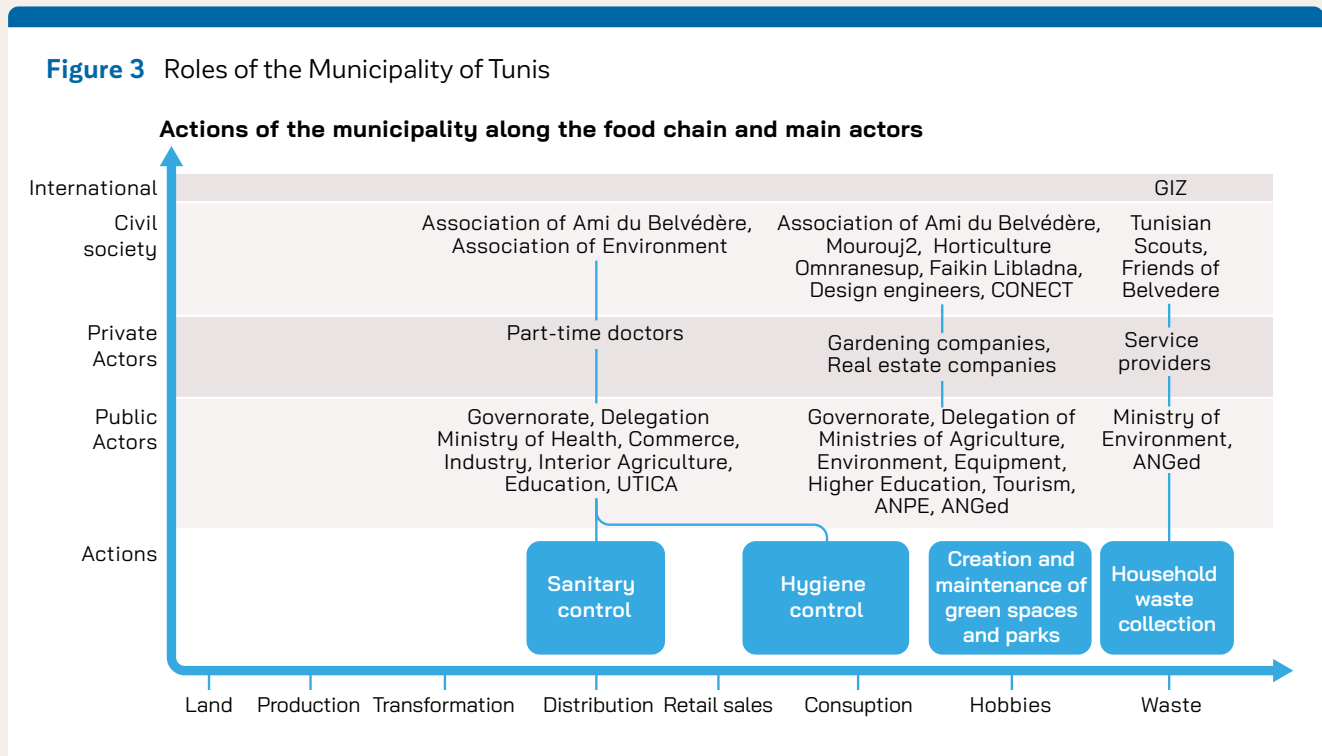
10 Small grocery stores, creameries, artisan butchers and fruit and vegetable vendors.

11 INS, 2015. National survey of household budgets, consumption and living standards.

wastage¹². Value chains also remain largely dependent on imported inputs (seeds, fertilizers) and animal feed.

The food system is centrally governed, with a top-down approach. All strategies are drawn up at the central level, and participation in decision-making by local authorities and civil society remains limited,

if not often absent. The municipality, like others in the country, is not equipped with a mechanism for planning, monitoring and evaluating food security and anticipating shocks (Khaldi, 2019)¹³. It has little or no visibility over all the players, since its role is limited to health and hygiene control, waste collection, and maintenance and creation of green spaces (Figure 3).



Source: Khaldi, R. (2019).

A destabilized food system, progressively affected at all levels by shocks

Over the past ten years, the most striking stress has been the political and economic instability that has prevailed since the Tunisian Revolution of January 14, 2011, when the population rose up against the dictatorial regime, unemployment and corruption. This chronic instability has severely disrupted the country's finances and decision-making and acted as an amplifier for other shocks (Figure 4, Table 1).

Climatic stresses have long been known and expected, but their intensity is increasing (lack of rain, delayed autumn and winter precipitations and prolonged high temperatures). They are occurring against a backdrop

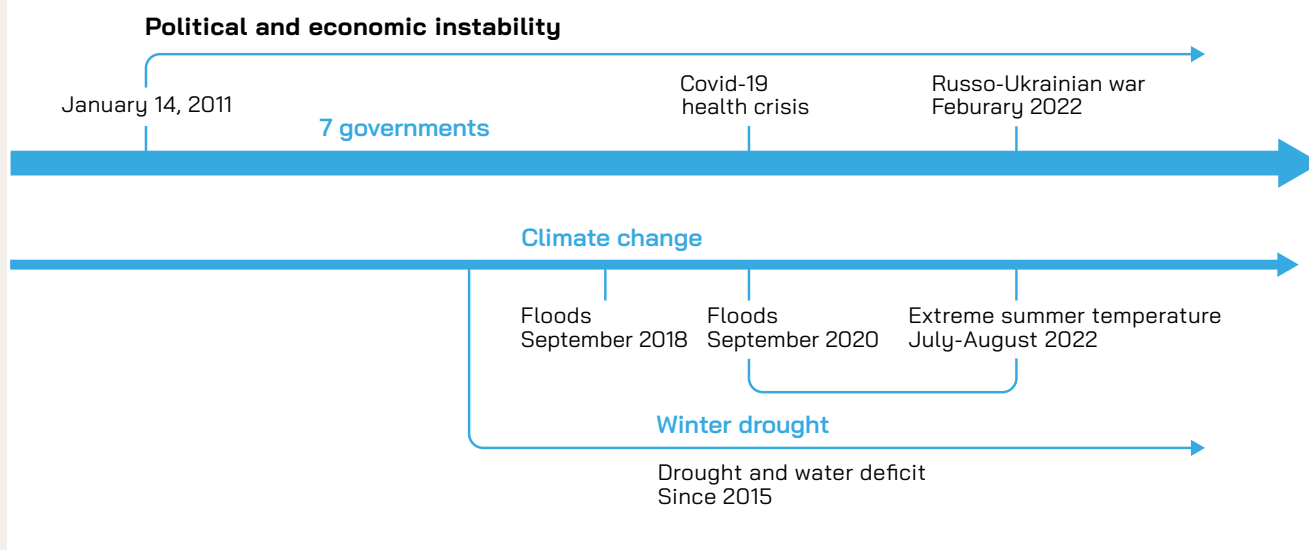
of serious degradation of natural resources (soil, water, biodiversity), and are further threatening local production.

In the short term, the COVID-19 pandemic destabilized the entire food system and affected all players. Despite major disruptions to distribution logistics, the city's supply was deemed secure, given its flexibility due to the proximity of storage silos, collection centres and refrigeration stations, and the openness of its food system to other local (neighbouring and distant) and global systems.

12 According to a survey of households in El Mourouj 2, 12.7% of bread purchased, 5% of other cereal products and 1.6% of vegetables are wasted, apart from what is thrown away by the many restaurants, hotels and fast-food outlets. Municipality of Tunis, INC and FAO, 2020. Analysis of food waste at household level: magnitude, causes and solutions.

13 Khaldi, Raoudha, 2019. Towards sustainable food and nutrition governance for the Municipality of Tunis. FAO-Municipality of Tunis consultation report.

Figure 4 Timeline of recent shocks and stresses



Source: FAO

At the same time, the crisis has immediately led to the proliferation of informal channels, whose consequences are perceived as intensely heavy on the rise in food prices and the unusual shortage of basic products.

All actors are unanimous on the strong and immediate effects of the crisis on consumer purchasing power, leading to changes in the eating habits of certain categories, especially the most disadvantaged¹⁴. The drop in demand has led to an exceptional and temporary increase in stocks (milk, poultry products, potatoes), with heavy financial consequences for companies and producers.

The Russo-Ukrainian war has aggravated the situation. It has hit regular imports of cereals and affected inputs, on which Tunisia is heavily dependent. Access to food is rapidly being undermined by rising food prices¹⁵, which has amplified the decline in purchasing power and poverty in the city. The informal sector has become even more widespread, leading to a shortage of certain subsidized basic products and the clandestine sale of livestock to neighbouring countries.

All actors agree that the latest shock has further weakened the food system through the accelerated rise in inflation¹⁶, and that the economy as a whole has been hard hit¹⁷.

14 By reducing the quantities consumed or by eating foods that are not normally appreciated.

15 In September 2022, food prices rose by 13% year-on-year (INS).

16 The inflation rate was 8.6% in August 2022, +0.4% higher than in July (INS).

17 The rate of coverage of imports by exports fell from 67.2% in 2021 to 62.4% in 2022 (January-September) (ONAGRI, 2022).

Table 1: The most significant shocks and stresses over the past 5 years and their impact on the urban food system

Shocks and stress	Description	Impact on Food System
Climate change	<p>Climate change is exacerbated by:</p> <ul style="list-style-type: none"> increasingly frequent rainfall shortages (one year in 5 is favourable), leading to greater water deficits delayed autumn and winter precipitation, prolonged and intense temperature rises. 	<ul style="list-style-type: none"> Lower yields and loss of income, especially for small farmers; Reduced availability of dry crops (cereals, olives, pastures) and irrigated crops (fodder, fruit and vegetables); Lower herd numbers, higher feed and meat prices; Decrease in irrigated areas and delay in dryland cultivation; Unregulated construction of wells and excessive use of non-renewable groundwater; Loss of soil fertility and biodiversity (fisheries at Lake Tunis Nord) and increased risk of flooding for the environment, the population and road infrastructure (Sebkhet Sijoumi); and Gradual abandonment of farming and sale of land.
Political and economic instability	<p>January 14, 2011, date of departure of the former President of the Republic following the uprising of the population against the dictatorial regime, unemployment and corruption.</p>	<ul style="list-style-type: none"> Weak coordination of decision-making, discontinuity of programmes and slowdown of activities; Declining public finances; Rising unemployment; Proliferation of informal channels and border smuggling; and Encroachment of anarchic construction on agricultural land.
Covid-19	<p>Spread of the pandemic towards the end of February 2020.</p> <p>Measures to implement the state of health emergency:</p> <ul style="list-style-type: none"> General containment, with the exception of vital sectors (agri-food, wholesale, retail and health); Restricted movement of individuals; Closure of livestock markets, slaughterhouses, weekly markets, collective and non-collective catering; Gradual targeted decontamination (small trades, craftsmen and affected sectors); and External constraints: Closure of borders. 	<ul style="list-style-type: none"> Spread of disease, deaths; Lack / shortage of manpower for agricultural activities; Loss of jobs in SMEs and craft businesses, slowdown of activities and loss of income; Increase in vulnerable rural and urban populations; Proliferation of informal channels; Low availability of inputs (fertilizers/pesticides) /services (veterinary, mechanization) and rising prices; Illegal slaughter of animals; Soaring food prices/scarcity of certain basic products; Low availability of inputs (fertilizers/pesticides)/services (veterinary, mechanization) and rising prices; Rising production costs/agricultural productivity, falling incomes; Difficult access to credit and low government support for small-scale producers; Consumer flight to home food storage (before confinement); Changing consumption patterns (home delivery, e-commerce) / eating habits (healthy products); Declining purchasing power or demand ; Increasing stocks of staple products (milk, poultry products, potatoes) and high management costs; Unfavourable nutritional situation of vulnerable populations (decline in quantity and quality of products consumed).
Russo-Ukrainian war	<p>The war, an unpredictable shock, disrupted the international market of primary commodities and energy. Tunisia imports over 60% of cereal and livestock feed from the two countries.</p>	<ul style="list-style-type: none"> Disruption and irregularity of supplies on these markets; Weakened strategic value chains, dependent on external markets; Increased production costs; Changes in production methods; Proliferation of informal circuits, multiplication of intermediaries; Shortages of basic products and inputs; Rising inflation and consumer prices and deteriorating purchasing power; Increased poverty and amount of vulnerable population; and Impact on food trade balance and budget for consumers' subsidies.

Box 1: Climate change in Tunis

Over the past ten years, the city of Tunis has recorded one favourable year in five. Water potential is becoming increasingly scarce (420 m³/inhabitant/year), while agriculture consumes 79 percent of the total volume of water, and dams will be filled to 25 percent of their capacity by 2022. Summer temperatures exceeded seasonal norms by 7 to 12°C.

In 2050, the maximum temperature in Tunis in the hottest month is expected to rise by 4°C, and in the coldest month by 1.2°C, resulting in an average annual temperature change of 1.5°C. Precipitation in the most humid month will decrease by 1%¹⁸.

What can be done to mitigate the impact of shocks and stresses?

Stakeholders feel that climate shocks are not the subject of specific actions for peri-urban agriculture (Table 2). Some projects are awaiting funding, such as the use of treated non-conventional water for irrigation, given the presence of several neighbouring industries.

For the other two major shocks (COVID-19 and the war in Ukraine), unprepared public authorities and food system actors launched a series of measures and initiatives to ensure the regularity of supply and the protection of citizens (Table 2). These measures are drawn up centrally by national commissions bringing together the relevant ministries (agriculture, industry, trade, social affairs, health, interior, finance) and professionals, and then applied uniformly at regional and local level.

Stakeholders feel that reactions are made in a hurry and are essentially focused on absorbing the shock to enable the food system to function without major changes, beyond a few minor adaptations. The measures targeted by the public authorities are numerous (Table 2, Figure 5), and the players identify, whatever the shock, three main types:

➤ **Production support:** These involve providing farmers with agricultural inputs and animal feed, and technical assistance, which remains limited to technical advice on adapting production methods without any identified transformation.

➤ **Regulation of strategic sectors:** This is achieved through price adjustments. In the milk sector, for example, an increase in the premium is granted for production, collection, processing and, above all, storage, to absorb the large volume of unsold milk. A price freeze has been implemented to compound feedstuffs to curb rising production costs (milk, meat, poultry, eggs). For essential products (onions, tomatoes, potatoes), an intervention price has been fixed to combat speculation and protect consumer purchasing power.

Following grain supply constraints coming from Ukraine and Russia, an unprecedented increase in selling prices was applied to encourage local production.

➤ **Protection measures:** These are also aimed solely at absorbing the shock. Financial support was granted to medium and very small businesses to limit the risk of their closure and support jobs¹⁹. It was also decided to postpone the expiry of bank loans (six months) for all actors. Part of the city's vulnerable population benefited from a cash transfer from the state²⁰.

Civil society initiatives are very limited.

18 Bastin JF, Clark E, Elliott T, Hart S, van den Hoogen J, and al. (2019). Understanding climate change from a global analysis of city analogues. PLOS ONE 14(10): e0224120. <https://doi.org/10.1371/journal.pone.0224120>

19 Allocated amount set at 200DT/month/employee. (1DT= 0.3 Euros)

20 Allocated amount set at 200DT/month/family.

Table 2: Main public measures and initiatives to cope with shocks

Shocks	Date	Initiative	Initiated by	Description
Changes in climate	Annually	Drainage cleaning.	Municipality, Ministry of Public Works, Housing and Spatial Planning, National Sanitation Board (ONAS).	To prevent the risk of flooding, which could block roads for food supply flows in particular.
Covid-19	March 2020	Opening of the Tunis wholesale market and food shops.	National government with the Ministries of Health, Commerce (SOTUMAG), Agriculture, Industry, Interior Affairs, Social Affairs and professionals.	<ul style="list-style-type: none"> To ensure the flow of products and maintain normal, regular supplies; Open wholesale markets (six days a week), retail markets and outlets.
	April 2020	Increase in the city's livestock feed quota.	Ministry of Agriculture, Hydraulic Resources and Fisheries (MARHP) following a request from the Regional Agricultural Development Commission (CRDA) of Tunis	To save livestock and enable business continuity: increase quota by 18% per month.
	April 2020	Provision of fertilizers for farmers.	MARHP in collaboration with the Ministry of Commerce.	To overcome the fertilizer shortage and save the agricultural campaign: Supply the market with fertilizer.
	March 2020	Enhanced support and technical assistance.	MARHP in Consultation with the inter professionals and the professionals.	<ul style="list-style-type: none"> A toll-free number to obtain travel authorizations from input and means of production suppliers; Technical advice for farmers (agricultural and livestock practices) provided by inter professionals, the professionals and the CRDA.
	August 2020 March 2021 July 2021	Regulation of strategic sectors.	National government ²¹ after consultation with Ministries: Commerce, Agriculture, Finance, professionals and Inter professionals.	<p>Milk sector: To absorb stocks of unsold goods:</p> <ul style="list-style-type: none"> Authorization for milk drying and export, with temporary incentives;²² Subsidy for UHT²³ milk storage. <p>To offset increase in production costs:</p> <p>Pour soutenir la production et assurer la régulation des excédents de production: Hausse des prix à la consommation</p> <ul style="list-style-type: none"> Revision of prices (+5 to 10%)²⁴ <p>To support production and regulate production surpluses:</p> <ul style="list-style-type: none"> Increase in consumer prices. Poultry sector: One-off storage aid for eggs and broilers²⁵; Potato sector: Temporary increase in storage²⁶ intervention price.

[continue →](#)

21 Ministerial Council of August 23, 2020, March 17, 2021, and July 6, 2021).

22 33 937 millimes/kg of milk powder produced and for export 115 millimes/liter of semi-skimmed milk and 200 millimes/liter of whole milk (1 000 millimes = 0.30 Euros).

23 50 millimes/liter of UHT milk storage.

24 The guaranteed minimum producer price was raised from 95 millimes/liter in August 2020 to 100 millimes/liter in March 2021; the collection subsidy for chilled and processed milk from 105 millimes/liter to 115 millimes/liter in August 2020.

25 1 000 millimes/hen (from slaughtered laying hens) and 190 millimes/egg.f

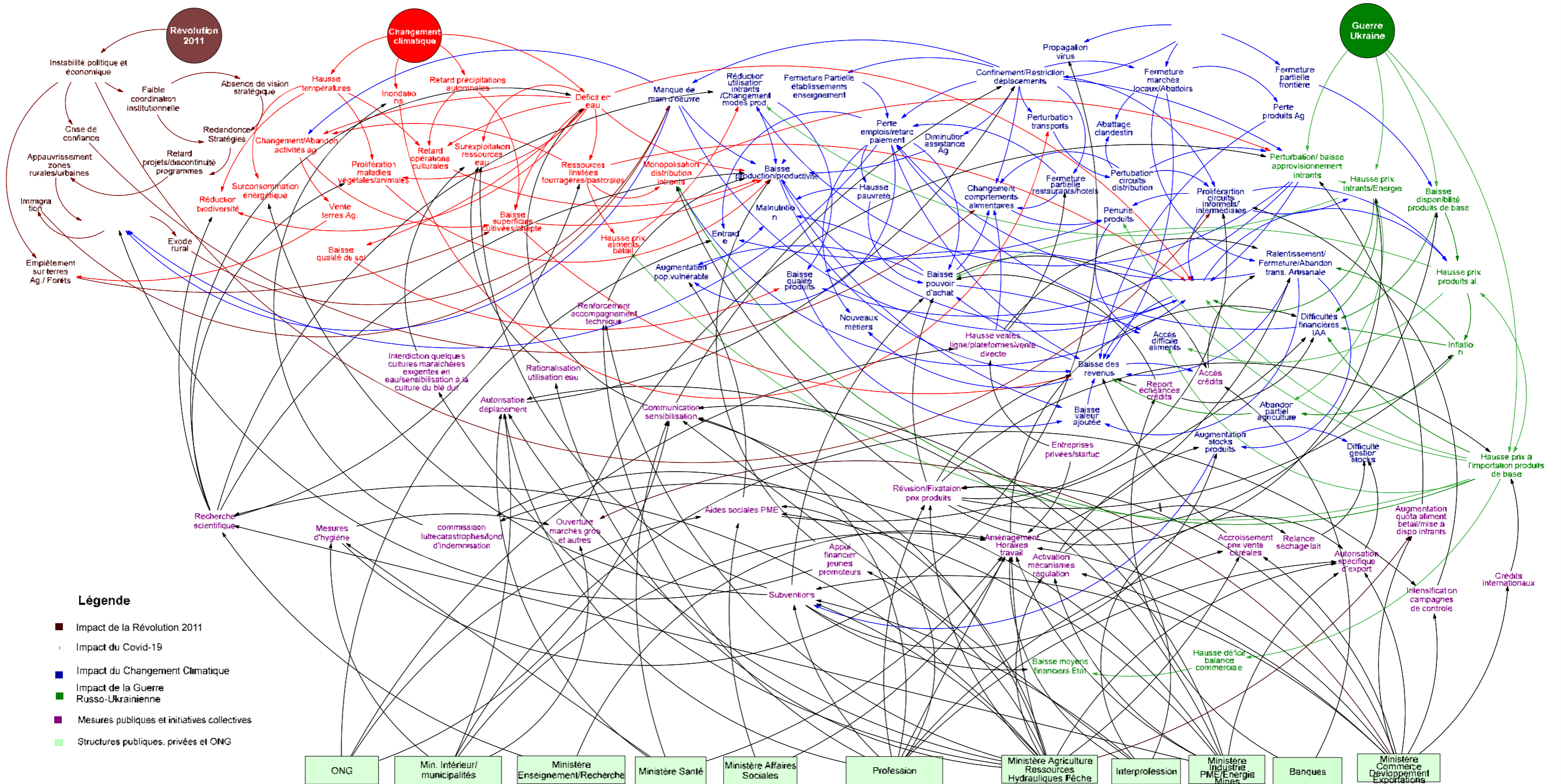
26 830 DT/T in 2020 and 2021 versus 770DT /T in 2019.

Shocks	Date	Initiative	Initiated by	Description
Covid-19 (continued)	March 2020	Financial support was granted to medium and very small businesses.	National government with Ministries of Finance, Social Affairs, Employment, Governorates	With the aim of limiting the risk of SME closures and sustaining jobs: financial support granted. ²⁷
	April 2020 September 2021	Social emergency plan	<ul style="list-style-type: none"> Government with Ministries of Finance, Social Affairs, Employment, Interior, Governorats Municipality of Tunis 	<ul style="list-style-type: none"> Set-up of a digital platform to register new vulnerable households affected by the disaster; Distribution of food packs and vouchers (300 families) by the municipality <p>To protect families in need:</p> <ul style="list-style-type: none"> Cash transfers (3% of category)²⁸. Establishment of a digital platform to register new vulnerable households. Distribution of food packs and vouchers by the municipality (300 families)
		Deferral of bank loan repayments (six months).	National government with Ministries of Finance, Social Affairs, Employment, Interior, Governorates.	In order to limit the economic repercussions on all actors, especially those who have lost their jobs or suffered a delay in payments.
	2020-2021	Civil society initiatives.	Mourouj2 residents' association.	<p>To improve the nutritional quality of food and the purchasing power of consumers:</p> <ul style="list-style-type: none"> Raising awareness of natural products and keeping a Mediterranean diet; Encouraging the planting of vegetable gardens; and Producer-consumer sales of fresh products.
	2020-2021	Individual adaptation.	Urban citizens.	<ul style="list-style-type: none"> Development of online shopping; Back to the "healthy" Mediterranean diet; Mutual aid (group purchases), solidarity with the most vulnerable.
Russo-Ukrainian war	2022- 2023	Price regulation for strategic products.	National government, Ministries of agriculture, trade, finance, professionals and interprofessionals.	<p>To encourage production:</p> <ul style="list-style-type: none"> Increase in cereal selling prices; and Freeze on compound feed prices <p>To combat speculation:</p> <ul style="list-style-type: none"> Set intervention prices for necessary products (onions, tomatoes, potatoes). Set intervention prices for necessary products (onions, tomatoes, potatoes).

27 200DT/employee for SMEs with more than 10 workers.

28 200DT/needy family in April 2020 and 300DT in September 2021.

Figure 5 Causality chart



Source: FAO

Are the measures and initiatives appropriate and do they meet stakeholders' expectations?

Although the measures are within shock-absorbing range, with no perceived changes, all actors feel that they have been able to adapt temporarily to the shock, but certain shortcomings have been observed in dealing with the impacts. Firstly, informal channels become more prevalent in times of crisis,

posing a risk to the food system. Secondly, small-scale farmers, who are the most vulnerable, have not benefited from any specific measures, especially as they have no access to credit. Furthermore, in view of the decline in dairy cattle, the stakeholders do not see any anticipatory measures for rebuilding it. Its

decline due to the frequency of anarchic slaughter and clandestine sales.

Stakeholders also perceive that price regulation measures for strategic commodities are ad hoc and temporary. The recent shocks of war have shown their limits, explaining the current fragility of several sectors in which the country was self-sufficient (milk and

meat). As for the freeze on livestock feed prices, they feel that the problem lies rather with the monopoly of production units and importers of raw materials.

Climate change is a major concern for all actors, especially as the implementation of preventive measures remains slow, due to a lack of real investment.

What future constraints do actors perceive?

According to the actors, while the food system may have emerged less weakened from the COVID -19 shock, thanks to the positive impact of the measures taken by the national government, it is rather the post-COVID-19 period that has hit the food system due to the hard effects of the war. The actors are worried about the country's future economic situation and fear:

- uncertain access to the global market for primary commodities and inputs;
- increasing inflation;

- decrease of purchasing power, raising the issue of food security;
- a risk of stagnation and slow growth in the agricultural sector (production);
- a strengthening of informal channels; and
- progressive abandonment of peri-urban agricultural activity.

At the same time, stakeholders are concerned about the environmental challenges of climate change and the depletion of resources, which will become acute if no specific action is taken to address these issues.

How can we build a food system resilient to future shocks?

Faced with the outlined challenges, the actors have drawn several lessons, the first is the absence of an operational mechanism for food system governance at a municipal level. Despite ongoing efforts in collaboration with FAO²⁹, actors strongly recommend accelerating the finalization of this process, which will be the basis for implementing the proposed actions.

Actors have suggested several pathways and those they consider to be priorities are based on transformative initiatives which are feasible in the short term:

- **The creation of a multi-sectoral network** to ensure synergies between local actors and to enhance the exchanges of information. A digital platform and a guide for the food system actors are recommended. Key actors will include the Governorate, the municipality, the communes, civil society and the private sector. Ministries (agriculture, industry, commerce, environment, health) will play a supporting role and will supervise
- **Adapting small farmers' practices to make production more resistant to shocks** and more efficient by integrating diversified, sustainable and value-added production systems (aromatic plants, organic agriculture) and agro-ecological production methods. Solutions based on local know-how are strongly recommended. Grouping and federating producers is also imperative for better input supply and product marketing. The central departments of agriculture, environment, research and extension, as well as civil society³⁰, will play an important role in supervising and supporting farmers, and in exchanging best practices.

- **An Edible City** is seen as feasible through awareness-raising of the planting of vegetable gardens and fruit trees (schools, private gardens, parks.). It is suggested that the El Agba nursery develop a specific activity for the multiplication of plants and seeds as well as for soilless agriculture. Support from agricultural technical services and research is recommended. Funding from the government or other donors should be secured. Civil society will play a key role in raising awareness and providing guidance.

- **Reducing food waste and up-cycling:** Several associations and startups could, with additional resources, help raise awareness, among consumers and restaurant owners, of the need to acquire and distribute these products³¹. A partnership between restaurateurs and producers could be established through the municipality to recover and up-cycle organic waste.

The actors also recommended other pathways for the future, including the use of untreated non-conventional water for irrigation, the development of youth entrepreneurship through the implementation of innovative projects, the official recognition of peri-urban agriculture in national agricultural strategies, and the channeling of food subsidies to the neediest citizens and producers.

29 In October 2015, the signature of the MUFPP by the Mayor of Tunis; in March 2019, the Mayor's participation in the Rome Conference and the Mayors' Summit in Milan with the signing of a partnership and cooperation agreement with FAO; in December 2019, the first study is carried out « towards sustainable food and nutrition governance for the Municipality of Tunis» followed by other studies on the food governance model; the fight against food waste; interventions and policies for healthy and sustainable food.

30 Example: Permaculture associations, El Mourouj2

31 Associations Zero waste, Foodealz, El Mourouj 2 , Banque alimentaire tunisienne (association caritative)



Marché de gros de Tunis Source: Business News



Marché Municipal de Tunis Source: Espace manager



Centre de la ville en période de confinement (Mars 2020) Source: <https://www.aa.com.tr/fr/afrique/covid-19-la-tunisie>



Travaux de groupe de discussion de l'atelier du 5 Décembre 2022 Source:



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