

# Resilience Profile

## TUNIS 2023

# Resilience Profile

## **TUNIS 2023**

# Table of Contents

---

- 6 **Introduction**
- 10 **City Context**
- 17 **Building Resilience in Tunis Through the Development Strategy**
- 20 **Recurring Shocks**
  - 24 **Floods**
    - 25 Driving factors
    - 25 Impacts of floods in Tunis
    - 26 Related action in the Development Strategy
    - 27 Alignment with Global Agenda
  - 28 **Water, Food and Energy Supply Shortage**
    - 28 Driving factors
    - 28 Impacts of floods in Tunis
    - 29 Related action in the Development Strategy
    - 29 Alignment with Global Agenda
  - 30 **Heat Waves**
    - 30 Driving factors
    - 30 Impacts of floods in Tunis
    - 31 Related action in the Development Strategy
    - 32 Alignment with Global Agenda
- 33 **Long-Term Resilience Perspectives**
- 35 **Annex: List of Shocks**
- 45 **Bibliography & References**

## List of map

---

<b>Map 1</b>	Tunis geographical location. Source: CRGP based on UN OCHA (2017).
<b>Map 2</b>	Grand Tunis metropolitan area boundary. Source: CRGP based on OSM (2017).
<b>Map 3</b>	Tunis city, satellite view of municipal boundaries and neighbouring governorates. Source: CRGP based on Google Satellite, UN OCHA (2017).
<b>Map 4</b>	Tunis informal peri-urban settlements. Source: CRGP base don OSM, UN OCHA, 2017 and H. Dlala (2007).
<b>Map 5</b>	Tunis transport main roads and railway network. Source: CRGP based on OSM and H.Dlala (2007).
<b>Map 6</b>	Tunis points of interest. Source: CRGP based on OpenStreetMap, Google Maps, European Environment Agency (2022).
<b>Map 7</b>	Tunis topography, waterways and flooding risk. Source: CRGP based on OSM, DEM from UN OCHA 2017, and El May et al., (2010).
<b>Map 8</b>	Average annual temperature; annual precipitation of Tunisia 1901-2019. Source: Climate Risk Profile: Tunisia. (2021).
<b>Map 9</b>	Tunis green spaces. Source: CRGP based on Open Street Maps, Google Satellite (2022).

## List of images

---

<b>Image 1</b>	Tunis urban grid – Medina. Source: Google Satellite (2022).
<b>Image 2</b>	Strategic Framework of the city of Tunis.
<b>Image 3</b>	Strategic Framework of the city of Tunis.
<b>Image 4</b>	Tunis, Tunisia. Source: Mustafa Elmas.

## List of tables

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<b>Table 1</b>	Data from the Emergency Event Database: EM-Dat database shows the country has endured various natural hazards, including floods, landslides, epidemic diseases, and storms. Natural disasters in Tunisia, 1900-2020 ( <a href="#">Source</a> ).
<b>Table 2</b>	Chronology of floods in Grand Tunis area since 2000s. Source: CRGP based on Fehri, N. (2014).

### **Disclaimer**

The Tunis Resilience Profile seeks to provide an outline of the key resilience challenges identified by UN-Habitat through involvement in the development of the Tunis Development Strategy. The findings of this profile are not officially endorsed by the City of Tunis or any other institutional partner and remain observations made by UN-Habitat City Resilience Global Programme.

# Introduction



# Introduction

With over half of the global population living in cities, and with around 3 billion more people expected to live in urban areas by 2050, cities are facing unprecedented demographic, environmental, economic, social and spatial challenges. Rapid urbanization coupled with new and magnified challenges resulting from climate change are resulting in more people facing more risk in our cities. Building resilience into cities is therefore essential if we are to ensure that development gains are not lost when cities are inevitably hit by shocks, stresses or challenges.

In this sense, UN-Habitat's urban resilience work aims to support local governments and relevant stakeholders to transform urban areas into safer, more inclusive and better areas to live in, and improve their capacity to absorb, adapt and recover from these potential shocks and stresses, while transforming in a positive way towards sustainability.

Over 2022, UN-Habitat City Resilience Global Programme in partnership with a network of Mediterranean cities, MedCities, and Barcelona City Council supported the city of Tunis in strengthening its resilience building efforts. The cooperation, carried out in the framework of a project "A'SIMA Tunis: Strategic planning and multilevel governance for a resilient metropolitan city", aimed at reinforcing the sustainability of Tunis through governance improvements and Mediterranean partnerships. It supported the development of a City Development Strategy (SDV), a process which involved consultations and projects of almost 186 local stakeholders from various levels as well as citizens.

As a partner of the project and leveraging its extensive experience on building resilience with numerous cities across the globe, UN-Habitat City Resilience Global Programme supported the development of the risk and resilience elements of the strategy in Tunis through diagnosis, review and recommendations of the strategy. This document presents some of the key take-aways from this process.

We would like to extend our thanks and congratulations to the city of Tunis for being one of the pioneering cities in the region to embark on this ambitious process to shift to resilience and sustainable development. The success of this initiative will have a major impact on other cities across the country and the region, and we urge and encourage all project participants to continue being proactive in the city's progress towards resilience.



A'SIMA Tunis



MedCities



Barcelona City Council



The Barcelona Metropolitan Area (AMB)

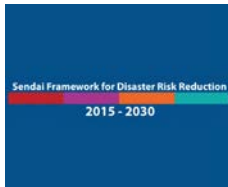


The Municipal Council of Tunis

# UN-Habitat CRGP: Main Concepts

Urban Resilience is the measurable ability of any urban system, with its inhabitants, to maintain continuity through all shocks and stresses, while positively adapting and transforming toward sustainability. A resilient city evaluates, plans and acts to prepare and respond to threats - natural or man-made, sudden and slow onset, expected and unexpected - in order to protect and improve the lives of people, to ensure development, foster an investment environment and drive positive change.

UN-Habitat City Resilience Global Programme's work is developed in line with global intergovernmental frameworks – Sustainable Development Goals, Sendai Framework for Disaster Risk Reduction, Paris Agreement on Climate Change, World Humanitarian Summit: Agenda for Humanity, and the New Urban Agenda.



Sendai Framework for Disaster Risk Reduction



Sustainable Development Goals



Paris Agreement on Climate Change

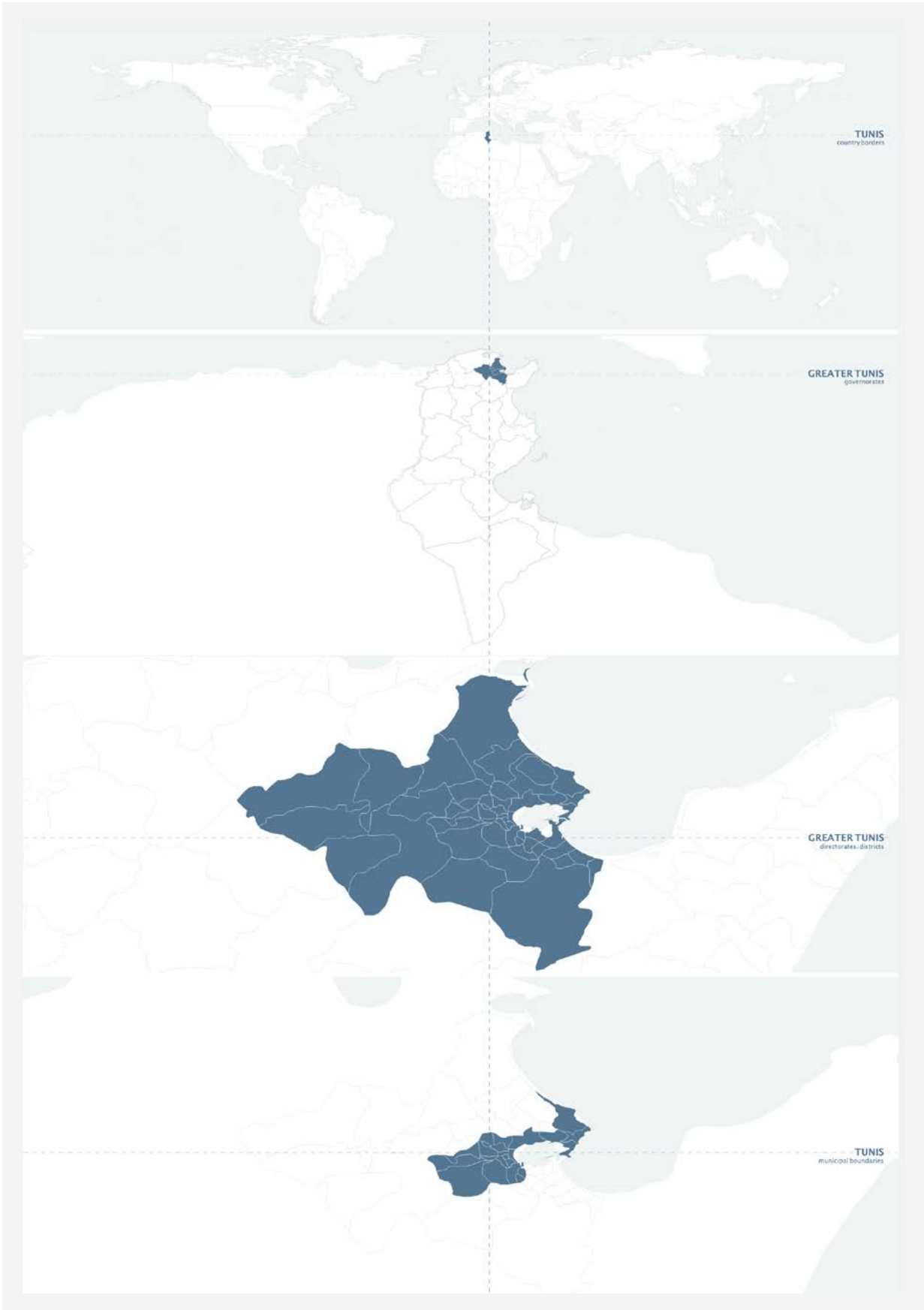


World Humanitarian Summit – Agenda for Humanity



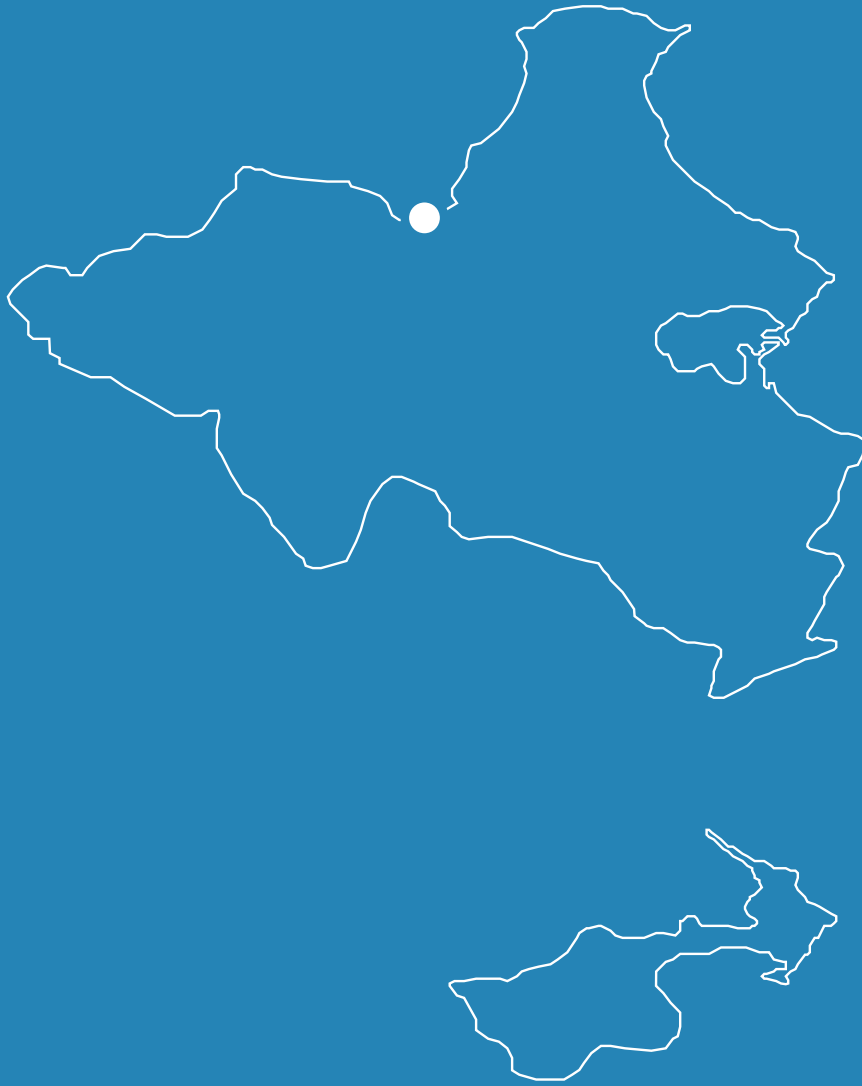
New Urban Agenda





**Map 1:** Tunis geographical location. Source: CRGP based on UN OCHA (2017).

# City Context



# City Context

## Quick Facts

Capital of the country, Tunis concentrates the main ministries, government agencies and most of the headquarters of large public and private companies in the country.

The city of Tunis is the central core of an urban ensemble that includes 4 governorates and more than 33 municipalities, the entirety of which forms Greater Tunis.

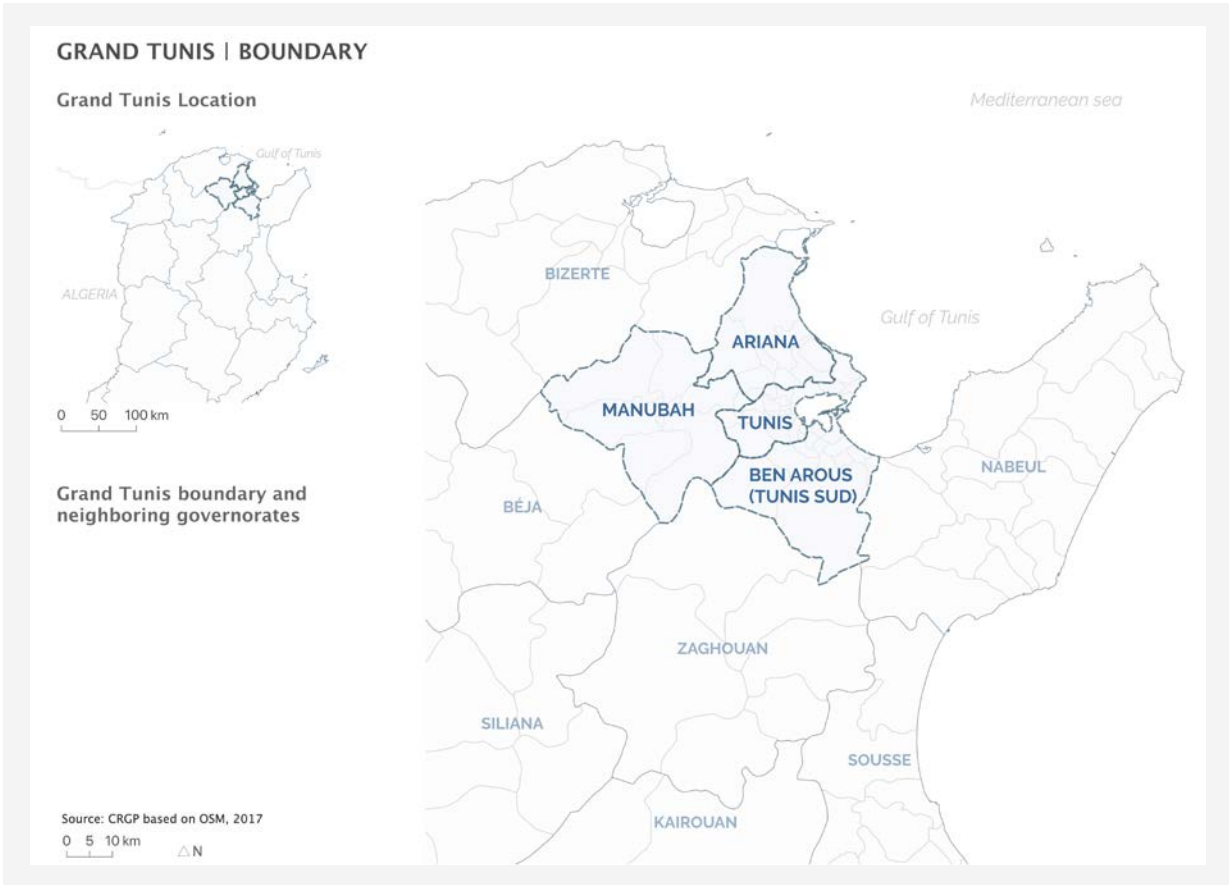
The Medina of Tunis is home to 88 nationally classified historical monuments.

Grand Tunis has a population of approximately 2,700,000 making it the fourth largest city in North Africa after Casablanca, Algiers and Tripoli.

<b>Region</b>	North Africa
<b>Country</b>	Tunisia
<b>Coordinates</b>	36° 48'N 10° 10'E. Time: UTC+1:00
<b>Area</b>	2,668 km <sup>2</sup> (Grand Tunis), 104 km <sup>2</sup> (City)

Located in the northeast of Tunisia, the city of Tunis is the capital of the governorate (Wilayat) of Tunis and is the core of an urban area called Greater Tunis. The capital city of the Republic of Tunisia since the country's independence in 1956, Tunis is today the main economic and political centre of the country.

The city is located on the shores of Lake Tunis and is connected to the Gulf of Tunis in the Mediterranean Sea by a canal, which leads to the port of La Goulette (Halq al Wadi). The city has an area of 212.63 km<sup>2</sup>, and is located 40 meters above sea level. The Greater Tunis area covers some 300,000 hectares, of which 30,000 are urbanized, the rest being shared between water bodies (20,000 hectares of lakes or lagoons) and agricultural or natural land (250,000 hectares).

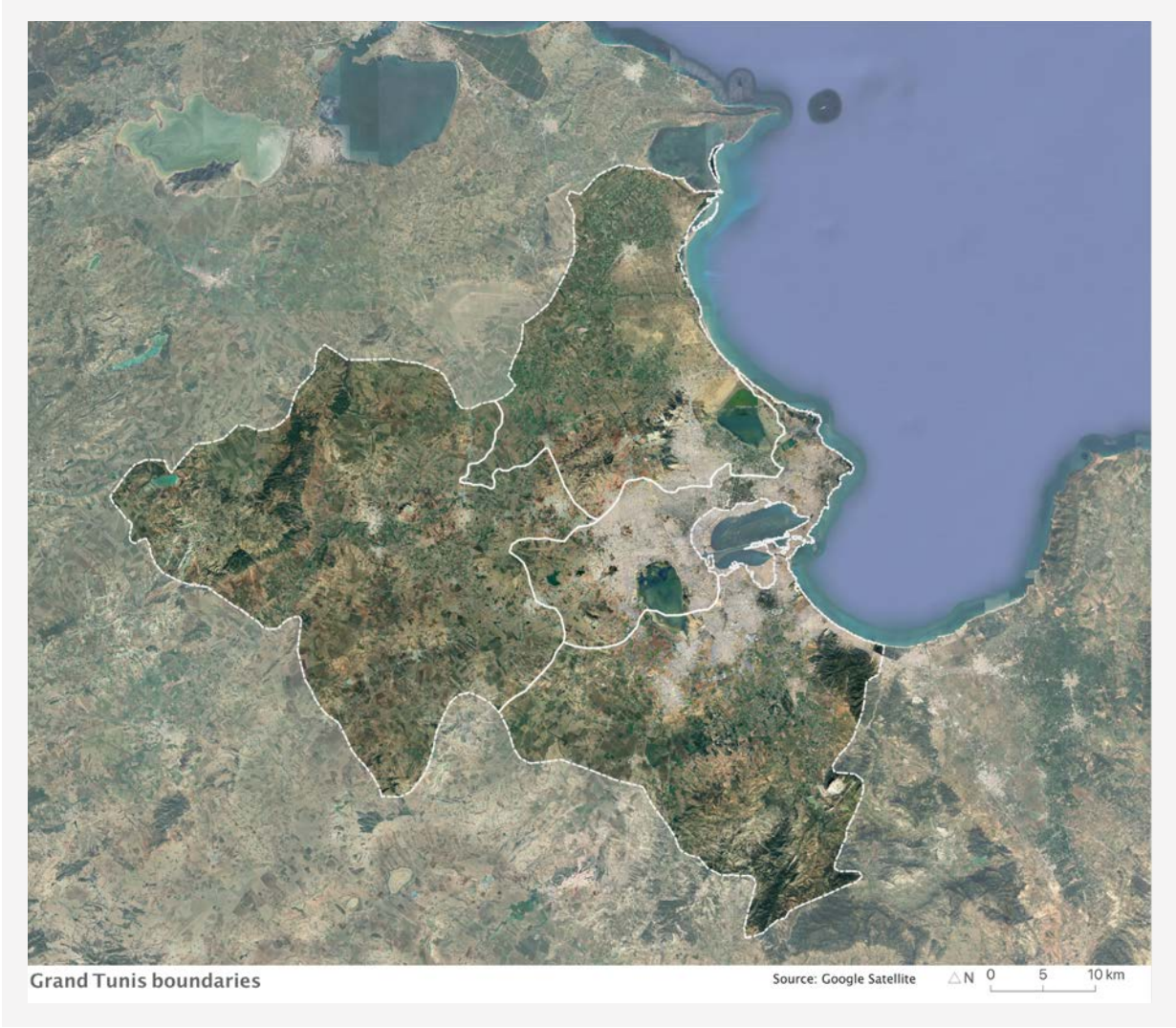


Map 2: Grand Tunis metropolitan area boundary. Source: CRGP based on OSM (2017).



Image 1: Tunis urban grid – Medina. Source: Google Satellite (2022).

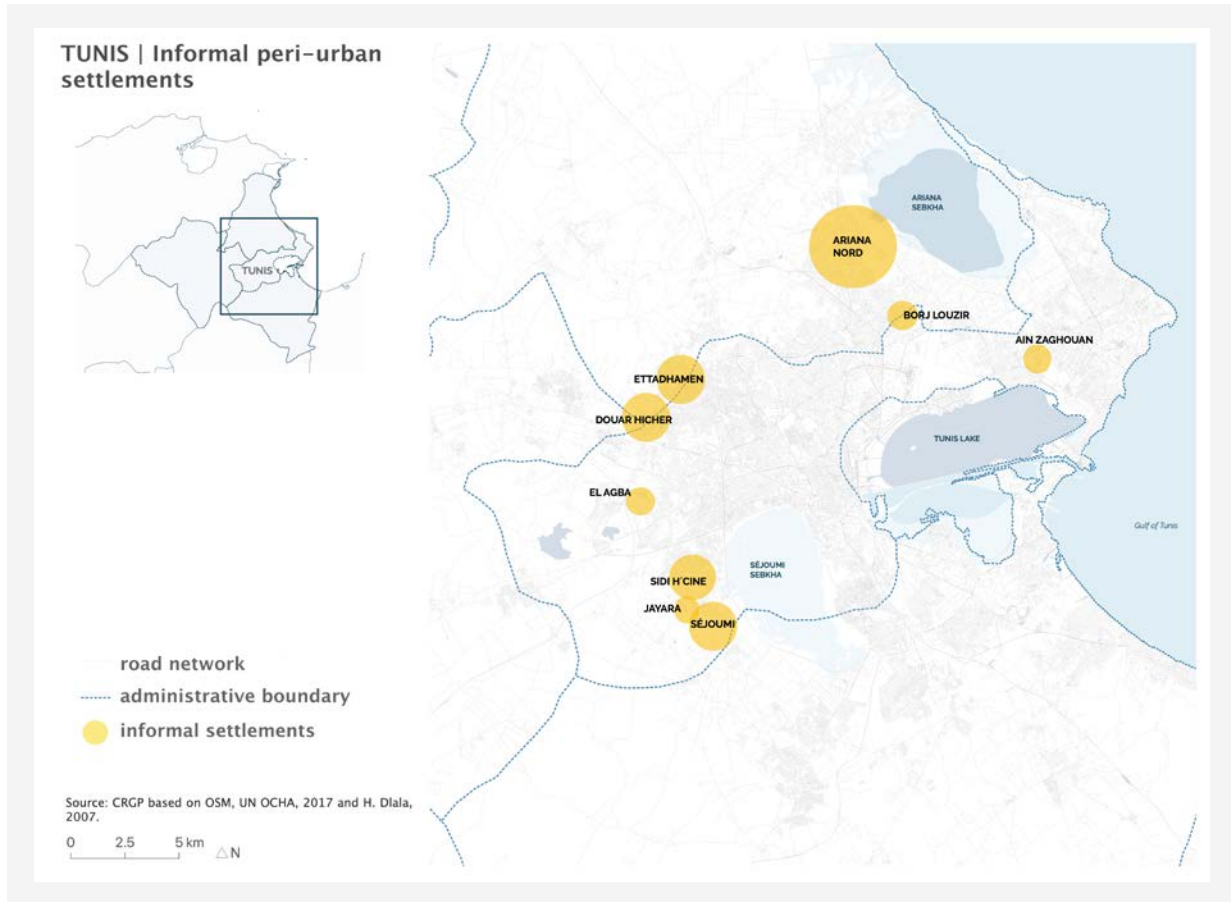




**Map 3:** Tunis city, satellite view of municipal boundaries and neighbouring governorates. Source: CRGP based on Google Satellite, UN OCHA (2017).

# Spatial Dimension

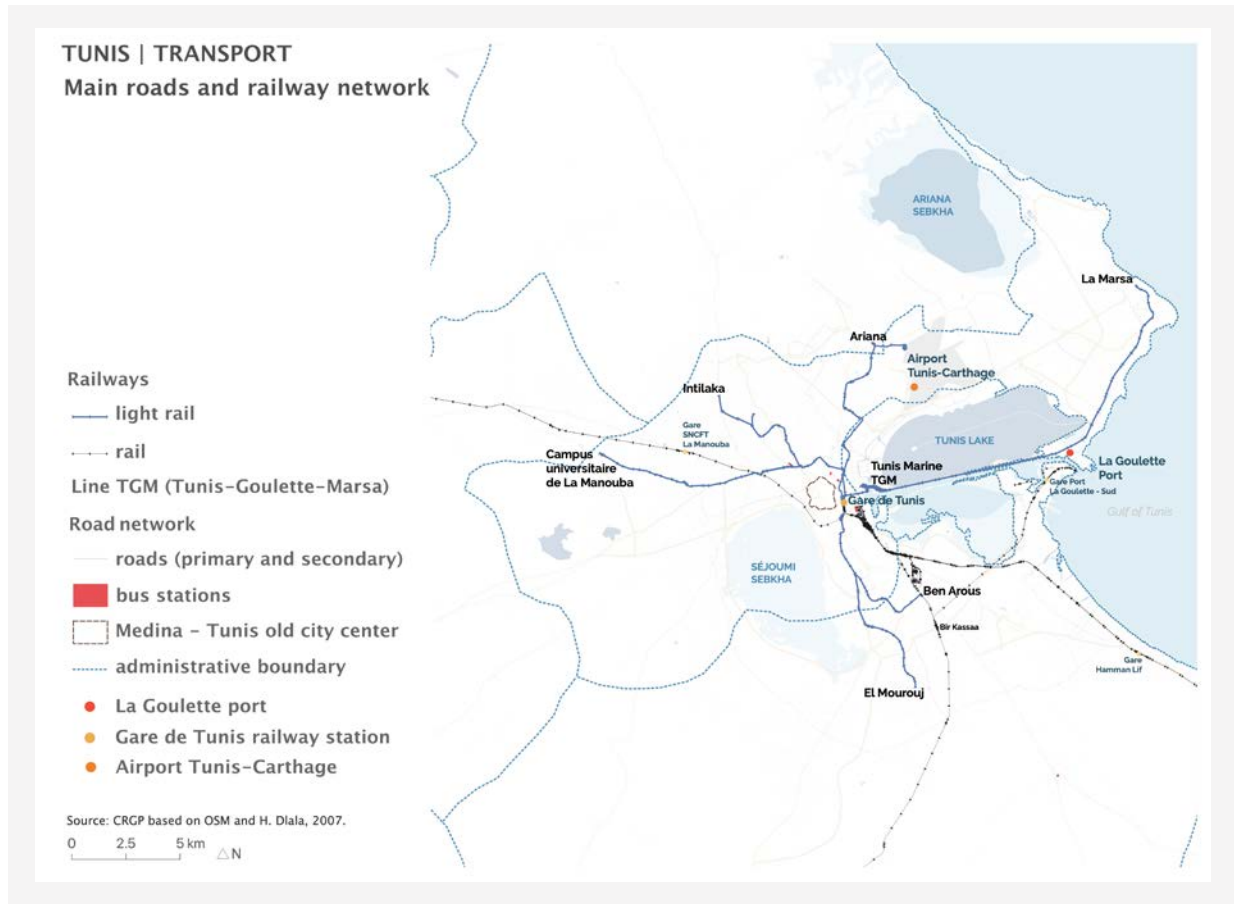
Urban growth, estimated to increase by 500 hectares per year, is gradually modifying the landscape of Greater Tunis. Tunisia reached ten million inhabitants in 2005, a tripling of its population since independence in 1956. Today, population growth is slower, but the city of Tunis has a population of approximately 610,915 inhabitants. In the area corresponding to the Governorate of Tunis, the number of inhabitants is estimated to be 1,056,247 and the density of the population is 2767 inhabitants/Km<sup>2</sup>. The rise of the city and rapid increase in the population have led to unplanned urbanisation and several social, environmental, and economic challenges.



**Map 4:** Tunis informal peri-urban settlements. Source: CRGP base don OSM, UN OCHA, 2017 and H. Dlala (2007).

# Function of the City

Within Tunisia, Tunis is a main hub for education and health services however, despite being the main national economic zone, it is not a major international hub. The city of Tunis has the potential and ambition to become a leading metropole on the international scene and an attractive hub for business.

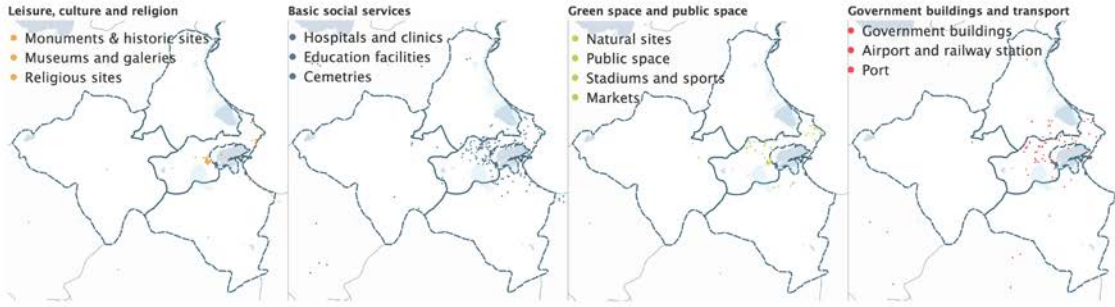


Map 5: Tunis transport main roads and railway network. Source: CRGP based on OSM and H.Dlala (2007).

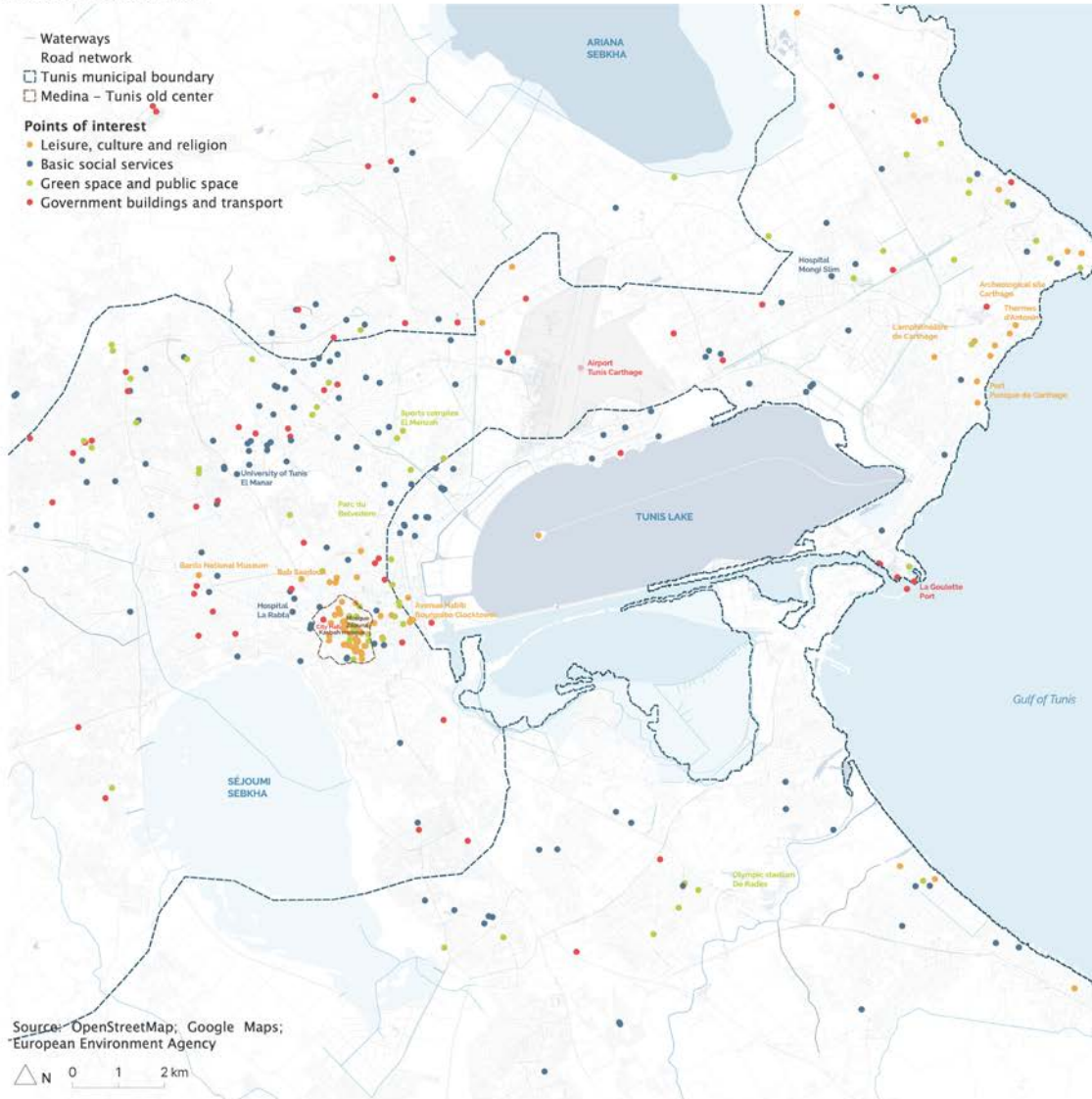


TUNIS | POINTS OF INTEREST

Non-exhaustive study of places and points of interest in the city of Tunis



Points of interests Tunis



Map 6: Tunis points of interest. Source: CRGP based on OpenStreetMap, Google Maps, European Environment Agency (2022).



# Building Resilience in Tunis Through the Development Strategy



# Building Resilience in Tunis Through the Development Strategy

## Quick Facts

The Strategy's actions are proposed around six work areas, one of which is the promotion of a resilient and eco-responsible city.

Through consultative workshops, the process to develop the strategy gathered the views of almost 186 stakeholders from national and regional agencies, municipal technical staff, local private companies, civil society associations as well as representatives of international organizations.

Launched early 2021, the project "A'SIMA Tunis: Strategic planning and multilevel governance for a resilient metropolitan city" aims to strengthen the urban sustainability of the city of Tunis through improved governance and Mediterranean partnerships. The project, coordinated by the network of Mediterranean cities, MedCities, is implemented in partnership with the Municipality of Tunis and the Metropolitan Area of Barcelona, with the financial support of the Delegation of the European Union in Tunisia. The City Resilience Global Programme UN-Habitat is supporting partners to identify and define resilience building opportunities in the framework of this initiative.

The City Development Strategy (SDV) is a way of promoting and planning the economic, social, environmental and spatial development of the city by defining a vision, by identifying strategic axes of development and by drawing up a global action plan around programs and projects spread over the short, medium and long term for sustainable and equitable growth. The SDV is developed and conducted through the representative participation of all with a view to sustainably developing the territory and improving the standard of living of all citizens.

One of the main findings of the diagnosis was that Tunis was 'vulnerable' with 'weak resilience to climate, economic, environment and social risks'. Resilience has been carried forward in the vision defined in the strategy which aims to create a city that is 'an inclusive capital that guarantees the right to a sustainable city: the engine of an organised and resilient metropolitan area...'

The current A'SIMA Tunis initiative is a major step towards resilience building in Tunis. By taking stock of effective ongoing risk-related initiatives and projects, identifying gaps and synergies, and actively planning risk-reducing measures into the city's overall strategic plan, Tunis is investing in resilience for its close and far future.



### Strategic Framework of the city of Tunis

For more information, [click here](#)



### Diagnostics of the city of Tunis (in French)

For more information, [click here](#)



### Video of the launch ceremony for the Development strategy of Tunis

For more information, [click here](#)



### Document on 7 transversal facts (in French)

For more information, [click here](#)



Image 2: Strategic Framework of the city of Tunis.



Image 3: Strategic Framework of the city of Tunis.

# Recurring Shocks



# Recurring Shocks

Urban sprawl has resulted in increased vulnerability in Tunis, in particular to flooding as a result of soil sealing. Tunis' morphology, local construction methods, the consumption patterns of its population, low level of vegetation in its public space, its transport system, the lack of investment in infrastructure development and maintenance are reflected in the proliferation of heat islands, a shortage of drinking water and repeated floods, which the city is not prepared to face due to limited financial and technical capacities. Nevertheless, recent years have seen a turning point in attitudes to resilience and a growing commitment to build the capacity and response to tackle these challenges. Although most of these efforts are focused at the national level, some are specific to the city of Tunis.

Greater Tunis has been exposed to a growing number of environmental and climate risks over the past 20 years, some new, some long-standing challenges. The city's hot-summer Mediterranean climate is characterized by prolonged dry summers and mild winters with moderate rainfall. The city is susceptible to sporadic and intense episodes of extreme weather such as in 2003 when 189 mm of rain fell in 24 hours, the same year that record temperatures were recorded over 59 days (World Bank, 2011).

Like in all cities across the world, the impacts of climate change are becoming increasingly severe and unpredictable, making these long-standing shocks more difficult to manage. More frequent extreme weather events and water-based shocks are expected to occur across the country. Some areas could see more precipitation, and tropical cyclones bringing heavy rain, while other regions will see increased frequency and intensity of droughts. In Tunis, many of the city's matters are water-related and a direct result of poor urban planning, water cycle management or rapid expansion of the city.

A 2011 World Bank study estimated that the net value of cumulative potential economic losses from all risks in the city could reach \$1.05 billion, or 8% of the capital's economic output. Around 59% of potential losses are related to flood risks, while 26% are due to seismic risks and 14% to storms. Potential losses are estimated at 25% by 2030 and will be attributable to climate change, most of which would be associated with flooding. In 2019, the INFORM 5 - international index allowing the classification of countries according to their levels of exposure to risks and their scales of vulnerability (on a scale of 0 to 10) - gave Tunisia a score of 3.2.

For more information, [click here](#)

While unpredictable and extreme weather are the most visible shocks, the city has not escaped the impacts of global political instability that have affected almost all cities. The global pandemic, and international conflict has put further strain on the supply of essential goods in the city. With these conditions, the city is keen to increase its resilience and has embarked on a collaborative and thorough analysis and diagnostic process.

The following subsections present an initial overview of a number of shocks that were highlighted in the diagnosis and identified by UN-Habitat CRGP as priority risks in Tunis. Although not exhaustive, the shocks were identified through early data collection, desk research, and through the findings of city diagnosis report (2021). The initial list of shocks and stresses was put forward during a collaborative workshop with diverse stakeholder in Tunis that allowed for exchange on the findings and seek consensus.

Natural Hazard 1900-2020	Subtype	Events Count	Total Deaths	Total Affected	Total Damage ('000 USD)
Drought	Drought	2	0	31,400	0
Earthquake	Ground Movement	1	13	0	0
Flood	Flash Flood	5	69	37,508	36,000
	Riverine Flood	4	49	180,500	242,800
Insect Infestation	Locust	2	0	0	0
Wildfire	Forest Fire	1	0	2,000	0

**Table 1:** Data from the Emergency Event Database: EM-Dat database shows the country has endured various natural hazards, including floods, landslides, epidemic diseases, and storms. Natural disasters in Tunisia, 1900-2020 ([Source](#)).



**Image 4:** Tunis, Tunisia. Source: Mustafa Elmas.

In March 2022 UN-Habitat CRGP undertook an initial field visit to Tunis with the aim to gain a deeper understanding of the city, its critical infrastructures and facilities, and to engage with local stakeholders on the necessity for urban resilience collaboration. During the visit, the following initial mapping of shocks, stresses and challenges in Tunis was elaborated:

Shocks	Stresses	Challenges
<ul style="list-style-type: none"> <li>● <b>Natural:</b> floods, sea level rise</li> <li>● <b>Environmental:</b> air pollution</li> <li>● <b>Complex:</b> water, energy and food supply disruptions</li> </ul>	<ul style="list-style-type: none"> <li>● Waste management</li> <li>● Rainwater collection system</li> <li>● Disruption of water services</li> <li>● Aging infrastructure, not compliant</li> <li>● Uncontrolled urban sprawl</li> <li>● Anarchic occupation of public space</li> <li>● Traffic congestion</li> <li>● Road insecurity</li> <li>● Ecosystems degradation</li> <li>● Environmental pollution</li> <li>● Unemployment</li> </ul>	<ul style="list-style-type: none"> <li>● Social/complex: migration</li> <li>● Climate change: heat waves, temperature change</li> </ul>

In the following stages of collaboration with the city, the UN-HABITAT CRGP focused on resilience building for 3 main recurring shocks that were considered of high impact to the city and were not directly addressed through any of the proposed projects. These are:



**Floods**



**Water, food and energy supply shortage**



**Heat waves**

For a full taxonomy of shocks used by UN-Habitat CRGP in its methodology please refer to Annex.



## Floods

The risk of flooding, including pluvial and flash floods, is the most pressing issue for city residents and the diagnosis conducted in the framework of the Tunis Development Strategy suggested that public perception of this threat has increased sharply over the past two decades. Tunisia is surrounded by three Sebkhas, meaning that a rise in water level (floods, sea-level rise) could lead to the flooding of low areas around the Sebkhas, areas that are increasingly urbanised. Unplanned construction and real estate developments have led to building in a number of flood-prone areas, posing a risk to residents.

The majority of stormwater drainage networks have very limited capacities to respond to the frequent floods that occur in urbanised neighbourhoods. Insufficient upstream basins and increasing pressures from unplanned urban development are exacerbating this shock. Flooding risks are accentuated by increased runoff water (result of continuous urbanisation, in particular informal urbanisation to the detriment of agricultural land) and areas of particular concern are Ariana Nord, Bardo/Oued Gueriana, Séjoui Ouest and Radès.

Period	Area	Impact on People, Processes, Assets
Jan – Feb 2003	North of Tunisia, particularly middle and lower course of Medjerda river, Grand Tunis	<ul style="list-style-type: none"> <li>• Harvests damaged to 85%</li> <li>• Damage estimated at around 20 million Tunisian dinars</li> </ul>
Sept – Oct 2003	Grand Tunis	<ul style="list-style-type: none"> <li>• 4 dead</li> <li>• 2500 people deemed homeless</li> <li>• Property damage</li> </ul>
Sept – Oct – Nov 2007	Grand Tunis, particularly, the sector of Sabbalet Ben Amar	<ul style="list-style-type: none"> <li>• 16 dead</li> <li>• Considerable material damage</li> </ul>
Sept – Oct 2011	Grand Tunis	<ul style="list-style-type: none"> <li>• 3 dead</li> <li>• Huge losses in the agricultural sector which are estimated at around 30 million Tunisian dinars</li> <li>• Pressure on infrastructure</li> </ul>
June 2017	Greater Tunis and Kef region	2 dead
Sept – Oct 2019	Grand Tunis and Sfax	Roads cut, means of transport interrupted, infrastructure collapse, property damage
Sept 2020	Grand Tunis, Sousse, Mahdia, Monastir	6 dead
Oct 2021	Bizerte, Greater Tunis, but also Nabeul and Kasserine	<ul style="list-style-type: none"> <li>• 3 dead in Thala</li> <li>• Roads cut, means of transport interrupted, infrastructure collapse, property damage</li> </ul>

**Table 2:** Chronology of floods in Grand Tunis area since 2000s. Source: CRGP based on Fehri, N. (2014).



## Driving factors

- Climate change induced trends, including higher temperatures, and more frequent and intensive rainfall episodes.
- Rapid urbanisation, and lack of risk-informed land use and housing development which continue to undermine the natural hydrological systems and natural terrains.
- Insufficient stormwater drainage system and inadequate solid waste collection leading to waste accumulation, and obstruction of rainwater flow through the drainage network.
- Lack of risk informed urban design including green and blue solutions for increasing permeability and surface draining capacities.
- Governance: lack of coherent planning and coordination between the governorates and numerous municipalities within Greater Tunis.

## Impacts of floods in Tunis

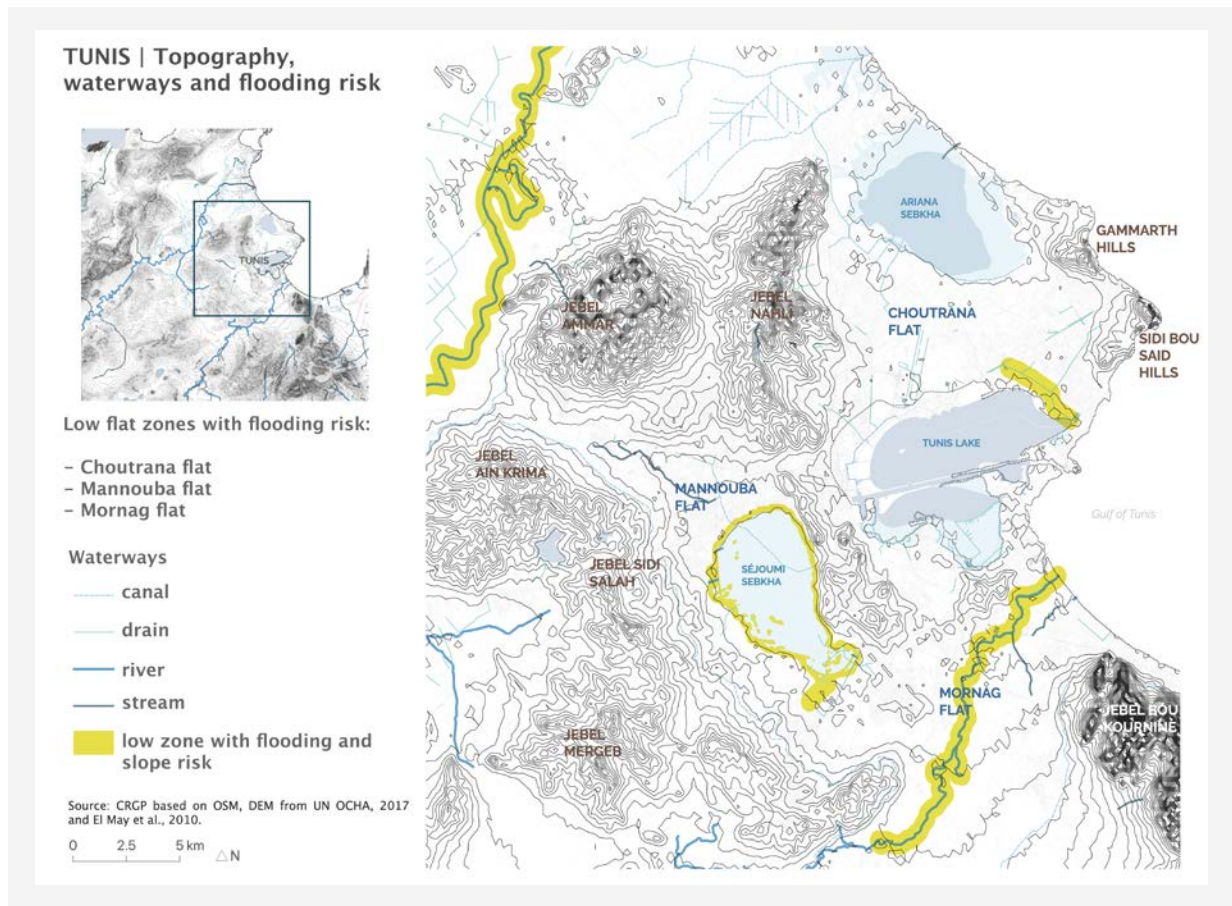
The issue of **water and sanitation management** is at the heart of the concerns of major Tunisian cities – especially Tunis. Wastewater treatment and management have become a critical public health concern in the context of the pandemic, revealing that significant efforts that need to be made to accelerate the connection of users to the sanitation network, and reduce the disposal of untreated wastewater into natural water bodies and Sebkhass. Recent reports on floods from the city have pointed to contamination incidents due to Sebkhass water overflow.

**Solid waste management** in Tunis has not yet reached the desired level of performance despite some progress. This has contributed to exacerbating many other issues such as public health, pollution and soil and water contamination. Despite the various plans and programmes put in place, only 5% of the waste collected is recycled and the rest is sent to landfill. In Tunisia, there is no data production and management system in the field of waste, and any existing data is limited and not updated. In addition, inadequate solid waste collection services lead inhabitants in neighbourhoods underserved by waste collection to dispose of solid waste in water bodies and open green spaces. Apart from the issue of waste accumulation in stormwater networks, as indicated previously, sweeping waste during flooding episodes pose serious health and contamination risks in the city.

Socio-economic impacts. According to a recent report by the World Bank, the estimated annual economic loss of floods in Tunisia is around 40 million USD, which amounts to %0.1 of Tunisia GDP in 2018.<sup>1</sup>

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<sup>1</sup> The Global Facility for Disaster Reduction and Recovery (2022).



**Mapa 7:** Tunis topography, waterways and flooding risk.  
 Source: CRGP based on OSM, DEM from UN OCHA 2017, and El May et al., (2010).

## Related action in the Development Strategy

The Development Strategy will address the issue of flooding through various work areas (chantiers), most notably work area four to promote a resilient and eco-responsible territory. Specific actions outlined in the strategy include the vulnerability study and restoration of the areas around the sebkhas and green spaces. In terms of governance, the introduction of a metropolitan resilience committee and efforts to build local capacity will also help reduce the impact of this shock. A specific actions on water management is also outlined in this work area, namely the creation of a city-wide plan for rainwater management.

Under the other five work areas, water management also featured across the work areas. In work area two, a specific action is foreseen to protect the lower parts of the city against flood risks; in work area five, governance measures are foreseen to manage risk and climate change.

## Alignment with Global Agenda

### Sustainable Development Goals - SDGs



**SDG 6**  
Clean Water and Sanitation



**SDG 11**  
Sustainable Cities and Communities



**SDG 12**  
Responsible Consumption and Production



**SDG 13**  
Climate Action

### New Urban Agenda



#### Article 77

Strengthening the resilience of cities and human settlements, including through the development of quality infrastructure and spatial planning, by adopting and implementing integrated, age- and gender-responsive policies and plans and ecosystem-based approaches in line with the Sendai Framework for Disaster Risk Reduction 2015-2030.



#### Article 78

Supporting moving from reactive to more proactive risk-based, all hazards and all-of-society approaches, such as raising public awareness of risks and promoting ex ante investments to prevent risks and build resilience, while also ensuring timely and effective local responses.



#### Article 158

We will strengthen data and statistical capacities at national, subnational and local levels to effectively monitor progress achieved in the implementation of sustainable urban development [...]



## Water, food and energy supply shortage

Water supply is not always optimal and, on several occasions, drinking water has been cut off for brief periods. Demand for drinking water in Greater Tunis and the financial port is expected to reach 9 m<sup>3</sup>/second in 2022, while current installations allow for production of around 8.4 m<sup>3</sup>/second. This is a deficit of around 65,000 m<sup>3</sup>/day in 2022, a figure that is expected to reach 500,000 m<sup>3</sup>/day in 2035.<sup>2</sup> This condition is exacerbated by generally very high levels of water scarcity levels across the country and its deteriorating quality, due to pressing effects of climate change and overexploitation of natural water resources.

The city has also experienced some serious food supply shortages associated with the crisis brought by the recent war in Ukraine, with several product categories (for ex., rice, flour, sugar, eggs) not being available for prolonged periods, due to the country's heavy dependence on foreign food imports, especially on grains. Food security and supply has also been increasingly disrupted by the general impacts on agriculture of climate change and water scarcity, decreasing land fertility and degradation, soil aridity and the effects of increasingly frequent extreme weather events.

### Driving factors

- More frequent drought episodes induced by climate emergency, deteriorating ecosystems resulting in increased water scarcity levels.
- International crises (e.g., war in Ukraine) and Tunis' heavy reliance on foreign food imports (especially, for grain).<sup>3</sup>
- High level of existing debt for foreign imports.
- Poor state of infrastructure for water distribution network, with leakages being common.
- Overexploitation of natural water resources by 400%, with most of the water destined to agriculture (77%)<sup>4</sup>, including to intensive farming practices of water-thirsty crops that are grown for export abroad.

### Impacts of supply shortages in Tunis

- Socio-economic impacts associated with rising basic commodities and water/energy prices, including possible food price speculations due to growing food insecurity and episodes of panic stockpiling.
- Growing cases of extreme water poverty and further deteriorating freshwater quality.
- Socio-economic impacts associated with possible increase in migration to urban areas due to increasing abandoning of agricultural land due to water scarcity.
- Associated health impacts.

<sup>2</sup> Sonede (2018).

<sup>3</sup> Ayeb, H. (2022).

<sup>4</sup> Ferchichi, K. (2021).

## Related action in the Development Strategy

Work area three of the six work areas (chantiers) includes targeted efforts to build food resilience in the city. Activities under this project are targeted at both the urban and peri-urban level and include efforts to promote urban agriculture (communal gardens, balcony agriculture, etc.) as well as more concerted efforts to increase the efficiency of larger-scale agricultural action. In order to shift towards a more circular economy, the strategy also foresees actions to promote local produce in an effort to reduce supply chains and supply chain vulnerability. The vulnerability assessment and metropolitan resilience committee may also support address the drivers of this shock.

## Alignment with Global Agenda

### Sustainable Development Goals - SDGs



**SDG 2**  
Zero Hunger



**SDG 3**  
Good Health and Wellbeing



**SDG 11**  
Sustainable Cities and Communities



**SDG 12**  
Responsible Consumption and Production

### New Urban Agenda



Strengthen food system planning and enhance resource efficiency, urban resilience and environmental sustainability.

**Article 51**



Supporting local provision of goods and basic services and leveraging the proximity of resources, recognizing that heavy reliance on distant sources of energy, water, food and materials can pose sustainability challenges, including vulnerability to service supply disruptions, and that local provision can facilitate inhabitants' access to resources.

**Article 70**



## Heat waves

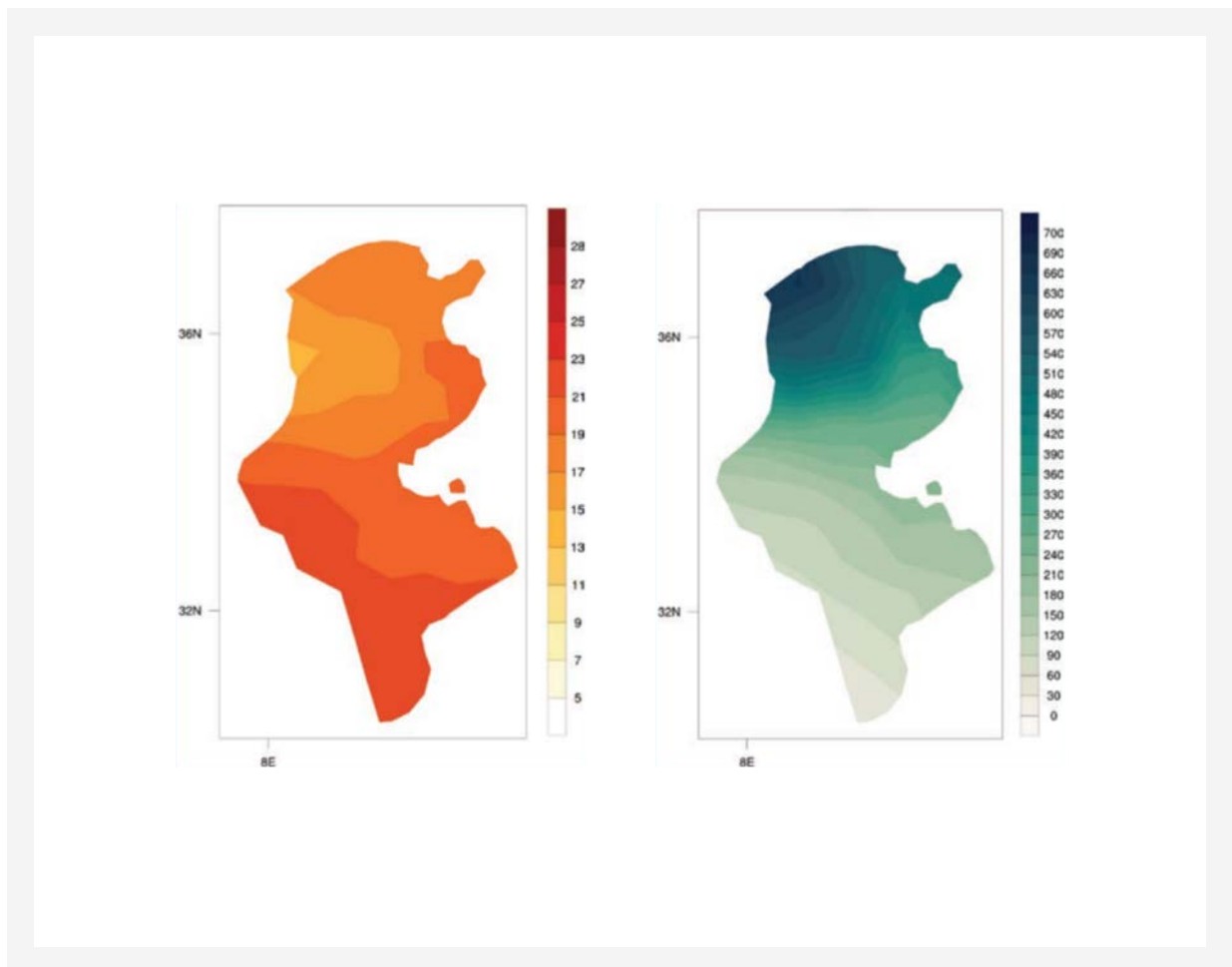
More frequent, intense and longer lasting heat waves are having a significant impact on human health, especially among vulnerable populations. These events reduce productivity, disrupt economic activity and harm agriculture. According to the IPCC, it is "virtually certain" that there will be more hot and less cold days with extreme temperatures, and it is "very likely" that heat waves will occur with higher frequency and longer duration, especially in the tropics.

### Driving factors

- Climate change trends.
- Lack of adequate urban vegetation and inadequate green coverage.
- Construction materials and sealed and impermeable surfaces.

### Impacts of heat waves in Tunis

- Health impacts.
- Reduced economic productivity.
- Deteriorated urban heat islands.



**Map 8:** Average annual temperature; annual precipitation of Tunisia 1901-2019. Source: Climate Risk Profile: Tunisia. (2021).

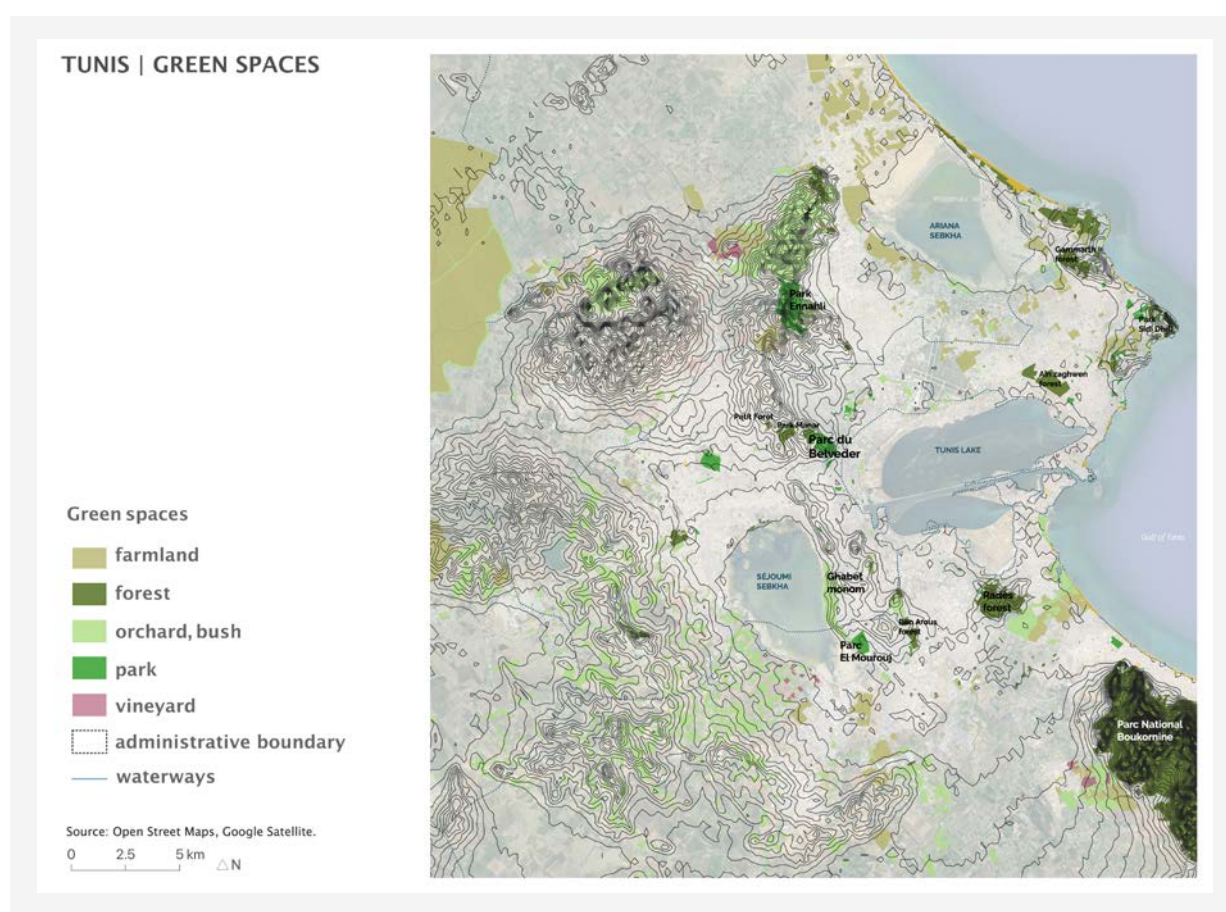


## Related action in the Development Strategy

Work area three of the six work areas (chantiers) outlined in Tunis' development strategy focusses on creating a resilient and eco-responsible territory. One key area of this work area is to preserve, restore and develop the natural spaces within the city. In particular, the strategy will seek to develop the banks of the Sebkhass as well as the urban forests of Gammarth and Jbel Jloud. These efforts will be combined with activities that seek to green public spaces and create green corridors. If achieved at scale, these measures will help address the risk of heat waves by addressing the drivers outlined above.

Under the same work area, the city also hopes to conduct an extensive risk study which would reveal future opportunities to build resilience and highlight drivers of risk. This action could be led by the metropolitan resilience committee proposed in the strategy and could be accompanied by actions to build capacity of municipal staff in the area of resilience and risk.

Lastly, the strategy foresees efforts to develop a climate fund strategy to finance the actions related to risk reduction and resilience.



**Map 9:** Tunis green spaces. Source: CRGP based on Open Street Maps, Google Satellite (2022).

## Alignment with Global Agenda

### Sustainable Development Goals - SDGs



**SDG 3**  
Good Health and Wellbeing



**SDG 11**  
Sustainable Cities and Communities



**SDG 13**  
Climate Action

### New Urban Agenda



**Article 37**

Promote safe, inclusive, accessible, green and quality public spaces, including streets, sidewalks and cycling lanes, squares, waterfront areas, gardens and parks, that are multifunctional areas for social interaction and inclusion, human health and well-being, economic exchange and cultural expression and dialogue [...]

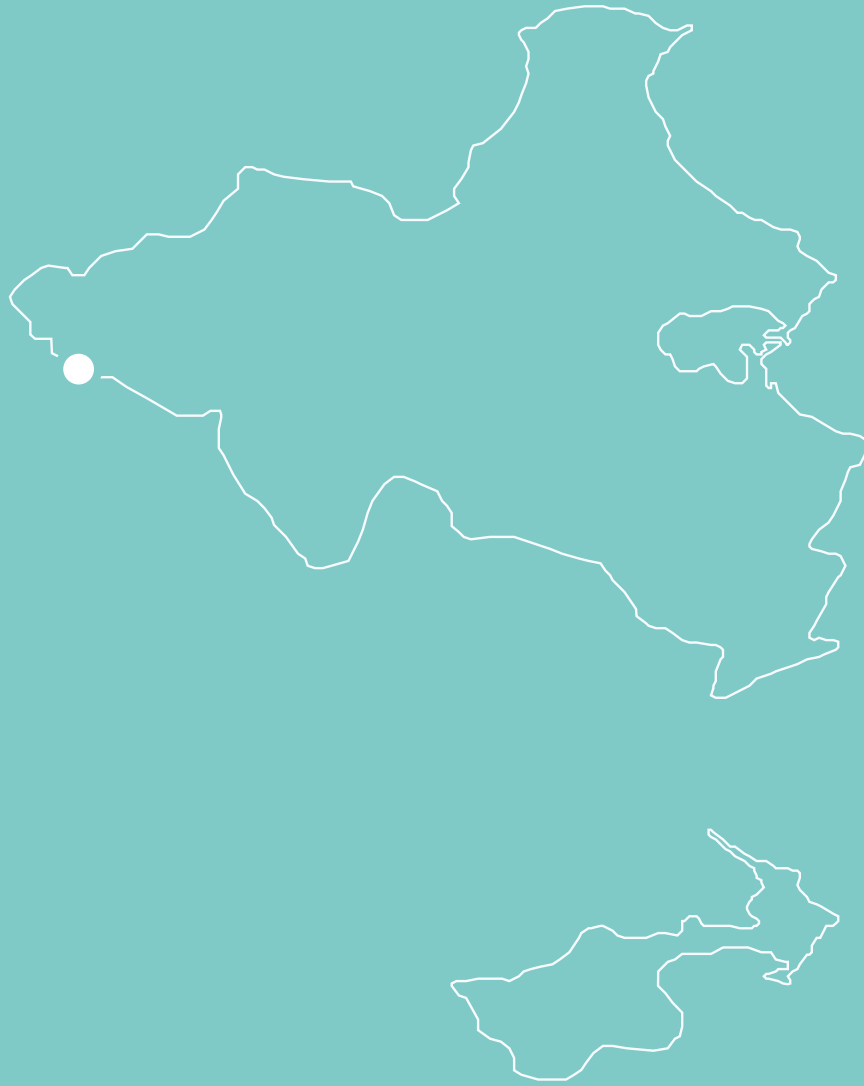


**Article 80**

Supporting the medium- to long-term adaptation planning process, as well as city-level assessments of climate vulnerability and impact, to inform adaptation plans, policies, programmes and actions that build the resilience of urban inhabitants, including through the use of ecosystem-based adaptation.



# Long-Term Resilience Perspectives



# Long-Term Resilience Perspectives

## Tunis' vision

Tunis is an inclusive and sustainable capital, the engine for an organized and resilient metropolitan ensemble, which innovates and shines economically and culturally on the international scene, with an attractive and welcoming central axis and neighbourhoods characterised by social and functional diversity and supported by local governance that is capable of mobilizing stakeholders and ensuring citizen support around shared objectives.

## Strategic Work Programms (Chantiers)

The 104 proposed actions and projects have been organized by the city into 15 structuring projects which form 6 strategic work areas:

<b>Work Program 1</b>	Attractiveness, outreach, metropolitan economic innovation.
<b>Work Program 2</b>	Requalification, articulation and enhancement of the central urban spine axis of the capital and place of collective symbolic appropriation.
<b>Work Program 3</b>	Socio-economic integration and inclusion and articulation, vitalization and territorial animation.
<b>Work Program 4</b>	Resilience and territorial eco-responsibility.
<b>Work Program 5</b>	Efficiency, transparency and accountability of territorial governance.
<b>Work Program 6</b>	Integrated and sustainable urban mobility.

Source: Strategic Framework of the city of Tunis. (Novembre 2022).

Prior to the development of the Strategy, Tunis was characterised by a level of "non-adaptation" to climate change. The Strategy outlines a proactive vision that seeks to increase resilience to economic, environmental and social shocks, and reduce vulnerability. The multi-stakeholder collaborative approach that has been fostered to develop the strategy has increased awareness of resilience among key partners in the city, from the grassroots level up to national and international actors. Beyond the actions outlined in the Strategy for sub-national government, the process has opened institutional doors for an increased commitment to capacity building, risk diagnosis, and the institutionalisation of resilience. This is reflected in the fact one of the Work Programmes, is specifically targeting Resilience and territorial eco-responsibility.


As of 2023, the A'SIMA Tunis project is in the operationalisation of the Strategy – from planning to implementation. The public conference and workshop for financing the SDV action plan took place in Tunis in December 2022 and initiated dialogue with financial and development partners on how to activate support for implementation, and with local partners on potential synergies and roles. The active involvement of these partners will help foster support for the Strategy and create an enabling environment for its actions to be fully realised.

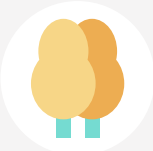
# Annex: List of Shocks

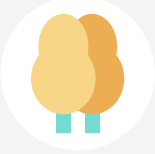


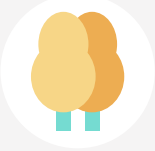
# Annex: List of Shocks


CRGP considers six main groups of shocks, of which four (Natural, Biological, Environmental and Technological / Manmade) are consistent with UNISDR's 2017 terminology and taxonomy on hazards. In addition to these four groups, CRGP's list includes Complex shocks as well as Societal shocks that seek to capture a range of potential socio-economic, sociospatial, or socio-cultural, to name a few, shocks to which a city may be prone.

Group	Type	Sub-type	Description
 <b>Biological</b>	<b>Infectious diseases</b>	Viral Epidemic & Pandemic Disease	E.g., Rubella/Measles, Small Pox/Variola, Hands, Foot and Mouth Disease (HFMD), Chikungunya, Rift Valley fever, Zica Virus, Influenza, Hepatitis, HIV AIDs and other sexually transmitted diseases.
		Bacterial Epidemic & Pandemic Disease	E.g., Salmonella, Cholera and Tuberculosis
		Parasitic Epidemic & Pandemic Disease.	E.g., Malaria, Chagas Disease, Giardiasis and Trichinellosis
		Fungal Epidemic & Pandemic Disease	E.g., Pneumonia and Fungal Meningitis
		Prion Epidemic & Pandemic Disease	E.g., Bovine Spongiform Encephalopathy (BSE), Creutzfeldt- Jakob-Disease (CJD) and Kuru
		<b>Infestation</b>	Insect Infestation
	Animal, Plant, Fungal & Pest Infestation	E.g., Worms, Rats, Grain-Eating Birds and Rabbit Infestation, Fungal Contamination, noxious or injurious invasive plants (e.g., Kudzu vine).	


Group	Type	Sub-type	Description
 <b>Natural</b>	<b>Drought</b>	Drought	An extended period of unusually low precipitation that produces shortage of water for people, animals and plants. The degree of precipitation reduction that constitutes a drought varies by locality, climate and environmental sector.
	<b>Extreme Meteorological Conditions</b>	Heat Wave	Periods of abnormally hot and/or unusually humid weather.
		Cold Wave	Periods of abnormally cold weather that may be aggravated by high winds.
		Extreme Winter Conditions	Extreme winter meteorological conditions such as frost, freeze, snow, and ice.
		Fog	Severe fog events.
	<b>Wildfire</b>	Land Fire	Wildfires are unplanned vegetation fires than may happen in land (bush, brush, grassland, scrub and pasture) and forest areas.
		Forest Fire	
	<b>Earthquake</b>	Ground Shaking	Ground shaking are the result of sudden movements of blocks of the Earth's crust along geological faults.
	<b>Mass Movement</b>	Rockfall	Falling of newly detached mass of rock of any dimension from a cliff or down a very steep slope, caused by factors such as ice wedging, root growth, ground shaking or erosion.
		Landslide	Moderate to rapid soil or debris movement, that includes phenomena such as mudflows, mudslides and debris flows.
		Avalanche	Mass of snow, ice, debris and/or rocks, flowing and sliding rapidly down a steep slope.
		Soil Liquefaction	The transformation of water-saturated soil from a solid state to a liquid state caused by an earthquake. Liquefaction reduces the strength and stiness of soil causing heavy structures (e.g., buildings) to sink and light structures (e.g., underground pipes and tanks), to rise up to the ground surface.


Group	Type	Sub-type	Description
 <b>Natural</b>	<b>Mass Movement</b>	Subsidence	Sinking of the ground due to groundwater removal, mining, dissolution of limestone (e.g., karst, sinkholes), earthquakes, among others
		<b>Volcanic Activity</b>	Volcanic Activity
	<b>Flood</b>		Volcanic Eruption
		Flash Flood	Heavy or excessive rainfall in a short period of time that produce immediate runoff, creating flooding conditions within minutes or a few hours during or after the rainfall.
		Fluvial Flood	Type of flood resulting from the overflow of water from a stream or river channel onto normally dry land in the floodplain adjacent to the channel.
		Groundwater Flood	Groundwater flooding occurs when the natural underground drainage system cannot drain rainfall away quick enough, causing the water table to rise above the ground surface.
		Pluvial Flood	Pluvial flooding occurs when an extremely heavy rainfall saturates drainage systems and the excess water cannot be absorbed.
		Coastal Flood	Higher-than-normal water levels along the coast caused by tidal changes or thunderstorms that result in flooding, which can last from days to weeks.
		Glacial Lake Outburst	A flood that occurs when water dammed by a glacier or moraine is suddenly released.
		Ice Jam Flood	Type of flood occurring when an accumulation of floating ice restrict or block a river's flow and drainage.


Group	Type	Sub-type	Description
 <b>Natural</b>	<b>Storm</b>	Tropical Storm	e.g. cyclones, hurricanes and typhoons.
		Extra-Tropical Storm	e.g. European winter/windstorm and Nor'easter.
		Local/ Convective Storm	e.g. Electrical storms or thunderstorms, rainstorms, windstorms, snowstorms and blizzard, tornadoes and dust and sandstorms.
		Geomagnetic Storm	Storm caused by solar wind shockwaves that temporarily disturb the Earth's magnetosphere. Geomagnetic storms can disrupt power grids, spacecraft operations, and satellite communications.
	<b>Wave Action</b>	Tsunami	High waves in ocean or in semi- or fully-enclosed bodies of water, such as lakes or bays, that may damage boats and coastal infrastructure, contributing to flooding and erosion. Usually generated by strong winds (e.g. ocean swells, rogue waves and seiches) or by underwater earthquakes, volcanic eruptions or landslides (e.g. tsunamis).
		High Swells & Rogue Waves	
		Seiche	


Group	Type	Sub-type	Description
 <b>Environmental</b>	<b>Water-Soil Degradation</b>	Soil Degradation	Soil degradation happens when the soil suddenly loses its value (in terms of nutrients, chemical make-up etc) as a result of acidification, over-farming, over-grazing, deforestation, desertification or erosion.
		Water Body Degradation	Water sudden physical changes, such as elevation of the temperature, discoloration, turbidity, siltation, depletion of oxygen (anoxia), salt-water intrusion and acidification, among others.
	<b>Air Pollution</b>	Sudden Pollution of the Air	Air pollution is the introduction of particulates, biological molecules, or other harmful materials into Earth's atmosphere, causing health issues and contributing to photochemical smog and acid rain, corrosion of buildings and damaging of trees and crops. Natural sources of Air pollution includes volcanic activity, methane from livestock, or dust from regions with little or no vegetation.
	<b>Erosion</b>	Sudden Inland Erosion	Natural temporary or permanent removal of soil or rock materials by the effect of rainfall (e.g., on riverbanks), wind, moving ice, and of infiltrating water that dissolves rock (e.g., in limestone and young volcanic ash geological formations). Coastal erosion further includes erosion due to the action of tides and sea waves.
		Sudden Coastal Erosion	
	<b>Biodiversity Loss</b>	Biodiversity Loss	e.g. degradation of biodiversity, species extinction, major changes on species distribution.



Group	Type	Sub-type	Description
 <b>Societal</b>	<b>Socio-Economic Shocks</b>	Economic Crisis	Economic crisis is an urgent and structural threat, at the regional and/or national levels, that necessitates urgent and alternative courses of action, but that also impacts the city's economic sector (e.g., inflation due to changes in oil-price, due to the decline of currencies, disruptions on import and export of goods and services).
		Financial Crisis	A sudden economic recession or depression caused by a lack of necessary liquidity in financial institutions. A financial crisis may be caused by natural disasters, negative economic news, or some other event with a significant financial impact. Financial crises tend to cause decreases in business activities, leading to a self-reinforcing intensification of the crisis.
	<b>Socio-Spatial Shocks</b>	Mass Immigration	Mass population immigration is the movement of people in the city, with the intention of settling in, temporarily or permanently. Mass Outward Displacement is its exact opposite, as movement of people goes out of the city.
		Mass Outward Displacement	
	<b>Socio-Cultural Shocks</b>	Destruction of Cultural Heritage	Destruction or desecration of cultural heritage or of sacred sites and symbols (e.g., temples, churches, sacred land and national symbols).
<b>Socio-Political Shocks</b>	Political Crisis	Political crisis is an urgent and structural threat, at the local, regional and/or national political levels, that necessitates urgent and alternative courses of action, and that impacts the city's normal functioning.	
<b>Crime</b>	Violent Crime	Sudden criminal events such as waves of violent personal crimes, waves of crimes against property, massacre or extermination.	

Group	Type	Sub-type	Description
 <b>Societal</b>	<b>Cyber-Attack</b>	Cyber-Attack	Cyber-attacks are offensive maneuvers, employed by individuals or organisations, directed at computers or other devices, or attacks where computers or other devices are integral to the offence. These include hacking, massive fraud and data theft, espionage, etc.
	<b>Terrorism</b>	Terrorism	Terrorism is the systematic use of terror, through violent acts or false alarms, exploiting human fear, as a way of trying to achieve political, ethnical, economic and/or religious goals. It may encompass biological, chemical, or bomb attacks, hijacking or shootings.
	<b>Conflict</b>	Urban Conflict	Conflict occurring in cities between different groups that may be caused by ethnicity, nationalism, religion, class or race.
		Inter-State Conflict	Conflict between state governments, potentially leading to war or armed conflict.

Group	Type	Sub-type	Description
 <b>Technological</b>	<b>Industrial &amp; Mining Incident</b>	Chemical Spill	Industrial and mining incidents encompass events such as the collapse, fire, explosion and primary radiation release from these sites and facilities, including the collapse of residual industrial and mining dams and landfills. It may happen due to accidents, negligence, incompetence, or has a consequence of another hazard (e.g., earthquakes). It further comprises chemical spills, gas leaks, oil spills, gas flaring and the poisoning of the environment due to industrial activities.
		Collapse	
		Explosion	
		Fire	
		Gas Leak	
		Oil Spill	
		Poisoning	
	Radiation		
	<b>Non-Industrial Incident</b>	Explosion	Non-industrial explosions include the explosion of old war munitions and of unexploded mines and ordnances (UXO).
		Urban Fire	Urban fires encompass uncontrolled fire within urban areas, affecting residential and/or commercial facilities.
		Transport Incident	Transport incidents encompass events caused by accidents, weather conditions, mechanical failure, incompetence or negligence, on air, road, railway and water. These include the transport of hazardous material such as fireworks, gases like LPG, fuels like diesel or petrol, acids and alkalis, industrial solvents, animal remedies, cleaning fluids and chemicals used in manufacturing.
	<b>Failure of Infrastructure &amp; Services</b>	Basic Infrastructure Breakdown	Breakdown or collapse of basic infrastructure, such as water, energy, solid waste, wastewater or communication systems.
		Built Infrastructure Breakdown	Collapse of the city's built environment, e.g. major damages on residential, commercial and public facilities and/or infrastructure.
Public Services Breakdown		Breakdown or collapse of public services, e.g. hospitals and clinics, emergency and rescue services, education facilities or social care services.	
Mobility System Breakdown		Breakdown or collapse of mobility system, including related infrastructure (e.g., bridge and tunnel collapses, breakdown of the city's railway), for systems based on water, air or land.	

Group	Type	Sub-type	Description
 <b>Complex</b>	<b>Failure of Supplies</b>	Food Crisis	A food crisis occurs when the population's access to appropriate quantities and quality of food and nutrition becomes inadequate or unreliable. It can encompass, besides food scarcity, natural and accidental events such as chemical, biological and foreign body food contamination.
		Water Crisis	A water crisis is a significant decline in the availability of acceptable quantity and quality of drinking water for both population (maintaining health and livelihoods) and economic activities. It can also encompass competition and conflicts situations over access to water, not only by different sectors (e.g., agriculture, industry and tourism) but also across boundaries (e.g., conflicts in transboundary river basins).
		Energy Crisis	An energy crisis is often a significant reduction in the supply and/or a substantial price increase of energy resources (e.g., electricity, fuel and gas). It may be caused by market fluctuations, limitations on free trade, nationalisation of energy companies, shortages or disruptions on the operation of energy producers and distribution networks (e.g., due to accidents or sabotage) and natural conditions (e.g., a severe winter).

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# Resilience Profile

## TUNIS 2023

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This report builds on research led by the city of Tunis and supported by local and international experts and partners, notably AMB and MedCities. The analyses and findings presented here were produced by the UN-Habitat City Resilience Global Programme to prioritize and plan actions and support stakeholder engagement.