## City Scoping and RCRA for Urban Africa

**Bizerte** 



GLOBAL CENTER ON ADAPTATION



## Methodology



- Part A– City Scan was conducted in February 2022
- Field mission in Bizerte and Tunis (7-11 March 2022) covering parts B & C
- Methodology based on:
  - Key informant interviews and workshops
  - GIS analysis and use of open data (Part B)
  - Climate Risk Assessment approach developed by C40 Cities Climate Leadership Group
  - Operational approach: elaboration of project sheets in discussion with stakeholders to guide investments
- Key stakeholders met:
  - Municipality (mayor & technical services)
  - Governorate
  - ONAS (Sanitation National Office)
  - SONEDE (National Company of Water Production and Distribution)
  - Urban Hydraulics Department within Ministry of Equipment
  - Directorate for Civil Protection DPC
  - APAL (Coastline Protection and Development Agency)
  - Agriculture Development Regional Commissariat (CRDA)
  - 6 local associations





## Rapid Climate Risk Assessment (RCRA)



## **RCRA** Study area



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#### Study area – 3 levels:

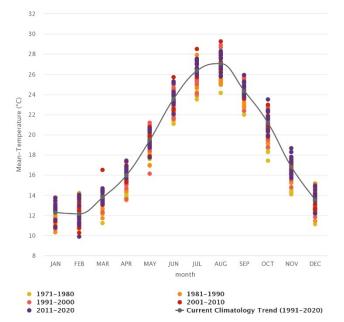
- Focus study area: the Urban Development Plan (PAU) perimeter
- Extended municipality boundaries
- Water subcatchment



## **Climate historical trends**

#### +4°C over the last 5 decades

Variability and Trends of Mean-Temperature across Seasonal Cycle, 1971-2020; Bizerte, Tunisia



Observed Average Annual Mean-Temperature of Bizerte, Tunisia for 1901-2020

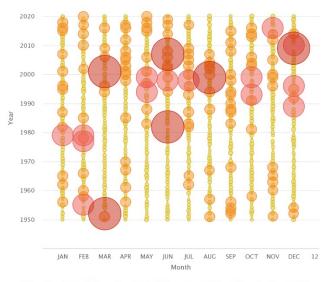






## **Increase of intense temperature events** starting from the 1990s

Change in Event Intensity of Maximum of Daily Max-Temperature; Bizerte, Tunisia



🔴 Less than 1 SD 🛛 Less than 2 SD 🕘 Less than 2.5 SD 🔵 Greater than 2.5 SD

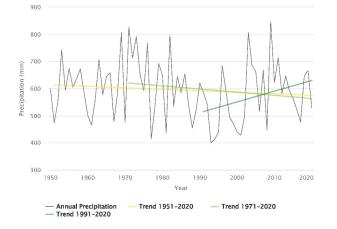


## **Climate historical trends**



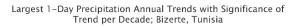
**Decrease in average annual precipitation** over 1951-2020, albeit with significant variability, and increase in the last period

Precipitation Annual Trends with Significance of Trend per Decade; Bizerte, Tunisia



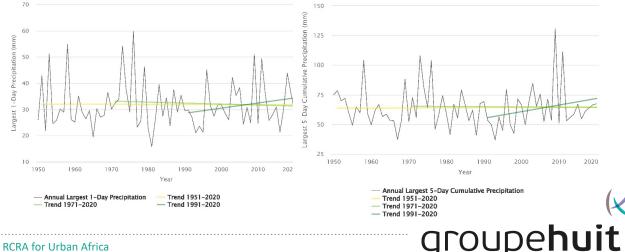
#### **Extreme events – floods**

Same trends observed for 1-day and 5-day precipitations



Largest 5-Day Cumulative Precipitation Annual Trends with Significance of Trend per Decade; Bizerte, Tunisia

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## **Climate historical trends**

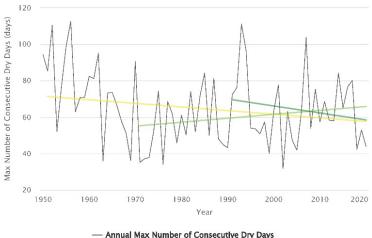


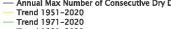
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#### **Extreme events – droughts**

Max number of consecutive dry days: high variability of the indicator

Max Number of Consecutive Dry Days Annual Trends with Significance of Trend per Decade; Bizerte, Tunisia

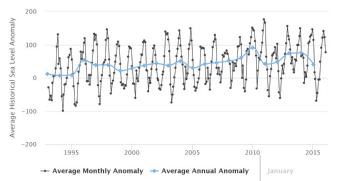




- Trend 1991-2020

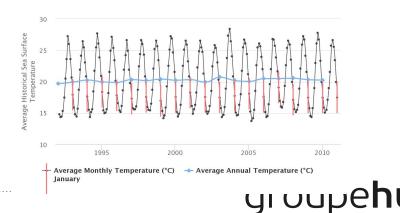
#### Sea Level Rise for Coastal Tunisia +2.1mm/year in average

Historical Sea Level for coastal Tunisia (1993-2015) *observed anomalies relative to mean of 1993-2012* 



#### Sea water temperature for Coastal Tunisia +0.027°C/year in average

Historical Sea Surface Temperature for coastal Tunisia (1992-2010)

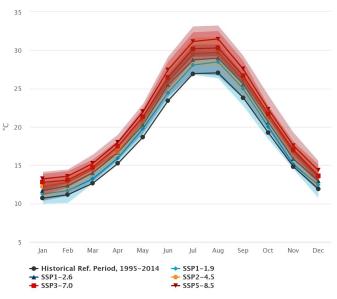


## Main climate & hazard projections

#### Projected increase of air temperature: +4.4°C by 2070

Under SSP5 – 8.5

Projected Climatology of Mean-Temperature for 2060-2079 Bizerte, Tunisia; (Reference Period: 1995-2014), SSP1-1.9, SSP1-2.6, SSP2-4.5, SSP3-7.0 & SSP5-8.5, Multi-Model Ensemble

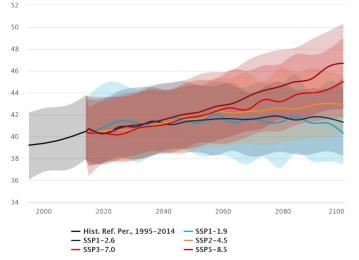


#### **Intense events**

Projected increase in annual maximum of daily maximum temperature: **reaching 43.8°C** by 2070 (range from 40.5°C to 47.2°C)

Under SSP5 – 8.5

Projected Maximum of Daily Max-Temperature Bizerte, Tunisia; (Ref. Period: 1995-2014), Multi-Model Ensemble

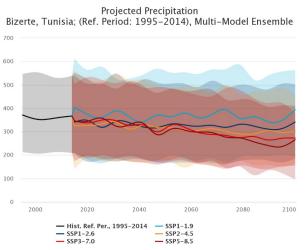




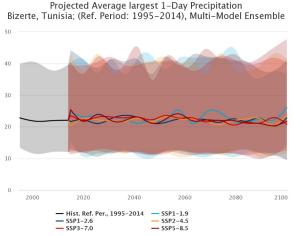
## Main climate & hazard projections



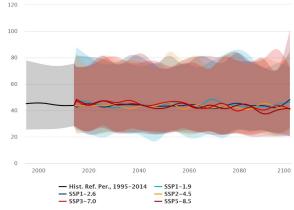
Projected average precipitationsdecreasefrom365mm/yearto2070



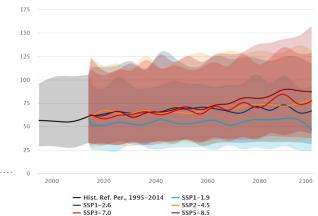
#### **Extreme events - floods** Projected variability of largest 1-day and 5-day precipitation Under SSP5 – 8.5



Projected Average largest 5–day cumulative rainfall Bizerte, Tunisia; (Ref. Period: 1995–2014), Multi-Model Ensemble



Projected Max Number of Consecutive Dry Days Bizerte, Tunisia; (Ref. Period: 1995–2014), Multi-Model Ensemble



### Projected increase in max number of consecutive dry days

From 61 today to **76 in 2070** & 87 in 2100 Under SSP5 – 8.5

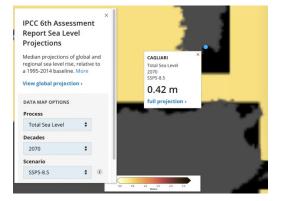
## Main climate & hazard projections

**Projected sea water level rise: +0.42m by 2070**, +0.78m by 2100 Under SSP5 – 8.5 – based on nearest station (Cagliari)

### Hazard projections

Marine submersion limited to the area around the lakes of Bizerte and Ichkeul, and central areas by the seafront

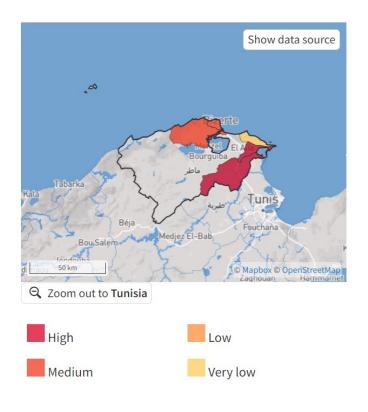




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**Coastal flooding risk** – classified as medium in Bizerte municipality = potentially-damaging waves are expected to flood the coast at least once in the next 50 years.

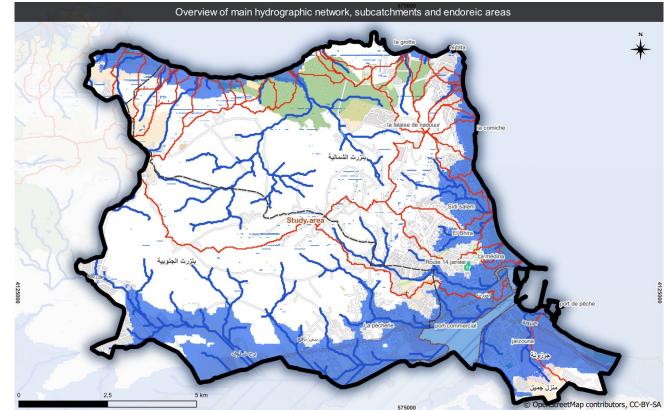






Urban floods - increasing risk due to high variability of future precipitation projections





Lack of correctly designed drainage network & hydraulic bottlenecks.



#### **Coastal erosion** – due to sea level rise.



#### Tackled by APAL project (PPLT)

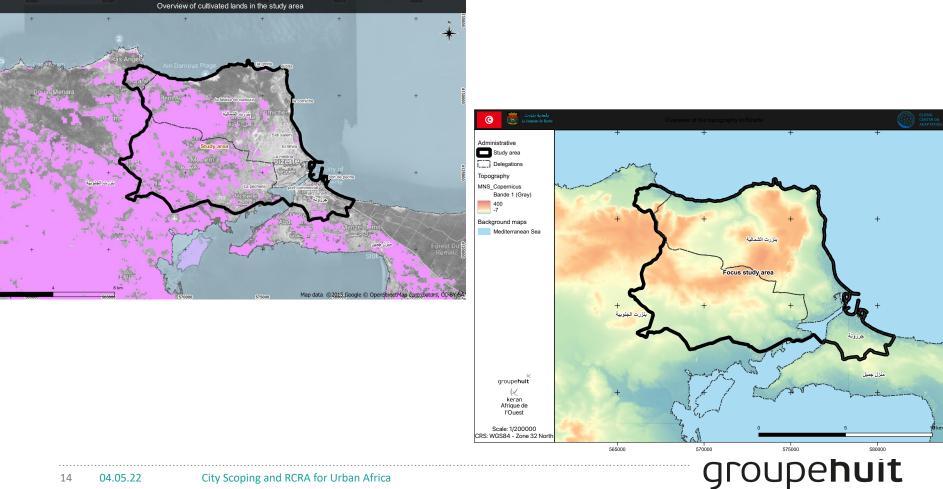








**Water salination**– due to high variability of future precipitation projections With significant impacts on agriculture – with cultivated areas in areas of low elevation.

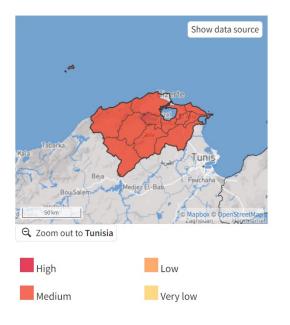


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#### Drought, water scarcity and heat waves.

- Heatwaves, exacerbated by the Urban Heat Island Effect, are a threat to public health and urban infrastructure in Bizerte.
- Already regular water shortages (Sidi Salem dam works at 30% of its capacity).

Extreme heat risk – medium risk

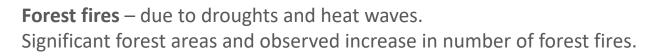


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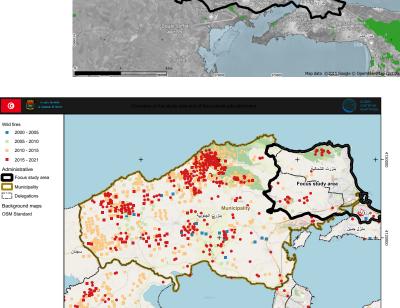
Water scarcity risk-medium

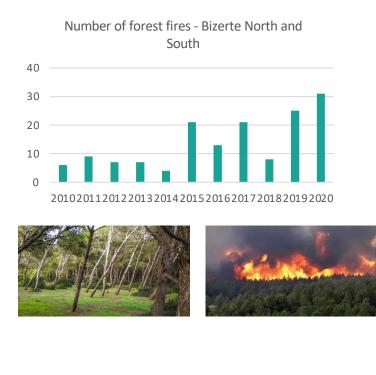


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Overview of forests in the study area

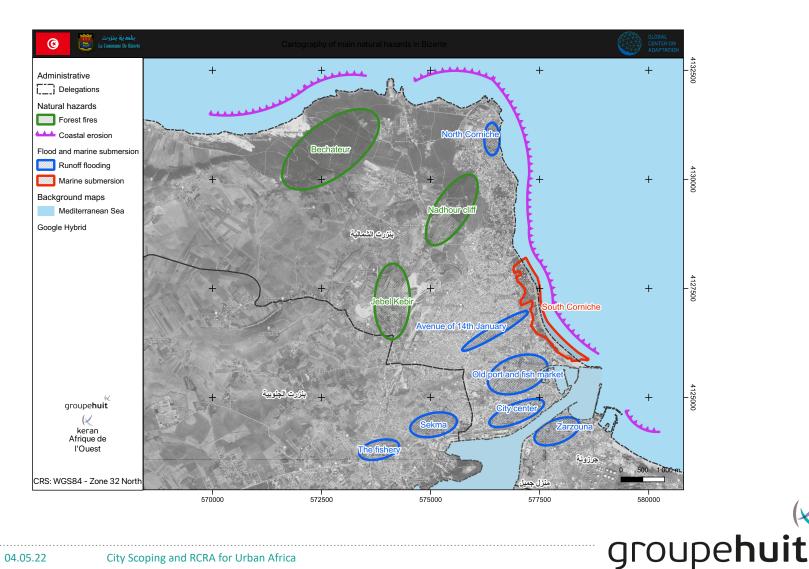




Location of wildfires from 2000 to 2020 (data from NASA FIRMS) showing numerous wildfires in Bizerte Sud forest areas and Nadhour forest.



## Synthesis – Natural hazards map

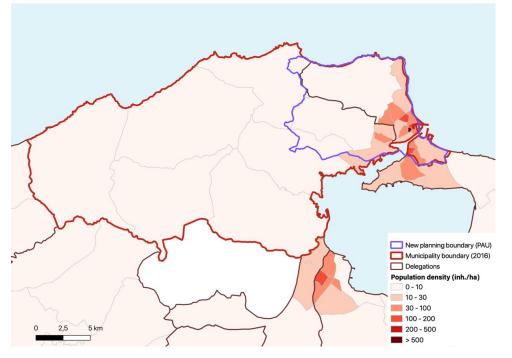


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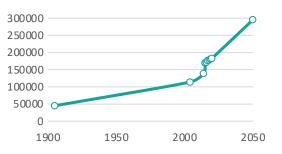


#### **Population**

- **186,000 inhabitants** in the municipality, about **155,000 inhabitants** in the study area
- **Fast growing population** (natural growth + in-migration) projected to reach 300,000 inh. by 2050.
- Mainly located near the sea & lake coast



Population density by sectors.



Population increase & projections at constant AAGR.





Lack of quantitative data on impacted population by hazard, but flood assessed as most impacting event on population, as well as water shortages, and to a more limited extent forest fires.

#### Vulnerable people

In the context of climate change, the vulnerable people are those who:

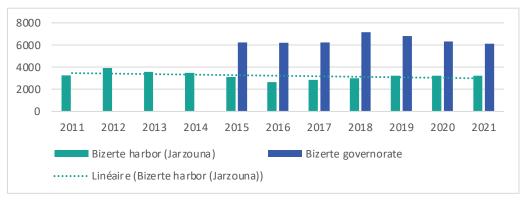
- Are more exposed to the climate hazards (due to the location of their houses, their economic activity and dependence on natural resources)
- Have less adaptation capacities due to their lack of awareness, financial means and/or skills. Thus, in the context of the study, the most vulnerable people are (i) mainly the poor due to lack of financial means to prevent, resist and adapt to climate change and (ii) with regard to water shortage risk, women who are more dependent on water resources -subject to pollution and the pressures of decreasing availability due to climate change- for household and childcare.

Population density by sectors.



**Economic activities** 

- **Urban economic activities** by the coastline and in the city center, impacted by floods.
- **Agriculture:** Impacted by lower precipitation, salinization of water resources, and droughts.
- **Fishery:** Impacted by increases in water temperature
  - Data show a small decline in fish production. Besides, higher efforts are undertaken by fishermen (longer distances to be traveled)
  - Apparition of new species



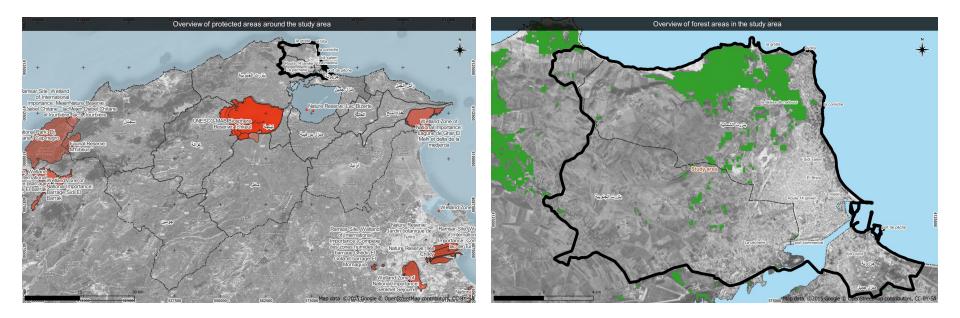
Fishing production

Industrial activities: Impacted by water shortages & urban floods



#### **Environment & natural resources**

Fragile ecosystems: the Ichkeul reserve, the shoreline, the forest areas, the Galite Archipelago





#### **Intensifying factors**

#### Mal-adapted urbanization patterns

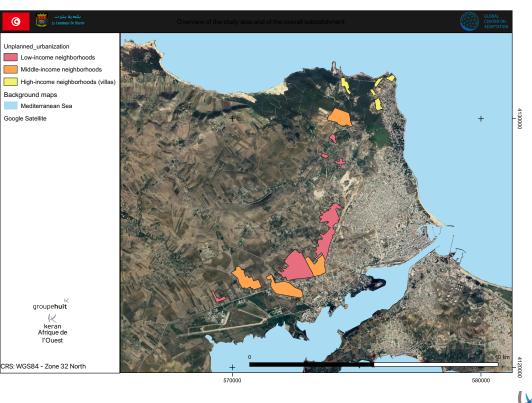
Urbanization in at-risk areas

Uncontrolled housing development. Source: AfDB – UMDF (2021), Urban Diagnosis of Bizerte





Map of uncontrolled urbanization



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#### **Intensifying factors**

- Mal-adapted urbanization patterns
  - Coastal landfills with no consideration of climate change and related risks

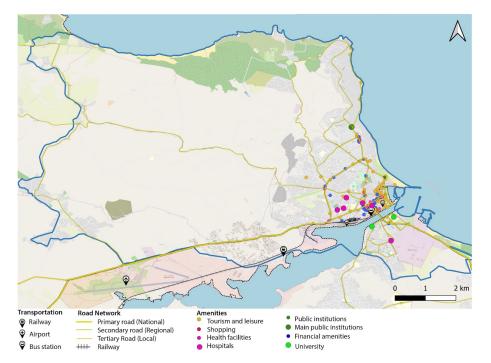






#### **Intensifying factors**

- Mal-adapted urbanization patterns
  - One-center city with amenities concentrated in flood-prone areas



Low adaptation to heat waves





#### **Intensifying factors**

#### Lack of forest management

- Start of fire is mainly of human/criminal origin
- Highly flammable & explosive species, not adapted to climate change
- Lack of maintenance & prevention works (firebreaks)
- Lack of emergency intervention capacities
- Sea water and lake pollution by urban & industrial activities, contributing to change marine biodiversity and impacting fishery activities

Low levels of rainwater harvesting while tradition is strong in other areas in Tunisia.

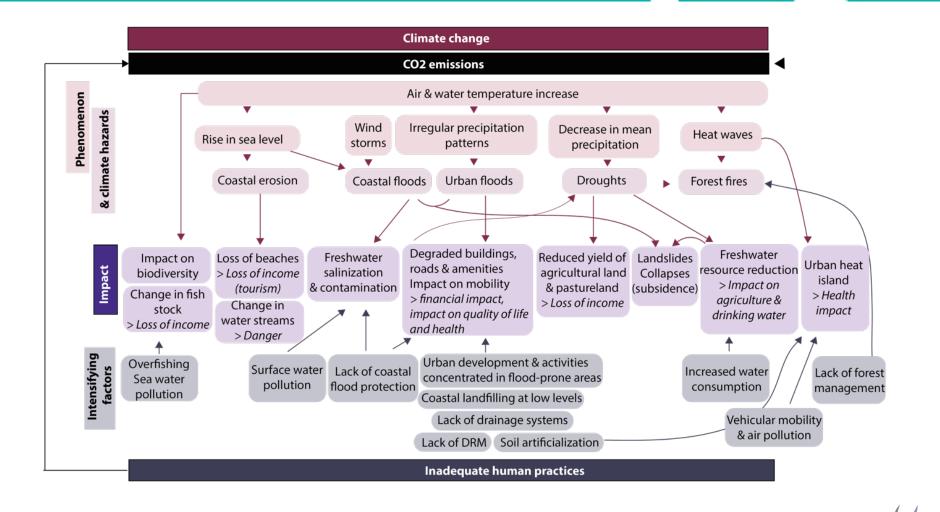


#### **Existing adaptation capacities**

- At the institutional level
  - Low levels of knowledge of climate risks by interviewed officials and lack of data to guide urban planning (e.g. map of flood risk areas);
  - A gap between regulatory documents and practices: uncontrolled urban development & tools to enforce regulatory documents are underused or inefficient
  - A gap between the devolution of powers to the municipality for drainage management, and actual municipality's means (financial means & human resources) to handle this main issue.
  - Increasing number of projects strengthening adaptation capacities: the APAL project of Protection of Coastal Areas (mega-project), Clima-Med support for the elaborating an Action Plan for Sustainable Energy Access and Climate identifying mitigation & adaptation strategies, ongoing flood risk study by Geoville & Terramonitor, Depollution of Lake Bizerte project.
- At the individual and private level
- - A very active and vibrant network of associations, with many working on adaptation and mitigation related issues
  - High private sector interest to develop activities in the coastline and in/around sites of environmental value (forests and other vulnerable ecosystems) due to the tourism economy.



## Impact diagram



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## Risk matrix



	Risk	Hazard	Exposure	Vulnerability	Exposure	Vulnerability	Risk
Environment							
Land	Loss of available land	Sea level rise (+0.4m by 2070) - > Coastal erosion, floods	Loss of beaches (already observed). Limited impact on coastal areas, and around lakes.	High economic value of beaches and of constructions on the costal areas. City extension based on coastal landfilling at low levels. APAL project for costal protection strengthening capacities.	3	3	9
Water	Decrease of quantity of fresh water available	number of days without precipitation (up to 87 vs 61 today > droughts) -> water scarcity Change in precipitation	Pressure on water tables Salinization mostly outside of Bizerte municipality	Risk intensified by water pollution from urban and industrial activities (waste and wastewater management issues), increased population number & water consumption (urban development and increased	2	3	6
	-		Pressure on water tables Salinization mostly outside of Bizerte municipality		3	2	6
Ecosystems	Destruction of ecosystems including terrestrial and marine biodiversity	Temperature increase (+4.4°C in 2070), precipitation decrease (-100mm/year), increased max number of days without precipitation (up to 87 vs 61 today > droughts) -> water scarcity Change in precipitation patterns -> water scarcity, flood Sea level rise (+0.4m by 2070) - > Coastal erosion, salinization, foods Urban heat island effect and loss of natural habitat.	biodiversity sensitive	Marine biodiversity strongly affected by change in water temperature (already observed reduction & change in species). Anthropic pressure on forest and green areas. Highly combustible tree species. Criminal and accidental (man-originated) forest fires.	2	3	6

## **Risk matrix**

	Risk	Hazard	Exposure Vu	Inerability Ex	oosure	Vulnerability	Risk
			Economy				
Fishing	Destruction of fishing resources	Temperature increase (+4.4°C in 2070)- > increase of sea temperature Sea level rise (+0.4m by 2070) -> coastal erosion, floods	Already observed change in fish species, with proliferation of invasive species. Fish migration.	Pollution of seawater and lakewater by urban and industrial activities (waste & wastewater). However, ongoing project to reduce vulnerability (Lake Bizerte Depollution).	2	3	6
Agriculture	Decrease of quantity of water available	Temperature increase (+4.4°C in 2070) -> water scarcity Sea level rise (+0.4m by 2070) -> Salinization, foods	Pressure on water tables Salinization mostly outside of Bizerte municipality	Use of water table for agriculture. But hill lakes creation by CRDA for improved access to water. No study/strategy for cultivation of best adapted crops.	2	3	6
All economic activities, particularly		Sea level rise (+0.4m by 2070) -> Coastal erosion, floods	-	High economic value of beaches and of constructions on the costal areas. City extension based on coastal landfilling at low levels. APAL project for costal protection strengthening capacities.	3	3	9
tourism	Main disturbances due to urban floods	Irregular precipitation patterns	Central areas (Avenue of 14th January, Old port and fish market, City center, Sekma, Fishery, Zarzouna) and North Corniche.	Concentration of socioeconomic activities and main mobility axes and bus station in flood prone areas.	3	3	9
Industrial activities	energy, etc.)	Temperature increase (+4.4°C in 2070) -> water scarcity Stronger and more frequent extreme events -> floods, heat waves, storms	Water shortages impacting the whole city. Heat waves can cause additional costs related to air conditioning.	Already very strong heatwaves in summer. Lack of data on costs on water and energy.	2	2	4

## **Risk matrix**

	Risk	Hazard	Exposure	Vulnerability	Exposure	Vulnerability	Risk
			People				
Human settlement	Loss of available land	Sea level rise (+0.4m by 2070) -> Coastal erosion, floods	Limited impact on coastal areas, and around lakes.	High economic value of beaches and of constructions on the coastal areas. City extension based on coastal landfilling at low levels. APAL project for costal protection strengthening capacities.	3	3	9
Human health	Health impacts (diseases spreading, sunstroke, dehydration)	Stronger and more frequent extreme events -> floods, heat	Heatwaves more significant in dense urban neighborhoods (urban heat island effect). Flooded areas as hotspots for health issues.	No data related to climate-related diseases, but reported in key informant interviews (with uncertainties regarding if caused/increased by climate change). Low preparedness to heatwaves.	1	2	2
	Accidents from collapses	Temperature increase (+2,5°C in 2070) -> water scarcity Stronger and more frequent extreme events -> floods, heat waves, storms Sea Level rise -> coastal erosion	Significant damages in coastal areas due to erosion. No data related to possible subsidence (due to lowering levels of water tables) - not reported during interviews. Limited landslides due to due to relatively limited slopes in urban development areas.	High frequentation of the corniche and beaches affected by erosion. Unplanned urbanization in areas more prone to landslides (near riverbeds, in flood prone areas).	1	2	2
	Drowning from new seawater streams	coastal erosion, change in	Already observed changing streams from increase in sea level and main works conducted for coastal preservation.	High frequentation of beaches and lack of knowledge of new dangers.	2	2	4
Economic resources	Loss of economic resources	stronger and more frequent	All resources are impacted by climate change (water, fish, land and especially beaches) so all economic activities and related incomes.	Tourism economy is highly dependent on beaches & coastal landscapes. There are adaptation projects in agriculture in other areas of the governorate. There is little adaptation of the fishery sector (e.g. no project related to aquaculture or valorization of new species).	3	3	9

## **City Scoping**



## Urbanization and planning



Built areas have doubled over the last 30 years



Aerial images – 1984 vs 2020

 A new Urban Development Plan (PAU) is under elaboration and will create a new urbanization area





## Climate adaptation strategies and projects



- The existing planning documents do not take into account climate risks.
- However, the following studies & projects contribute to strengthen the city adaptation capacities:
  - APAL-led project of protection of Bizerte's Coastal Areas (supported by KfW) – a mega-project recreating and protecting beaches;
  - EBRD/EIB financed Depollution of Lake Bizerte (ongoing);
  - Master Planning of the Extreme North Hotspot and Bizerte East Coast hotspot (ongoing studies) – studying territorial vulnerabilities and identifying development scenario and projects;
  - Implemented and planned flood management projects by the DHU: however, there is a lack of general vision of the issues and the projects appear to follow a piecemeal approach;
  - The ongoing study by Geoville & Terramonitor on flood risks;
  - The Action Plan for Sustainable Energy Access and Climate (PAAEDC) developed by clima-med, identifying climate adaptation and mitigation actions.

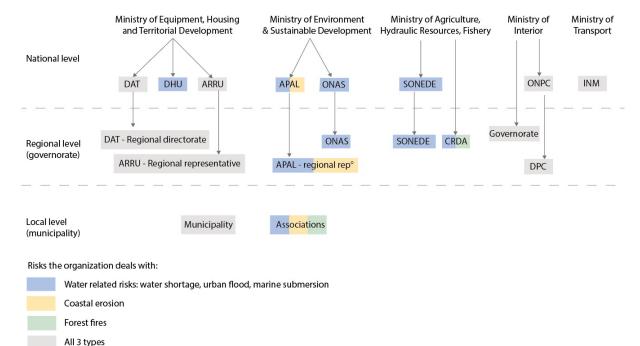


## Stakeholder analysis & capacity



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Low level of decentralization: most projects are conducted by central organizations, which have also higher levels of knowledge of climate change, its impacts and possible adaptation strategies and projects.



- Low level of municipal resources but high political willingness to be a model city regarding climate change adaptation & mitigation
- Lack of clarity regarding share of competences for rainwater management



## Recommendations on adaptation measures



List of identified projects, prioritized considering level of priority & preparedness

N°	Name of project	Level of priority and preparedness
1	Strengthening knowledge of climate risks and knowledge dissemination	1
2	Stormwater Drainage Management	1
3	Rainwater harvesting and recovery for urban use	1
4	Sustainable and resilient planning of Bizerte new town	1
5	Sustainable and resilient mobility: updating the Urban Mobility Plan and financing of a priority investment tranche	1
6	Sustainable management of forest areas	1
7	Fixation of sand dunes by planting palm trees	2
8	Water supply Master Plan	2
9	Recognition of the old port of Bizerte as a port or fishing shelter and eco-label obtention.	3
10	Improvement of wastewater collection & treatment system	3
11	Support for regulatory reform concerning the management of Galite archipelago (SPAMI), and implementation of co-management with fishermen	3
12	Elaboration of Coastal Management Program (CAMP) including beach occupancy plan, with climate change consideration	3



# Project 01 – Climate risks knowledge building and dissemination of knowledge

Objective: Build and disseminate knowledge about climate risks

#### Key components of the project:

**Component 1**: Climate multi-hazard study and creation of a GIS platform for risk and vulnerability data management

**Component 2**: Creation of a "climate house" in the city center and financing of associations and educational institutes for awareness-raising activities

**Component 3:** Strengthening APAL's Information and Decision Support System (SIAD) in Bizerte area

#### Justification/climate rationale:

- Bizerte is subject to various climate risks, but the city disposes of very few data, studies and knowledge about these risks
- Lack of staff capacity
- No municipal GIS database
- APAL' Information and Decision Support system as efficient tool for knowledge generation & adaptation, to be expanded to Bizerte's region

Project Owner: Municipality of Bizerte / APAL

**Location**: Yet to be defined – the car park next to the Old Port would be ideal

**Cost:** Component 1 – 600 000 € Component 2 – between 900 000€ - 1.7M€ Component 3 – no estimation





## Project 02 - Stormwater drainage management

Objective: Strengthen the resilience of Bizerte's municipality to stormwater runoff through a program for stormwater drainage system considering the impact of climate change.

#### Key components of the project:

**1. Study** – Preparation of a Master Plan for the Development and Management of stormwater

**2. Works** – implementation of the priority phase of the Master Plan

#### Justification/climate rationale :

- Intense storms
- Lack of effective drainage
- Strong artificial hydrographic network
- Foreseen sea level rise (30-42cm by 2070)
- => Regular very intense flooding

Project Owner: Municipality of Bizerte

**Location**: Waterbasin / focus on new PAU zone

Cost: Total 16.5M€ Diagnosis and Master plan for rainwater management – 0.75M € Work to implement the priority phase – 15M € Supervision of works – 0.75M €

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The project is linked with project 02 –Rainwater harvesting and recovery for urban uses

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## Project 03 – Rainwater harvesting and recovery for urban use

Objective: Rainwater harvesting to increase the availability of water and preserve the available water resources.

#### Key components of the project:

- 1. Apply the rainwater harvesting system to the roofs of existing and planner administrative, educational and health facilities
- 2. Require all housing to be equipped with a rainwater collection system
- 3. Revise the regulatory framework through a detailed development plan

#### Justification/climate rationale :

- Risk of water shortages due to changes in the regime of rainfall
- Pressure on groundwater



**Project Owner**: Municipality of Bizerte

**Location**: Bni Nafaa district (west of the city) – pilot district

Cost: Total 3.5M€ Component  $1 - 1M \in$ Component  $2 - 2M \in$ Component  $3 - 0.5 M \in$ 



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Project 04 – Sustainable Planning of Bizerte's New City with Investments' Identification for a Model Neighborhood



Objective: The PAU will extend to the borders of Ras Angela area. The objective is to implement sustainable & resilient planning and realize an eco-district.

#### Key components of the project:

**Component 1** : Sustainable & resilient planning study of the new city

**Component 2** : Creation of an eco-district by AFH (study)

Project Owner: Municipality of Bizerte

**Location**: West of the city, between Cap Blanc and Ras Angela

**Cost:** Component  $1 - 70\ 000 \in$ Component 2 - up to  $100\ 000 \in$  without land acquisition

#### Justification/climate rationale:

Two main challenges:

- Urban growth with housing needs, and current uncontrolled urbanization in at-risk areas
- Adapt the city to the effects of climate change





## Project 05 – Sustainable and Resilient Mobility - the revision of the Urban Mobility Plan and first tranche financing

Objective : Develop a sustainable, smart and resilient system of transportation through the integration of a diversity of transportation modes, to ensure intermodality and the development of non-motorized transportation.

#### Key components of the project:

**Component 1** : Updating the Urban Mobility Plan of the municipality of Bizerte, taking into account climatic risks (in particular flooding) and with the objective of improving public transport services and soft mobility infrastructures.

**Component 2** : Financing the priority investment phase identified by the Urban Mobility Plan

Rationale :

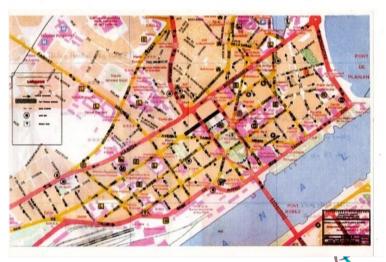
- Latest Urban Mobility Plan dates back to 2003
- Mobility dysfunctions aggravated by climate change



Project Owner: Municipality of Bizerte

Location: Study at the scale of the PAU

**Cost:** Component 1 – 70 000 € Component 2 – studies about 30 000 € / investments 300 000 € enveloppe





## Project 06 – Sustainable Forests' Management and Resilience to Fire Risks

Objective : Develop a sustainable management plan, strengthen fire management capacities, reforest and involve the population in the conservation and protection of the forests

#### Key components of the project:

- 1. Development of a sustainable forest management plan
- 2. Capacity building for fire management
- 3. Reforestation with adapted species

4. Community-based activities for forest conservation and protection

#### **Rationale :**

• Frequent forest fires

<sup>41</sup>04.05.22

- Mainly criminal origin BUT drought and heat waves induced by climate change accentuate the impacts of forest fires
- Highly flammable and explosive species

#### Project Owner: CRDA

**Location**: Forests located within the municipal perimeter

**Cost:** Approximately 1.5M €





## Other projects

#### **Fixation of sand dunes by planting palm trees (palmivelles)** Project owner: APAL

Fixing sand dunes by planting palmivelles (palm tree cuts) enable to reduce vulnerability to sea level rise and coastal erosion.



#### Water supply Master Plan

Project owners: SONEDE/CRDA In response to water shortage risks:

- Water Resources Management Plan (diagnosis of existing water resources, assessment of present water demand, projection of the future water demand)
- Water supply Master Plan (diagnosis of the existing water supply system, projection of the future water demand and definition of scenarios in order to comply with the future water demand)



## Other projects



#### Planning of wastewater treatment system

Project owner: ONAS

- Preparing a Master Plan of the sewerage system, with main output consisting in a phased investment program enabling to address existing issues and anticipate the future development of the city,
- Preparing the tender dossier related to the priority phase,
- Performing corresponding works, with adequate supervision.

**Recognition of the old port of Bizerte as a port or fishing shelter and eco-label obtention.** The recognition of the old port as a fishing port or fishing shelter, and the establishment of a management authority would promote sustainable artisanal fishing, and thus strengthen the resilience of fishermen to changes (in fish populations, types of fish) induced by climate change. Obtaining the "Blue Flag" eco-label would also improve the environmental management of the old port (environmental co-benefits).



## Other projects



Support for regulatory reform concerning the management of Galite archipelago (SPAMI) and implementation of co-management with fishermen.

The Galite Archipelago is recognized as Specially Protected Area of Mediterranean Importance (SPAMI) since 2001. As recognized by the SPA/RAC on the official website page on the Archipelago, and stressed by Bizerta Maritime Association, a main threat on the natural heritage is fishing, which visibly continues to be done illegally, while protection regulations strictly forbid fishing. According to Bizerta Maritime Association, fishing activities are mainly conducted by Italian trawlers in bad weather days, where visibility is lower. According to Bizerta Maritime Association, a co-management approach whereby local fishermen are allowed for limited and controlled fishing (quantities, types of fishes), and contribute to enforcing of fishing prohibition (overseeing and preventing from illegal fishing from Italian trawlers) would better fit protection needs. Local fishers are currently impacted by climate change (change in water temperature and impact on fish stocks & types), which require to rethink how fishing activities are controlled. *The project idea could not be discussed with APAL and needs to be further researched.* 

Elaboration of Coastal Area Management Program (CAMP) including beach occupancy plan, with climate change consideration

Project owner: APAL

CAMP is a tool that is part of the Integrated Coastal Zone Management approach.

As a priority plan that can be included within the CAMP, or realized independently, is the Beach Occupation Plan (Plan d'Occupation des Plages – POP).





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