BeBrit Extreme Heat Risk Project
City Case Study

Heat Resilience in Istanbul: Challenges and Actions

About Istanbul

- Istanbul is an ancient city, home to three great empires (Roman, Byzantine, and Ottoman)
- A cultural hub in Turkey, renowned for its stunning historical landmarks and famous stray cats and dogs, attracting millions of tourists each year
- Population of **15.46 million**, a **megacity** where the impacts of climate change are increasingly felt due to **rapid urbanization** and the **reduction of green spaces**

Vulnerability to Climate Change

- Ranked as one of Europe's most vulnerable cities to climate change
- Faces increasing risks from extreme weather events
- At risk of economic damage, along with 15 coastal European cities (Abadie, Sainz de Murieta and Galarraga, 2016)

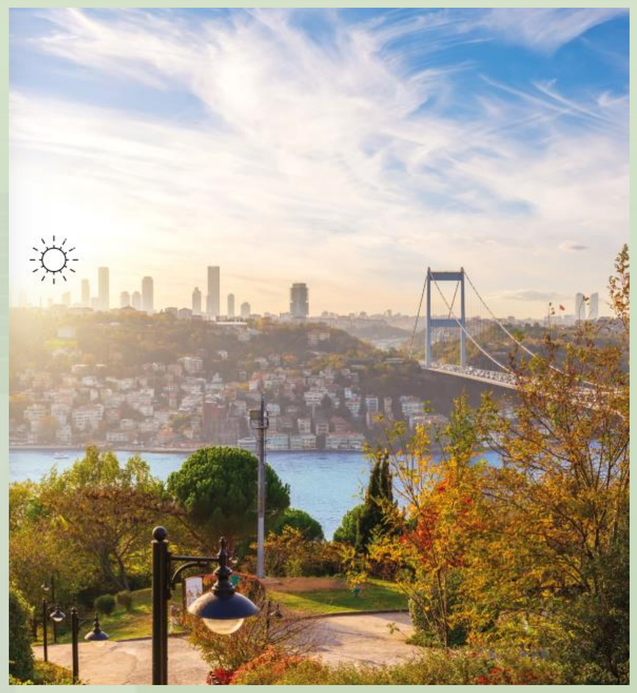

Figure 1: Istanbul view (Istanbul Metropolian Municipality, 2021, p. 50)

Area	5.313 km²
Density	2.892 per km²
Green Space	257.452 ha
Population	15.46 million
Tourists per year	13,9 million
Life Expectancy	77,8 years
Annual average temp (max)	17,7 °C
Hours of sun per year	2.421
Rainfall per year	820 mm
Total GHG emissions	50,9 $MtCO_2e$ (2019)
GHG emissions per capita	3,3 tCO_2e/capita (2019)

Figure 2: Istanbul in Figures (Istanbul Metropolian Municipality, 2021, p. 52)

- As urbanization increases and green spaces diminish, **the city is experiencing more frequent and intense heatwaves**, alongside rising temperatures projected to increase by **1 to 4.5°C annually**

- The **urban heat island effect**, intensified by population density and traffic, contributes further to this temperature rise

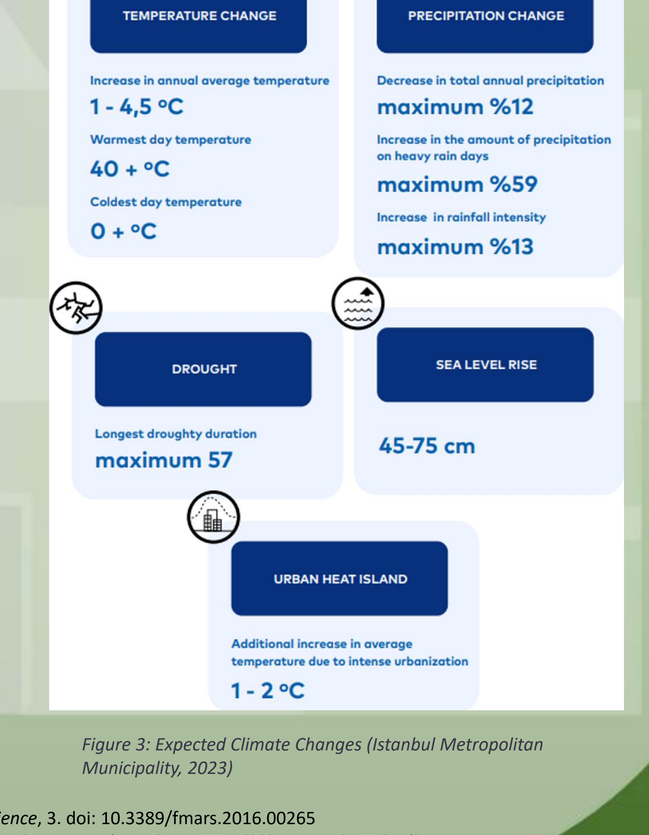

Figure 3: Vulnerability assessment of different urban sectors & services (Istanbul Metropolitan Municipality, 2021, p67)

City Readiness for Heat Risk

Key initiatives include:

- Commitment to reduce **greenhouse gas emissions by 40% by 2030**, alongside the development of a **Sustainable Energy and Climate Action Plan (SECAP).** This plan focuses on critical sectors such as buildings, transportation, and waste management, with short-term measures like tree planting and cooling systems for public spaces.
- **İstanbul Climate Action Plan (İDEP) is** developed by the İstanbul Metropolitan Municipality (IBB), this plan outlines strategies to reduce greenhouse gas emissions and enhance the city's resilience to climate change, including measures to combat extreme heat.

What can be improved?

- Istanbul lacks a **Heat-Health Alert system** which could help raise awareness and protect citizens during extreme heat events, ensuring that the city remains resilient in the face of climate change
- Include data and actions on extreme heat and urban heat island in the city's **climate monitoring reports** (the last one in 2022 focuses on mitigation)
- IBB should implement more effective measures to address extreme heat, such as **integrating cooling systems** and **water dispensers at bus** and **metrobus stops.**

Figure 3: Expected Climate Changes (Istanbul Metropolitan Municipality, 2023)

Abadie, L.M., Sainz de Murieta, E. and Galarraga, I. (2016) 'Climate Risk Assessment under Uncertainty: An Application to Main European Coastal Cities', *Frontiers in Marine Science*, 3. doi: 10.3389/fmars.2016.00265

stanbul Metropolian Municipality (2021) 'Istanbul Climate Change Action Plan'. Available at: https://cevre.ibb.istanbul/wp-content/uploads/2022/06/istanbul_climate_change_action_plan_v03.pdf (Accessed: 14 April 2024).

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