4th Euro-Mediterranean Conference & Exhibition 2020

# Innovation for Climate Adaptation in Mediterranean Cities

(SM E 4 S M A R T C I T I ES)

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October 9-10, 2020, Divani Caravel Hotel, Athens-Greece

# Innovation for Climate Adaptation in Mediterranean Cities

## Climate Change – MED Cities

- The Challenge

## Adaptation and Innovation

- Tel Aviv Case Study

## Innovation and MED Cities

- 32 cities survey

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*Mediterranean SME working together to make cities smarter*

# Climate Change – MED Cities

- The Challenge

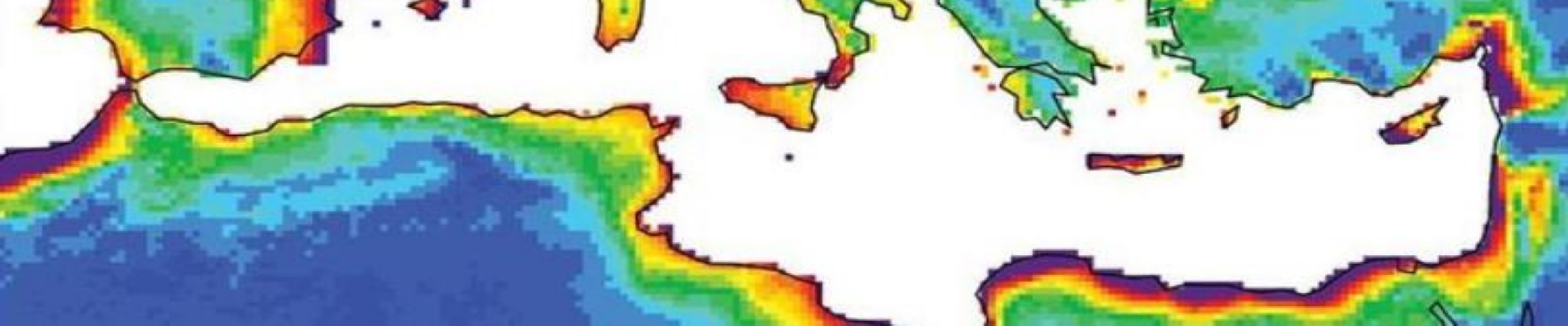
# Urban Impacts of Climate Change

- Temperatures are already rising in cities around the world due to both climate change and the urban heat island effect. Mean annual temperatures in 39 ARC3.2 cities have increased at a rate of 0.12 to 0.45°C per decade over the 1961 to 2010 time period.[1]

- Mean annual temperatures in the 100 ARC3.2 cities around the world are projected to increase by 0.7 to 1.5°C by the 2020s, 1.3 to 3.0°C by the 2050s, and 1.7 to 4.9°C by the 2080s (Figure 2).[2]

- Mean annual precipitation in the 100 ARC3.2 cities around the world is projected to change by -7 to +10% by the 2020s, -9 to +15% by the 2050s, and -11 to +21% by the 2080s.

- Sea level in the 52 ARC3.2 coastal cities is projected to rise 4 to 19 cm by the 2020s; 15 to 60 cm by the 2050s, and 22 to 124 cm by the 2080s.[3]

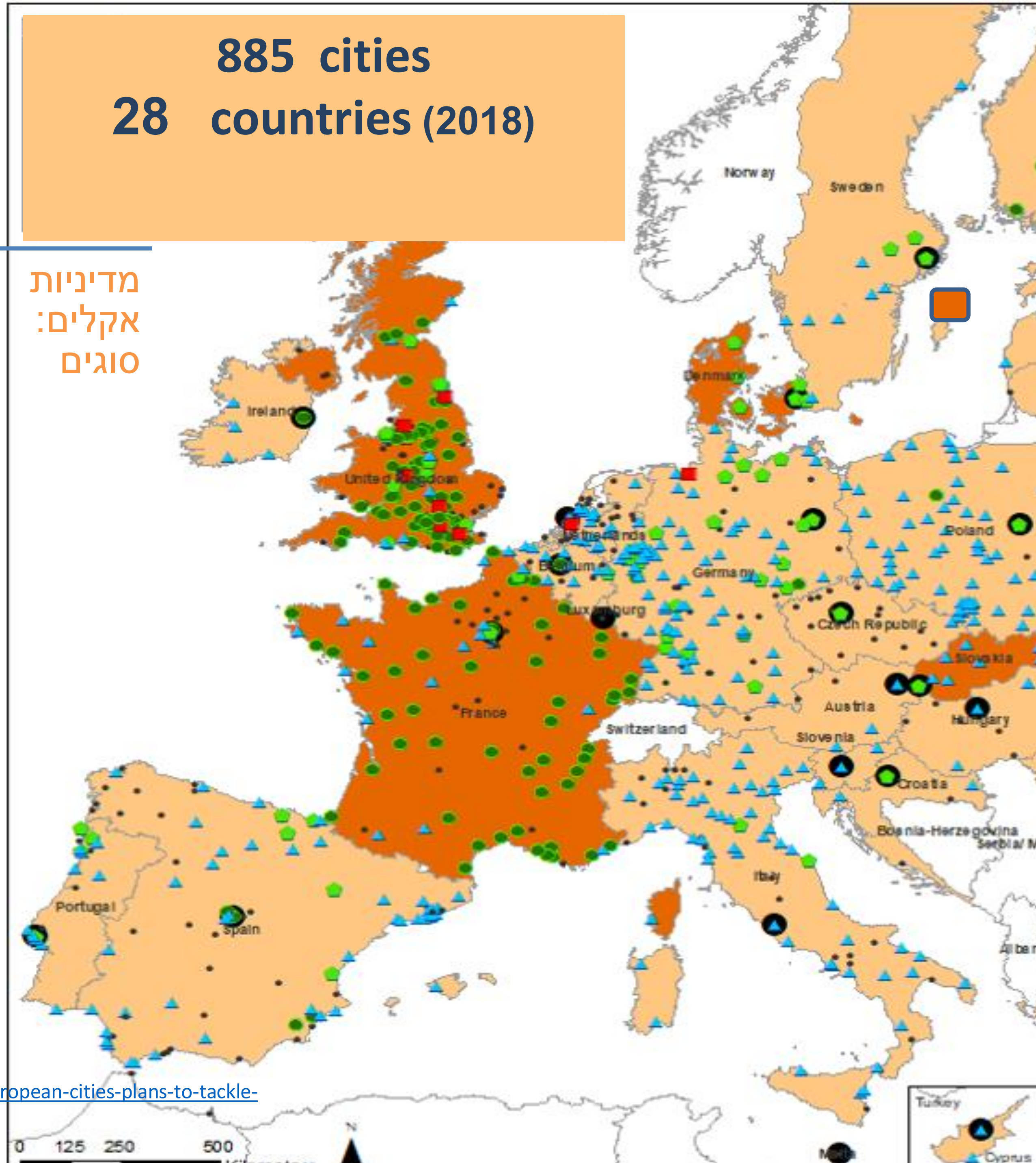


- The Eastern Mediterranean and North Africa are defined as one of the world's CLIMATE HOTSPOTS
- Casablanca, Tunis, and Alexandria will experience losses of more than 1 billion USD
- Temperature increase of more than 200% is predicted for the Mediterranean region

**World Bank Report**

**885 cities**

**28 countries (2018)**




מדיניות
אקלים:
סוגים

- Cities with mitigation plans
- Cities with adaptation plans
- Cities with separate mitigation and adaptation plans
- Cities with separate mitigation and adaptation plans

https://theconversation.com/we-examined-885-european-cities-plans-to-tackle-climate-change-heres-what-we-found-95733

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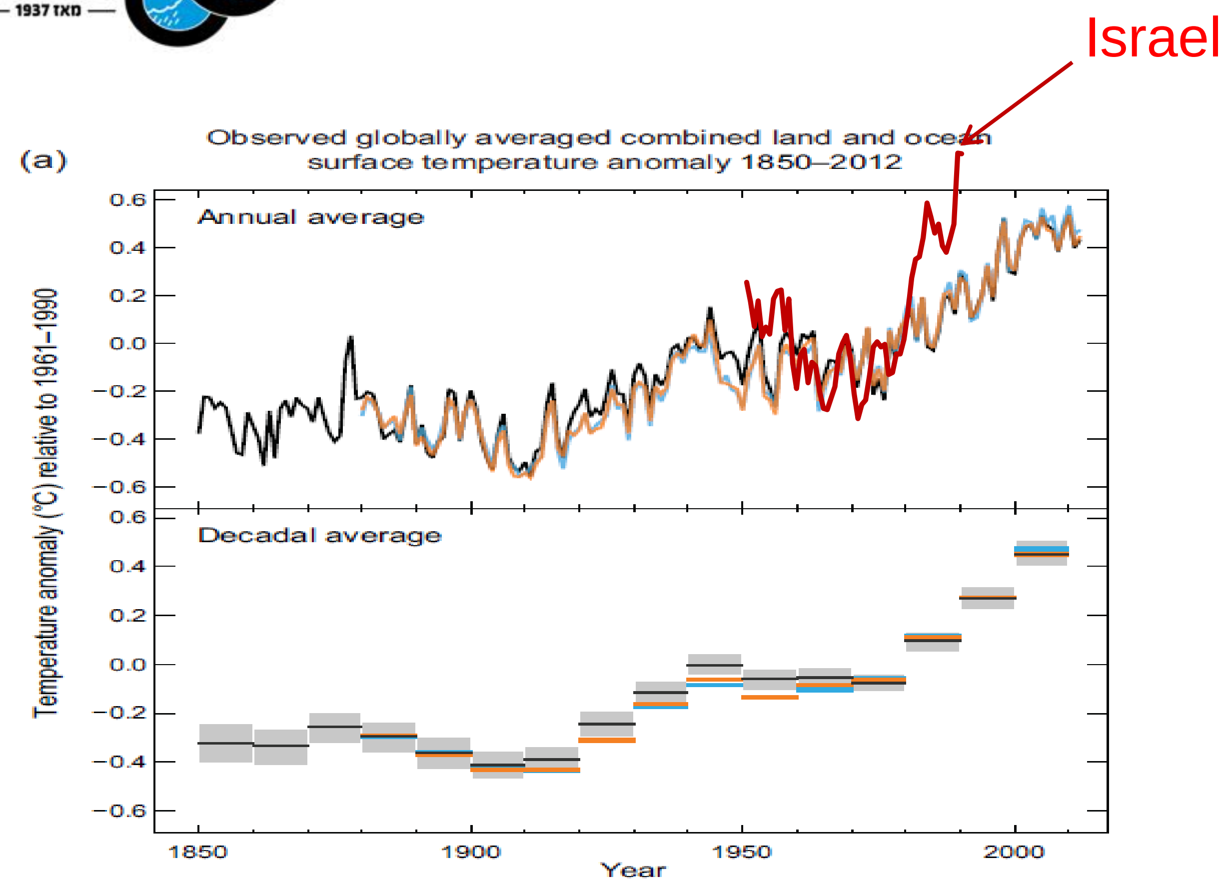
IMS השירות המטאורולוגי מאז 1937

# Israel is getting hotter




**IPCC 2013 Figure SPM.1 |** (a) Observed global mean combined land and ocean surface temperature anomalies, from 1850 to 2012 from three data sets. Top panel: annual mean values. Bottom panel: decadal mean values including the estimate of uncertainty for one dataset (black). Anomalies are relative to the mean of 1961–1990.

URBAN WELLBEING = CLIMATE ADAPTATION

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## Adaptation and Innovation

- Tel Aviv Case Study

# Tel Aviv Yafo Adaptation Plan

The premise underlying the plan is that **the climate is changing worldwide and in Israel**. The change is certain, but its intensity and impact are not fixed or known. Consequently, the climate change adaptation plan is **incremental and gradual**. Sets of measures will be added every year that will reinforce the city's adaptation and make it more consistent with the changing climatic environment.

**HOT and STORMY**- identifying the impacts of climate change on the city

**Leaving no one behind** - adapting together with the community and without neglecting vulnerable population groups

**Green now** - the immediate suspension of practices that adversely affect ecological infrastructure

**Innovation and adaptation** - implementing a set of innovative measures to improve the living conditions in the city in a hot and stormy age

**Together** - integrating the plan across the Municipality and in collaboration with all the stakeholders in the city

# Risk Assessment

**The following working assumptions were extrapolated from those analyses:**

Tel Aviv -Yafo is located in a region that is steadily becoming warmer – in the coming decade, it is expected that there will be a rise of **about 30% in the number of days with temperatures exceeding 30 ºC**.

Precipitation intensity in the Dan District metropolitan area is increasing. There are still no clear forecasts regarding the extent of the increase. The working assumption – **a more limited range of assessments regarding a storm whose intensity will lead to the closure of the Ayalon Highway, declining from once in twenty years to once in five years.**

As a coastal city, Tel Aviv-Yafo is exposed to storms from the Mediterranean and sea level rise – **the sea level is expected to rise by 1 to 2 meters by the end of the century**.

The city is growing and covering more open spaces – the spreading of city development is adversely affecting infiltration capacity, leading to an increasing loss of stormwater.

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# Expected Heat Stress

## NASA and Columbia University

| | 2020s | | 2050s | | 2080s | |
|---|---|---|---|---|---|---|
| | Low estimate | High estimate | Low estimate | High estimate | Low estimate | High estimate |
| **Low emissions scenario (RCP 4.5)** | +30 days | +45 days | **+55 days** | +76 days | +66 days | +88 days |
| **High emissions scenario (RCP 8.5)** | +35 days | +53 days | **+78 days** | +97 days | +112 days | +129 days |

**The following working assumptions were extrapolated from those analyses:**
rise of **about 30% in the number of days with temperatures exceeding 30 ºC**.

# VULNERABILITY

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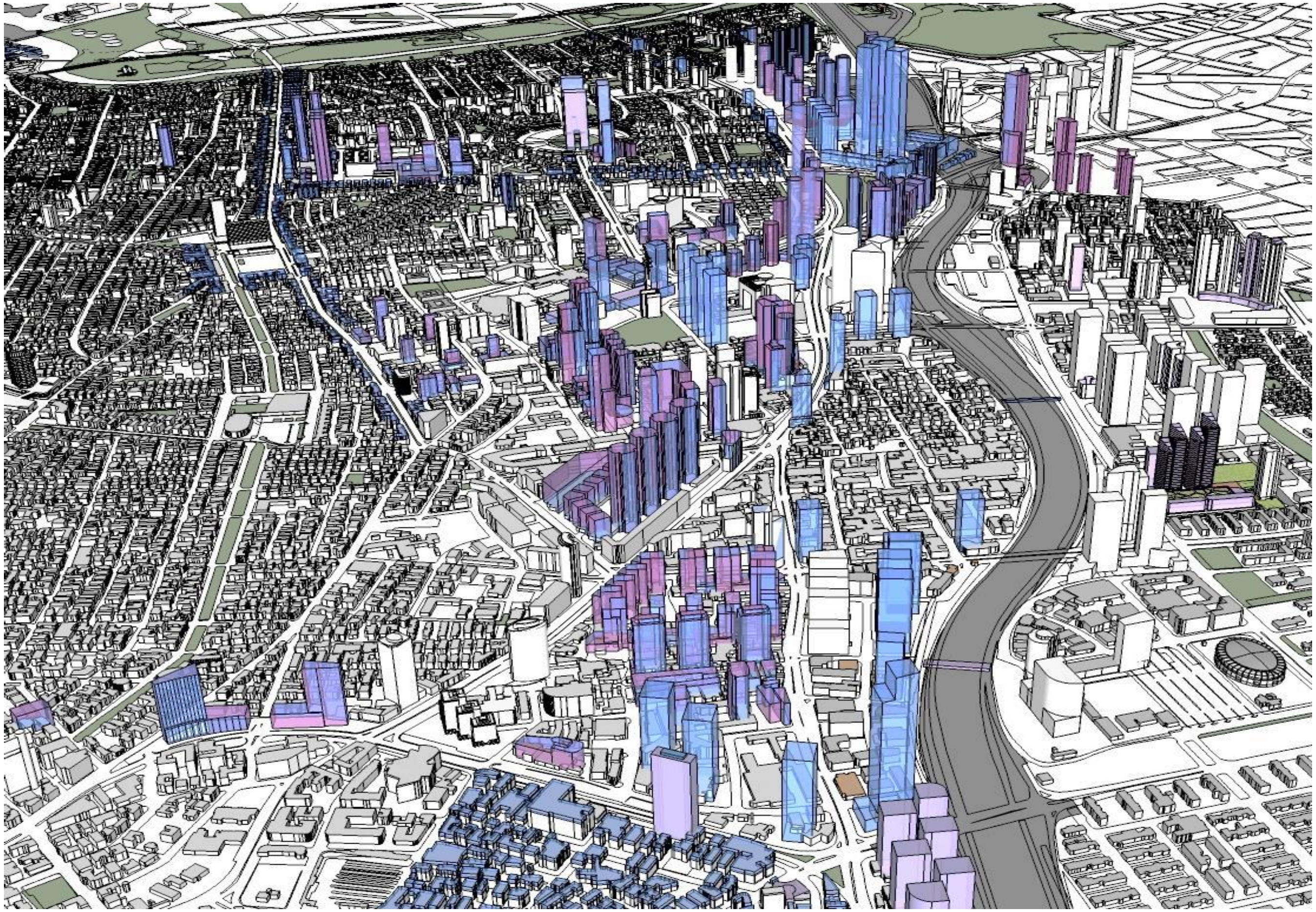
# 2030 – POPULATION AND THE BUILT AREA INCREASING

**100,000**
**NEW RESIDENTS**

**300,000**
**ADDITIONAL BUILT AREA**

**7,000,000**
**ADDITIONAL BUSINESS AREA**



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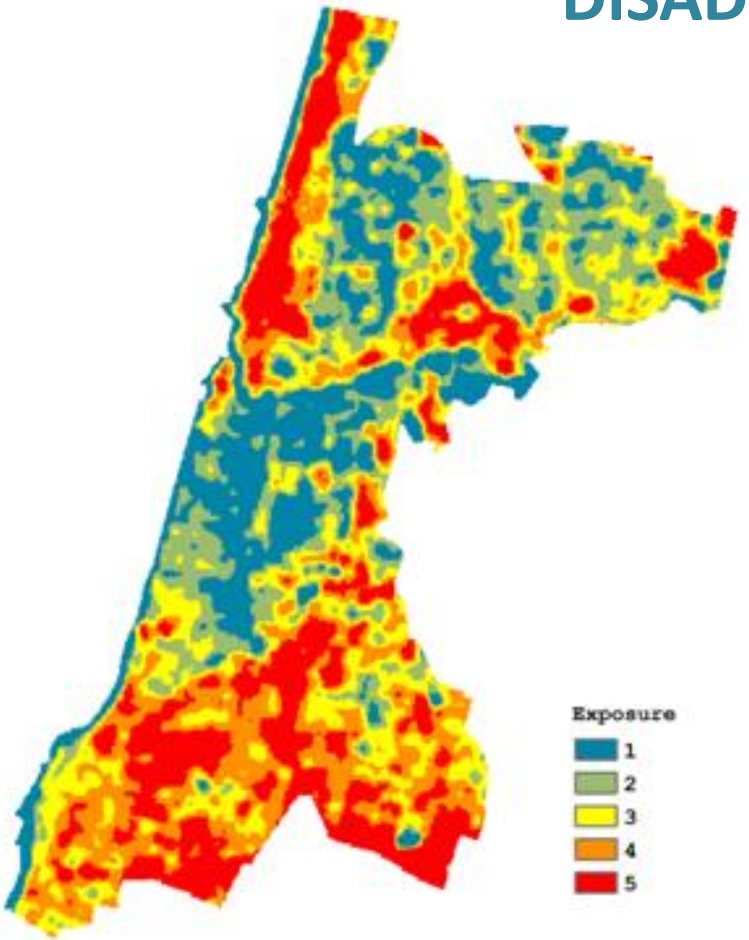
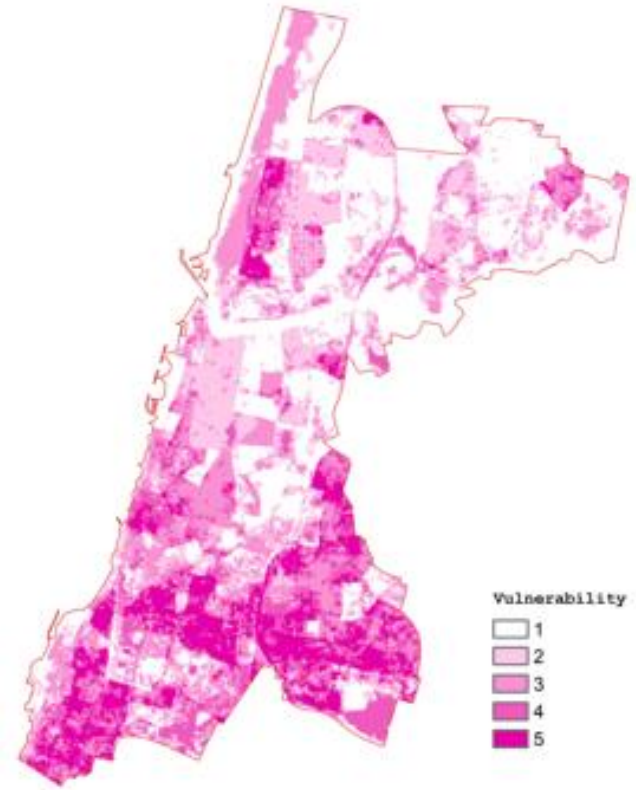
# URBAN HEAT ISLANDS AND DISADVANTAGES POPULATIONS



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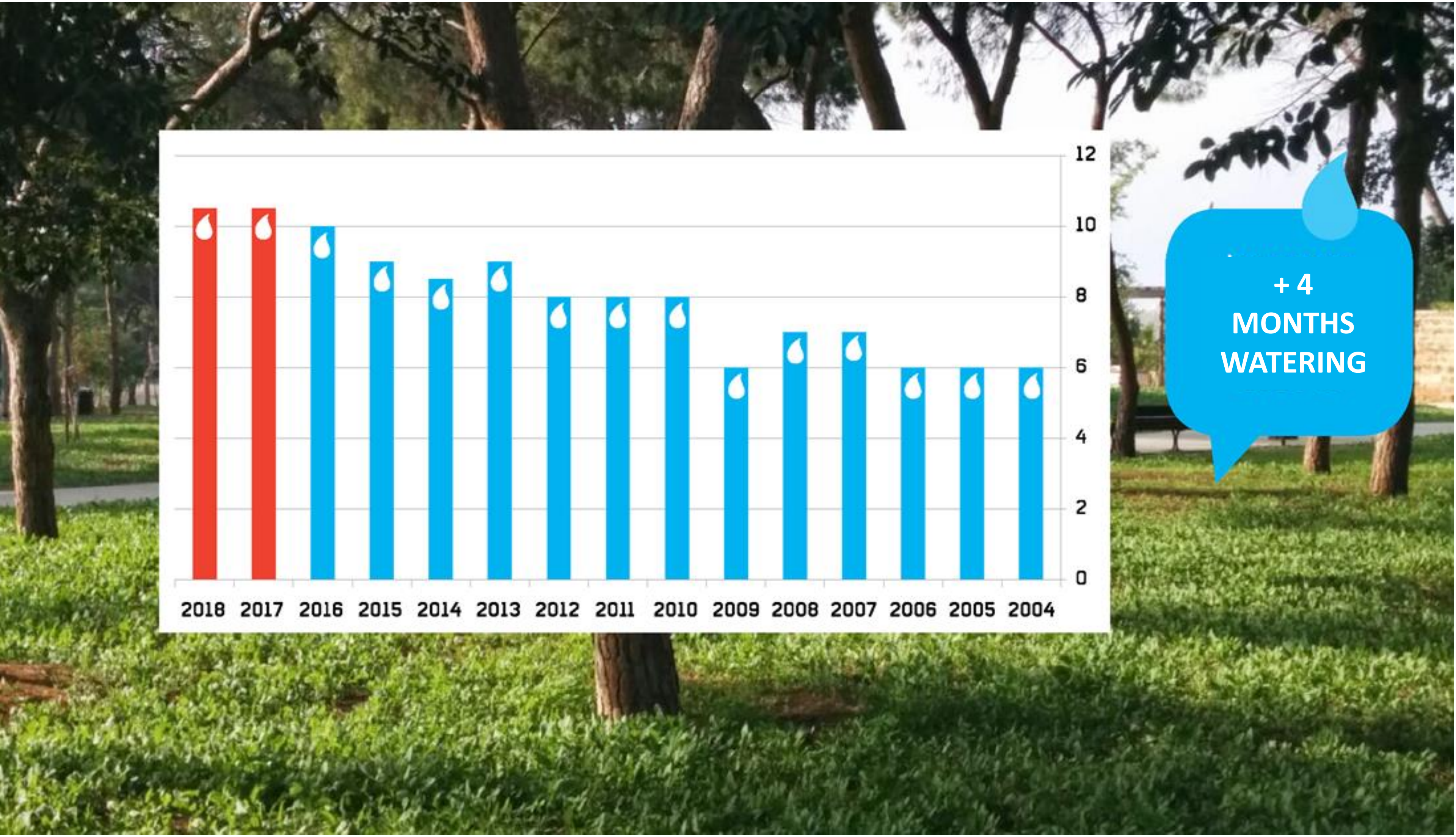

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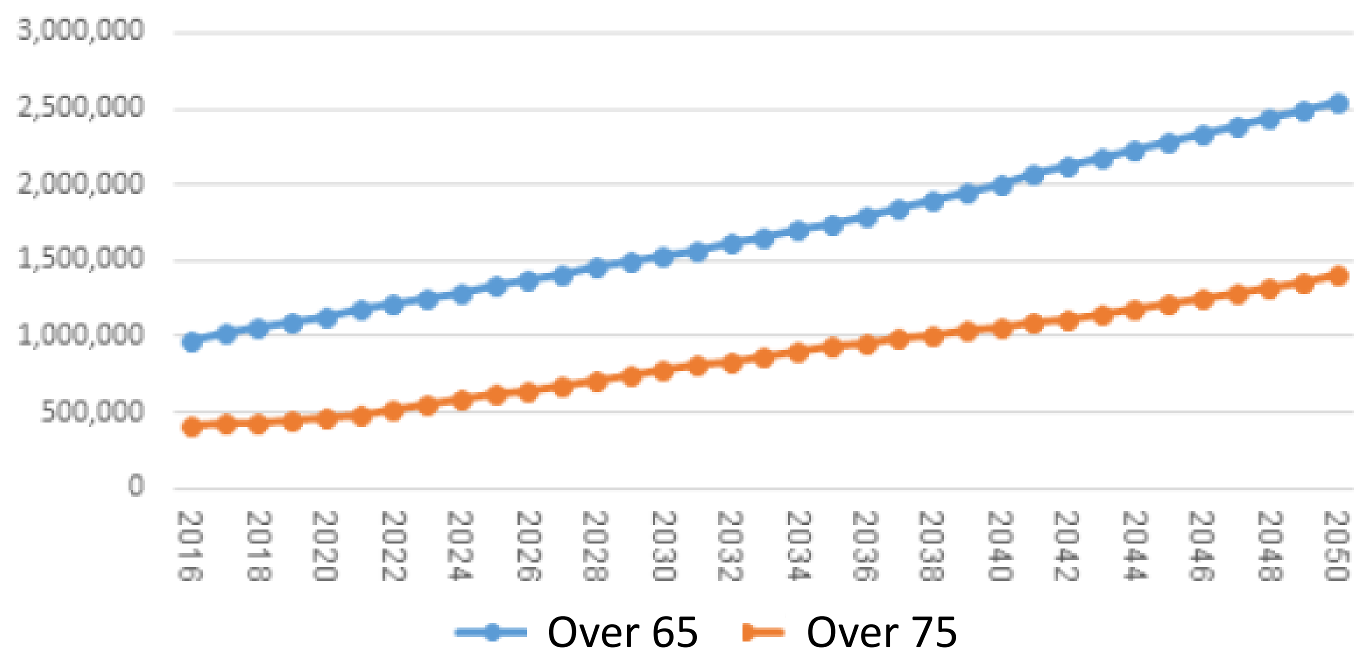
# Increase in the elderly population



# Challenges for 2030

Less water More flooding

+

Increase in consumption and disparity

+

Ecological ecosystem weakening

+

The city is less permeable

+

Home space is heating up

+

Public Space is heating up

## TASKS:

### Water management

- +absorption
- Improving drainage
- Water conservation

### Cooling the city

- Cooling the public space
- Decreasing heat emissions
- Coping with extreme 'weather events

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# Objectives:

**Identification of urban challenges in Mediterranean cities and how technology can respond to them. [Efficient use of resources + participatory government and citizenship]**

***Creation of a Regional Stakeholder Group to support the project***

***Public administration. R&D Centers, Universities, Sector Experts, etc.***

***Identification of Urban Challenges ( E | I | S ) Alignment to existing strategies***

***Inventory of existing technologies (SME identification)***

***Guide public buyers of technology and procedures***

***Mapping opportunities for SMEs in the smart cities market***

***SME needs detection***

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*SME needs detection*

# City Challenges Survey

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**Identification of urban challenges to make Mediterranean Cities Sustainable and Smart**

- Understand main economic, social & environmental challenges & obstacles
- Find actual solutions that cities can apply
- Top common challen ges will be addressed by the next project stages

# City Challenges Survey

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**Survey and Cities Participation**

The Urban Challenges Identification Survey was conducted over a period of 9 months, from Dec 2019 to August 2020

34 Municipality officials from 32 cities with varied roles, ranging from a mayor and Mayor Deputy to Innovation managers, Environment managers and other departments' managers

16 cities over 100,000 citizens, 16 cities less than 100,000 citizens, from Malaga in southern Spain to Eilat in southern Israel

# City Challenges Survey

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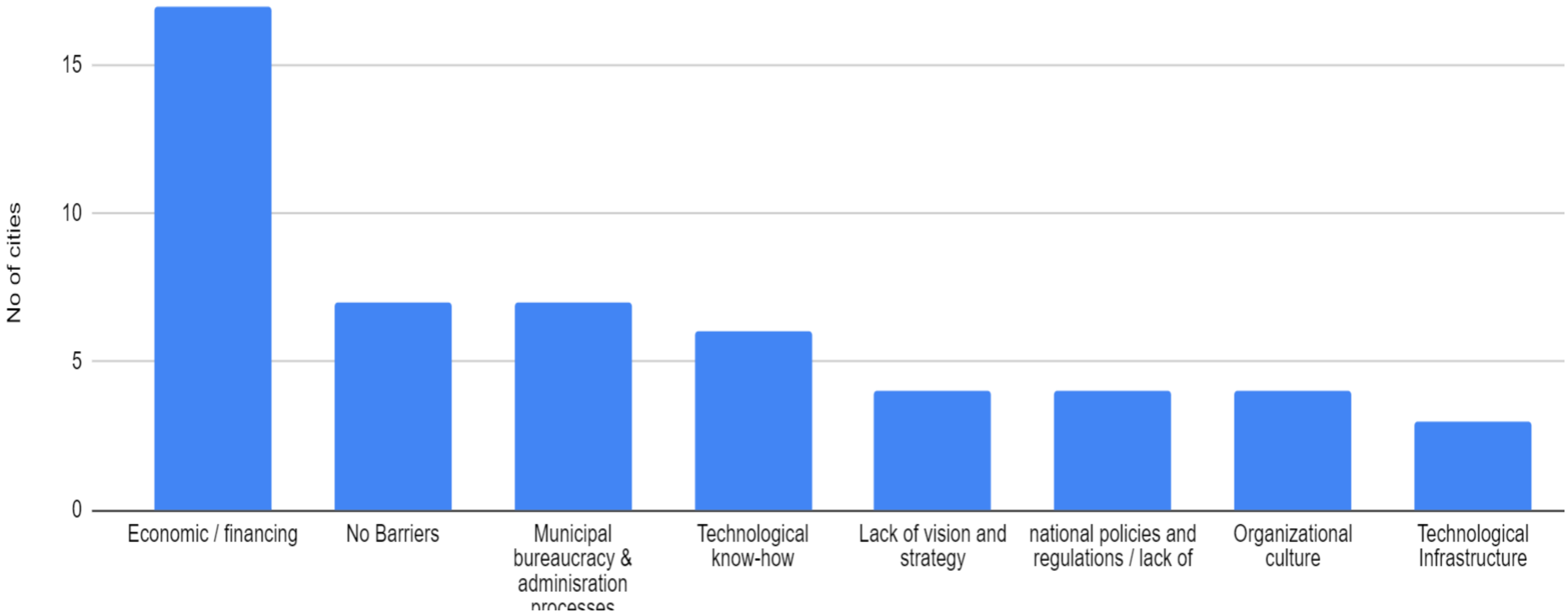
## Barriers to advance smart initiatives



# City Challenges Survey

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## Barriers to working with SME and Startups

# City Challenges Survey

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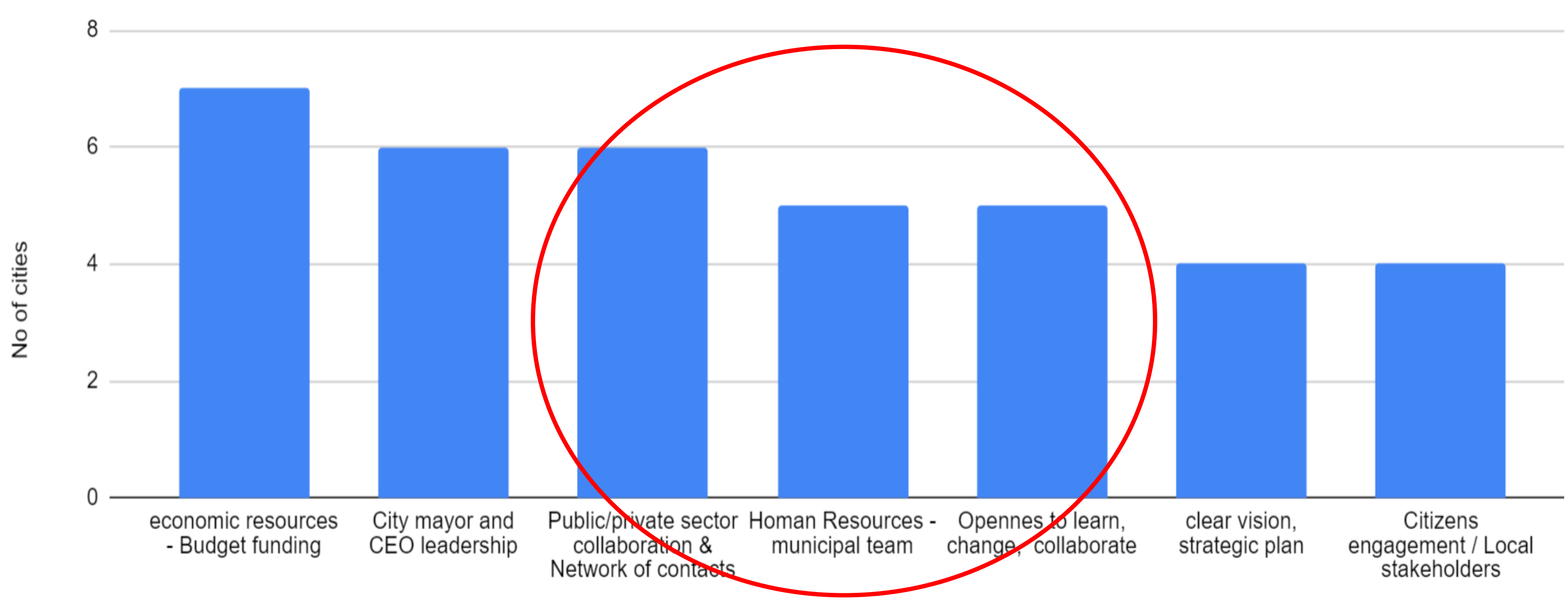
Key factors to smart innovation success in the city



# Conclusions

- SMART CITIES ARE NOT ABOUT TECHNOLOGIES BUT ABOUT CAPACITY
- CLIMATE CHANGE IS ASSOCAITED MOSTLY WITH ENERGY AND MOBILITY LESS WITH ADAPTATION MEASURES
- CITIES HAVE DIFFICULTY IN CREATING AN INNOVATION ORIENTED CLIMATE
- WHEN IN CRISIS BARRIERS FALL
- SMALLER CITIES TEND TO CONTRACT LARGE ESTABLISHED COMPANIES
- LARGE CITIES ARE MORE OPEN TO RISK TAKING

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*Mediterranean SME working together to make cities SMART and SUSTAINABLE*

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*Thank you*