Risk and Vulnerability Assessment for the Municipality of Rafina-Pikermi (RAFRVA)

ΔΗΜΟΣ
ΡΑΦΗΝΑΣ
ΠΙΚΕΡΜΙΟΥ

Municipality Rafina - Pikermi
Barcelona, 11, June, 2025

The CLIMAAX project is funded by the European Union under Grant agreement ID 101093864.
This publication was funded by the European Union. Its contents are the sole responsibility of the author(s) and do not necessarily reflect the views of the European Union.

CLIMAAX
climate ready regions

Municipality of Rafina - Pikermi

- 40.501 km^2
- Population of 22,327 citizens
- 25 km distance from Athens
- Next to the ancient Marathon city
- 2nd busiest port in Greece with 2 million passengers

The CLIMAAX project is funded by the European Union under Grant agreement ID 101093864. This publication was funded by the European Union.
Its contents are the sole responsibility of the author(s) and do not necessarily reflect the views of the European Union.

Municipality of Rafina - Pikermi

The municipality is marked by a vibrant mix of densely populated urban areas and substantial ecological zones, including valuable **riverbeds and coastal ecosystems**.

The CLIMAAX project is funded by the European Union under Grant agreement ID 101093864. This publication was funded by the European Union.
Its contents are the sole responsibility of the author(s) and do not necessarily reflect the views of the European Union.

Municipality of Rafina - Pikermi

• The local infrastructure is currently challenged by an **aging and inadequate water management system**, insufficient drainage networks, and the legacy impacts of inadequate spatial planning and land management practices.

The CLIMAAX project is funded by the European Union under Grant agreement ID 101093864. This publication was funded by the European Union.
Its contents are the sole responsibility of the author(s) and do not necessarily reflect the views of the European Union.

Municipality of Rafina - Pikermi

• The local infrastructure is currently challenged by an **aging and inadequate water management system**, insufficient drainage networks, and the legacy impacts of inadequate spatial planning and land management practices.

• The **economic impacts** of the Greek financial crisis further constrained the municipality's resources, limiting effective emergency preparedness and adaptation strategies.

The CLIMAAX project is funded by the European Union under Grant agreement ID 101093864. This publication was funded by the European Union.
Its contents are the sole responsibility of the author(s) and do not necessarily reflect the views of the European Union.

Municipality of Rafina - Pikermi

• The local infrastructure is currently challenged by an **aging and inadequate water management system**, insufficient drainage networks, and the legacy impacts of inadequate spatial planning and land management practices.

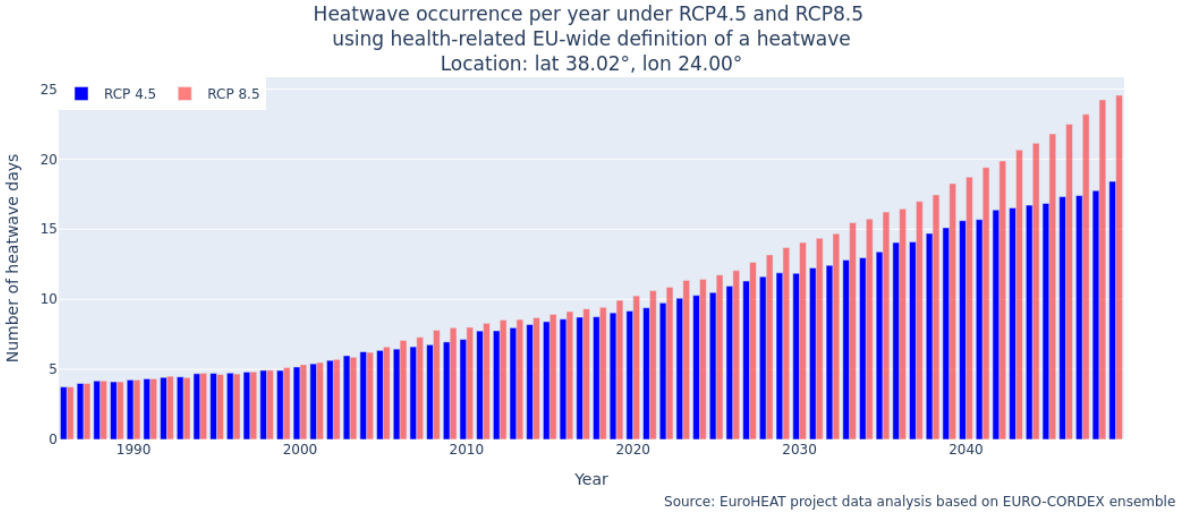
• The **economic impacts** of the Greek financial crisis further constrained the municipality's resources, limiting effective emergency preparedness and adaptation strategies.

• **Urgent need** of a comprehensive climate adaptation framework to enhance its resilience.

The CLIMAAX project is funded by the European Union under Grant agreement ID 101093864. This publication was funded by the European Union.
Its contents are the sole responsibility of the author(s) and do not necessarily reflect the views of the European Union.

#1 Workflow Results for Heatwaves

- **4–5 heatwave days** per year during the last decades in the 20th century.
- By 2050, heatwave occurrences are projected to increase substantially to around **17–18 days per year** under the moderate emissions scenario (RCP 4.5).
- **23–24 days per year** under the high-emissions scenario (RCP 8.5), projections suggest a further increase to approximately

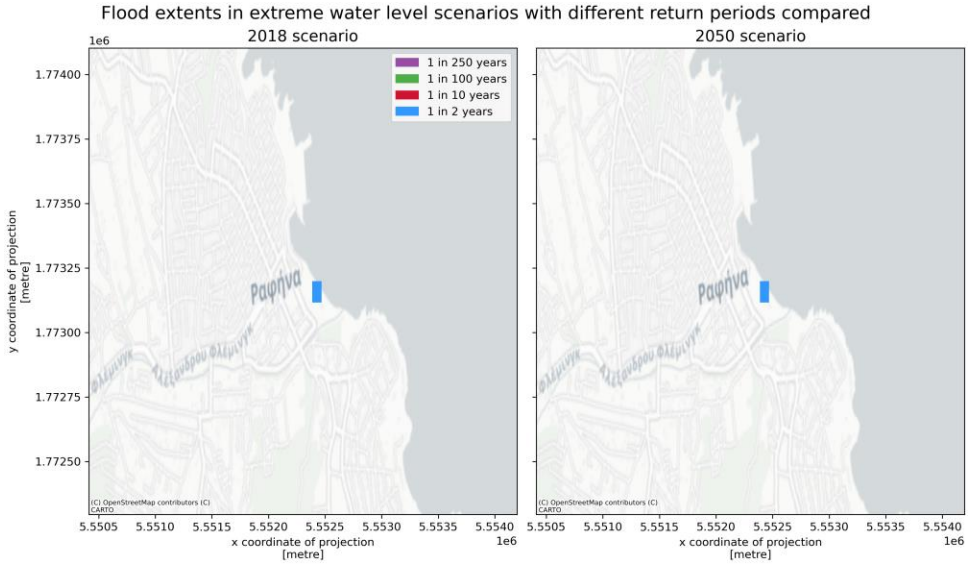


Temperatures already often reach 40°C!

Data used: EuroHEAT & Xclim (EURO-CORDEX)

The CLIMAAX project is funded by the European Union under Grant agreement ID 101093864. This publication was funded by the European Union.
Its contents are the sole responsibility of the author(s) and do not necessarily reflect the views of the European Union.

#2 Workflow Results for River and Coastal Floods



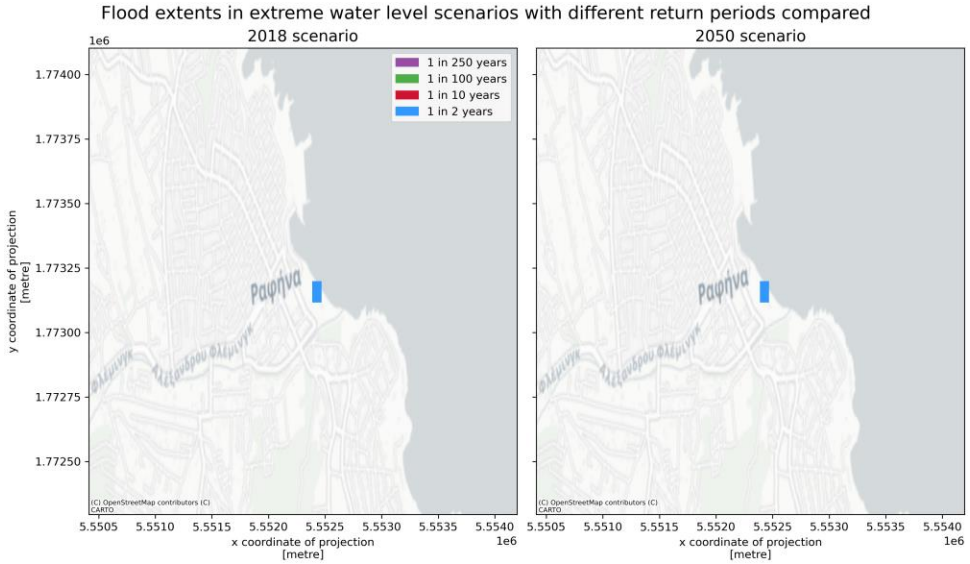
Estimated extreme water levels above Mean Sea Level are:

- **0.40 meters** for a 5-year Return Period event
- **0.50 meters** for a 100-year Return Period event

Data used: JRC flood depth and damage curves, Copernicus Land Monitoring Service

The CLIMAAX project is funded by the European Union under Grant agreement ID 101093864. This publication was funded by the European Union.
Its contents are the sole responsibility of the author(s) and do not necessarily reflect the views of the European Union.

#2 Workflow Results for River and Coastal Floods



Estimated extreme water levels above Mean Sea Level are:

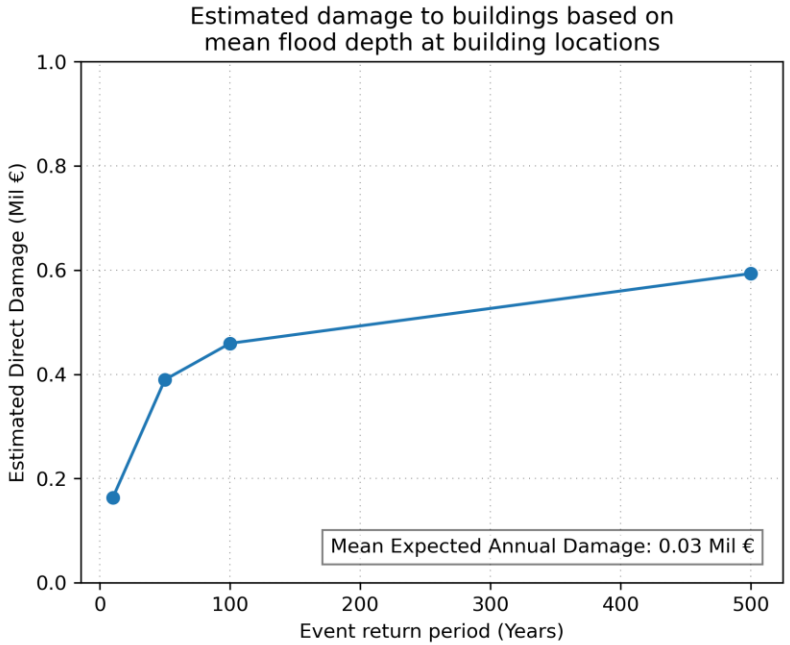
- **0.40 meters** for a 5-year Return Period event

- **0.50 meters** for a 100-year Return Period event

Estimated flooded area

The CLIMAAX project is funded by the European Union under Grant agreement ID 101093864. This publication was funded by the European Union.
Its contents are the sole responsibility of the author(s) and do not necessarily reflect the views of the European Union.

#2 Workflow Results for River and Coastal Floods



• The damage-to-return period are inconsistent with known past damages in the Rafina urban core, reflecting a slight **underestimation of both hazard and exposed asset values**.

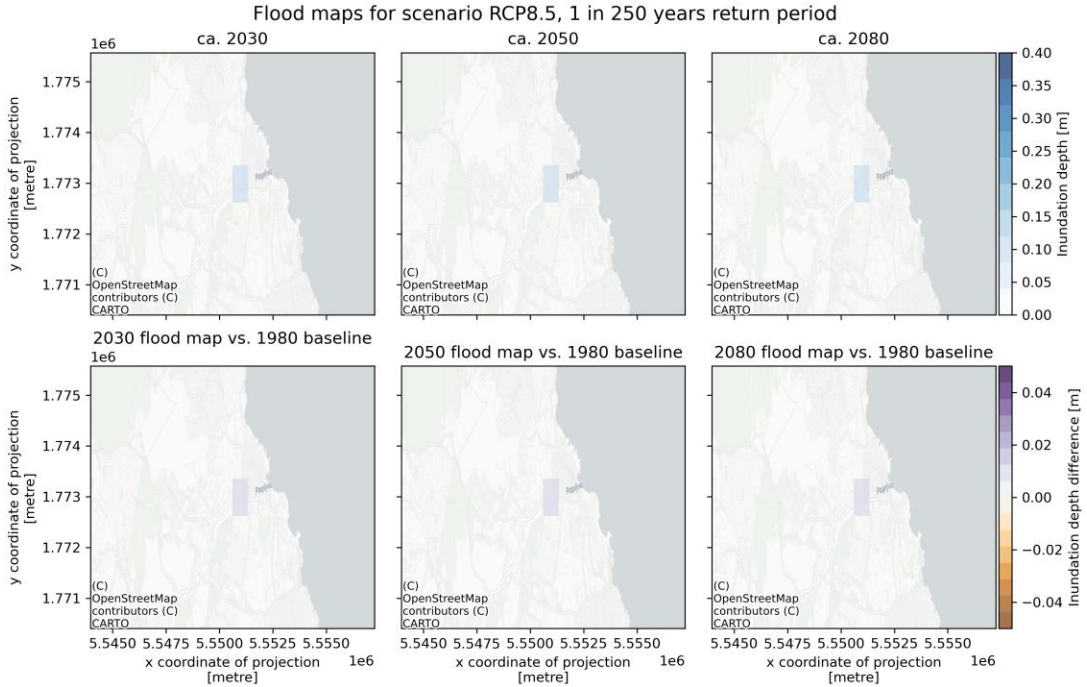
• Damage for Mean depth (~0.4 m) and corresponding return period events in years (RP):

- RP=10: Total damage (€) = 163.266
- RP=50: Total damage (€) = 389.743
- RP=100: Total damage (€) = 459.507
- RP=500: Total damage (€) = 593.575

Data used: JRC flood depth and damage curves, Copernicus Land Monitoring Service

The CLIMAAX project is funded by the European Union under Grant agreement ID 101093864. This publication was funded by the European Union.
Its contents are the sole responsibility of the author(s) and do not necessarily reflect the views of the European Union.

#2 Workflow Results for River and Coastal Floods



The comparison maps of river flood extents between 2030, 2050 and 2080, and between return periods, confirm that only the coastal zones demonstrate a measurable hazard increase, while river flood scenarios show virtually no change or development of risk, even under future climate extremes.

Data used: JRC flood depth and damage curves, Copernicus Land Monitoring Service

The CLIMAAX project is funded by the European Union under Grant agreement ID 101093864. This publication was funded by the European Union.
Its contents are the sole responsibility of the author(s) and do not necessarily reflect the views of the European Union.

The Second Phase of CLIMAAX has started: A unique opportunity that has activated the entire city...and extraordinary evidence emerges!

Zafiropoulos Charalampos
Vice-Mayor of Civil Protection

Mayor Dimitra Tseva Mila: *"CLIMAAX help us gain a deeper understanding of the climate risks we are exposed to, and take action in order to improve our regional climate and emergency risk management plans".*

The CLIMAAX project is funded by the European Union under Grant agreement ID 101093864. This publication was funded by the European Union.
Its contents are the sole responsibility of the author(s) and do not necessarily reflect the views of the European Union.