# **RESILIENCE OF HISTORICAL CITIES AND CLIMATE CHANGE.**

# THE CASE OF THE OLD TOWN OF CORFU.





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The aim of the presentation is the highlighting of the effects that climate change can cause to historical cities, and the necessary planning solutions and measures to be taken, to make them resilient. Case study will be the old Town of Corfu -a World Heritage Site.

The presentation is based on a Monitoring and Evaluation (M&E) framework developed by a team of multidisciplinary experts to identify the effects of climate change on Greek cultural heritage and propose guidelines to ensure that this heritage has the capacity to adapt appropriately.

The aim of the Framework is to complement and revise the 2016 National Strategy for Cultural Heritage. Each NAS's proposed action was supplemented with a series of measures and each measure with indicators.

**The measures** were proposed considering the international and European experience adapted to the actual conditions in Greece and aim at achieving the goal set by the respective action. **The indicators** were developed following UNESCO's guidelines and aim to monitor the implementation of each measure and evaluate its effectiveness, at national, regional, and local levels.



The Old Town of Corfu is located on the Island of Corfu (*Kerkyra*), off the western coasts of Albania and Greece. First habitants of the island were Eretrians and Corinthians (775-750 BCE).

The current fortifications of Corfu were designed by renowned Venetian engineers, (1386-1797) and in the course of time, they had to be repaired and partly rebuilt several times, especially under the British rule in the 19<sup>th</sup> century. Corfu, after a brief interlude of French control (1807-14), became a British protectorate for the next half-century (1814-64).

In 1864 the island was attached to the Kingdom of Greece. The fortresses were disarmed and several sections of the perimeter wall of the gradually demolished. The mainly housing stock of the Old Town is partly from the Venetian period, partly of later construction.





# CORFU IS INSCRIBED IN THE UNESCO WORLD HERITAGE SITE LIST FROM 2007.



The outlines of the Old Town were determined by lack of space and the needs of defence.

The urban fabric forms a compact core consisting of ten quarters, differentiated by their form. The quarters range over the three low hills and are irregular.

They are characterised by a network of radial streets, small squares, and compact blocks of housing clustered around the churches.

The outskirts of these areas, present a more regular framework, especially those which open out behind the Spianada in a grid of straight lines running east-west.

Spianada is a large place, formed during French control of the town





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## THE VULNERABILITY ASSESSMENT OF CULTURAL HERITAGE OF CORFU

is based on

The Intergovernmental Panel on Climate Change (IPCC) tool of Climate Change Vulnerability Assessment (CCVA) (2001)

### Climate change factors\_

Increasing temperatures, increasing rainfall, consecutive dry days, increasing wind.

### Possible impacts\_

Deterioration of materials, Biological growth, Salt crystallization, Wet and dry cycles and stone erosion, Structural damage, Flooding, Typhoones, Biodiversity change,, etc

### The procedure of the study\_

Define the study area and the site's characteristics that compose its multifaceted identity.

Analyse climate data / indicators and identify the most likely hazards.

Assess the site's vulnerability.

Communicate vulnerability assessment analysis to Stakeholders.

Periodically repeat the above procedure to evaluate the site's vulnerability to future changes of the weather.

## UNDERSTANDING THE VULNERABILITY

## OF THE OLD TOWN OF CORFU

The analysis is based on the IPCC's vulnerability assessment approach

It is examined:

(a) The **location** of the site.

(b) The Old Town's **sensitivity** to climate change and extreme weather events due to its unique urban characteristics, historic buildings and vegetation.

(c) The **adaptive capacity** of the site based on its existing infrastructure and management practices applied.

**The pressures** affecting the Old Town that will be taken into account are: \_age of the buildings.

\_insufficient infrastructure for fire and earthquake protection.

\_incompatible land uses.

\_over-tourism, traffic congestion and overcrowding.

\_weaknesses in the regulation for the urban operation.

\_absence of participatory processes.



**KEY RESULTS FROM THE ANALYSIS OF CLIMATE DATA AND INDICATORS** (The climate data are provided by the National Observatory of Athens)

- Increased temperatures.
- Reduction of daily temperature fluctuations.
- The annual distribution of dry days, as well as wet, rainy and very rainy days remains constant. However, it was necessary to process hourly rainfall rates to assess sudden floods and flood risk, that are very common in Corfu
- The average daily wind speed remains approximately constant, but tornadoes, windstorms have already been recorded several times, mainly in the area of the Old Fortress. (*https://www.meteo.gr/weatherEvents.cfm*).
- Additional climate hazard that will affect the city of Corfu, is the sea level that may rise up to 1.6-1.8 meters (*Plan Bleu*).



#### PROPOSALS

- Monitor and forecast long-term and short-term effects of climate change on the Old Town of Corfu.
- Measures to improve the city infrastructure (Electromechanical, flood and fire protection etc.)
- Enhance the durability of the materials and structures of the historic buildings.
- Form an integrated plan that will enable managing effectively excessive tourism.
- Redesign and reorganise the excessive traffic.
- Control the occupation of public space.
- Develop an emergency management plan.
- Inform, educate and sensitize the residents to the challenges the city faces.
- Engage the local community and businesses in the management system of the World Heritage Site.



combination with permanent problems that monuments/sites may face for achieving the goal of adaptation to climate change, requires the cooperation of an interdisciplinary team.

It is emphasized that an integrated management approach should include and assess a wider range of pressures to which the site is vulnerable.



All the above should be incorporated in the management plan of the town, inscribed in the UMESCO World Heritage Site