

# HERITAGE-BASED CLIMATE RESILIENCE IN MENA CITIES: A NEW OLD PARADIGM FOR URBAN ADAPTATION

Cities Alliance  
Cities Without Slums

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Tower of Silence, Wind Towers and Ice Chamber in Yazd, Iran - Julia Maudlin, Flickr



Cities Alliance **promotes** heritage-based climate adaptation solutions in urban areas, **by mapping** traditional techniques, **rehabilitating** them for modern use, and **replicating** these cost-effective practices in communities with limited resources.

This approach leverages local knowledge to create resilient, affordable strategies tailored to informal and low-income neighbourhoods.



Water management in the oasis of Figuig, Morocco

## EXAMPLES OF HERITAGE-CENTRIC CLIMATE SOLUTIONS INCLUDE



### Water management

Traditional systems like Tunisia's *Majels* (underground rainwater cisterns) and Algeria's *Qanat* systems (system of underground shafts and tunnels to transport water) illustrate effective strategies to conserve and channel water in arid climates. These heritage techniques can be revitalised to tackle modern water shortages and prevent flooding in vulnerable areas.



### Passive cooling architecture

The region's historical buildings incorporate natural cooling elements like wind towers, shaded courtyards, and thick-walled structures to reduce reliance on energy-intensive cooling systems. Such features found for example in Iraqi courtyard houses provide a sustainable model for reducing urban heat and energy demand.



### Sustainable agriculture

Practices like Tunisia's *Ramli* farming system demonstrate resilience in the face of climate change. This technique integrates crops in sandy soil near lagoons, harnessing fresh groundwater to prevent salinization. Re-examining such traditional farming practices holds potential to enhance food security and biodiversity in increasingly arid conditions.



### Urban forms and compact layouts

Historic medinas offer climate-adapted urban designs that provide natural shade, promote airflow, and reduce the urban heat island effect. Cities like Cairo and Marrakesh, with their narrow streets and shaded spaces, model effective urban planning for high-density areas in hot climates.





# REVITALIZING MAJELS FOR CLIMATE ADAPTATION AND RAINWATER HARVESTING

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MINISTÈRE DE L'EUROPE ET DES AFFAIRES ÉTRANGÈRES

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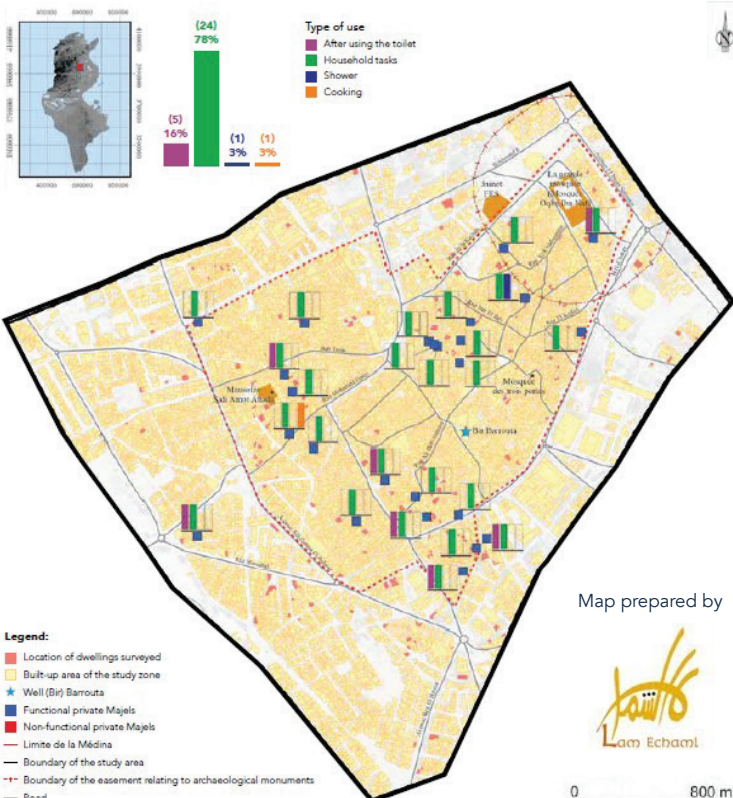
## KAIROUAN, TUNISIA

Kairouan, a UNESCO World Heritage city in Tunisia, faces severe water shortages due to prolonged droughts and irregular rainfall. Historically, Majels were installed throughout the city for rainwater harvesting, providing a reliable water source even during dry seasons. Although these structures have deteriorated over time, they still offer a promising solution for sustainable urban water management.



Majel in Kairouan

### USE OF PRIVATE MAJELS IN KAIROUAN (based on participatory analysis)



### CITIES ALLIANCE INITIATIVE



WOMEN AND SUSTAINABLE CITIES  
Improving access to and governance of water resources

- 01 Empowering women in water governance:** Mapping women's roles in urban water governance highlights both their challenges and potential contributions to sustainable water management. They are key actors in the management and revitalisation of household and community Majels.
- 02 Capacity building and knowledge transfer:** Providing targeted training to empower women and families to improve sustainable water management techniques, increase skills on maintaining and using existing domestic Majels, and facilitate access to funding for new Majel installations and repairs.
- 03 Public space revitalisation:** Rehabilitation of the *Jardin Municipal*, a central public garden, includes installing a collective Majel for rainwater harvesting and designing the space with gender-sensitive principles to ensure it serves diverse community needs.

### HOUSEHOLD MAPPING RESULTS



**220+**  
HOUSEHOLDS SURVEYED  
in Kairouan's Medina

**ONLY 22%**  
HAVE MAJELS INSTALLED, and  
**ONLY 69%**  
OF THESE ARE FUNCTIONAL



**Majel water**  
IS PRIMARILY USED FOR DOMESTIC NEEDS

### BARRIERS TO ADOPTION AND USE

**Lack of technical knowledge**

ON MAINTENANCE AND EFFICIENT USAGE LIMITS MAJELS' ROLE IN HOUSEHOLD WATER SUPPLY

**Strong expressed interest**

AND WISH AMONG CITIZENS FOR INSTALLING MAJELS, YET LACK OF RESOURCES AND KNOW-HOW