

Timimoun, Algeria: Exploring the Interaction Between Traditional Water Systems, Urban Morphology, and Landscape

PAOLO TARABUSI,
École Nationale d'Architecture de Paris-Val-de-Seine

Collaborative Project

Timeframe: 2025

Algeria
Université Alger 1 - Faculté d'Architecture (Co-coordinator)

France
Ecole Nationale Supérieure du paysage de Versailles (Co-coordinator)
Ecole Nationale d'architecture Paris-Val de Seine (Co-coordinator)

Institutional support
FAO, Food and Agriculture Organisation of the United Nation – GIAHS Programme (Globally Important Agricultural Heritage Systems)
Ministère des Affaires Etrangères Algérien
Ministère de la Culture Algérien
Institut National de la Recherche Agronomique d'Algérie
Wilaya Timimoun
Centre Algérien de Patrimoine Culturel Bâti en Terre

Funding
Union for the Mediterranean (UfM)

Urban Challenges Tackled
Sustainable water management
Public-realm regeneration
Integrated oasis landscape planning

Alley of the old town (the Ksar) – earthen buildings and shaded passageways.

Ventilation shaft of a foggara crossing the contemporary town.

At the heart of the Algerian Sahara the oasis of Timimoun has historically served as a strategic stop along the major trans-Saharan caravan routes of Antiquity. This territory was structured around an ingenious underground water management system: the foggaras. Derived from Persian qanats, these draining galleries enabled the development of agriculture and the establishment of sedentary life in an otherwise extreme environment, playing a decisive role in shaping the landscape, structuring social organization, and influencing the cultural identity of the region.



How has the pragmatic logic of the foggara network influenced urban form?

What traces has this system left over the centuries on building placement, the configuration of public spaces, and the organization of agricultural plots?

What lessons might this heritage offer for the contemporary improvement of urban districts and the quality of life of their inhabitants?

Building upon this exceptional heritage, a study workshop, initiated and supported by the Union for the Mediterranean, brought together eight Master's students from three institutions in architecture, urban planning, and landscape studies: the University of Algiers 1, ENSA Paris-Val de Seine, and ENSP Versailles.

Prior to the fieldwork, a phase of collaborative research and cartographic

analysis between the three universities established the main focus of the workshop: the interactions between the underground hydraulic infrastructure and urban morphology.

To address these questions, the workshop employed a deliberately empirical and observational methodology on site, combining surveying, walking, and free-hand drawing. At the conclusion of this one-week immersion, two major documents were produced: a large-scale plan and section illustrating the impact of a selected foggara on the urban fabric. A complementary series of analytical sketches highlighted key sites and representative landscapes encountered during the fieldwork.

Within the constraints of time and available resources, this study proposes an original interpretative framework for a territory that is at once fascinating, complex, and highly fragile—underscoring the urgent necessity of preserving and sustaining it for future generations

Territorial section produced by students during the workshop – underground water-collection network running through the town from the desert to the palm grove.



The Trans-Disciplinary Dimension

The project was proposed by the UfM in collaboration with FAO, with the aim of strengthening the future candidacy of the Timimoun to be recognized as Globally Important Agricultural Heritage Systems.

The process

Prior to the on-site workshop, several video meetings were held in order to identify the main issues and to define the working methodology. A case study was selected in advance, and a detailed schedule was established to ensure efficiency, optimize site visits and travel, and fully benefit from the contributions of the different experts involved.

During the workshop, daily sessions of discussion and collaborative work were organized to review observations and survey results. All documents were produced collectively by the students, directly on-site and by hand, using pre-printed base maps.

The process and the project phases may be outlined in the following points:

- The Co-design phase: The development and co-design phase was carried out in partnership between the UfM and the three academic institutions.
- Co-production phase: The on-site workshop involved experts from local, regional, and governmental institutions.
- Continuation and outcomes: The study resulted in a public presentation and a brochure made available to the UfM. The preparation of the GIAHS candidacy file, which will build upon the study conducted, will be undertaken by the Algerian authorities in coordination with the FAO.

Competences and Skills

To remain as closely grounded as possible in the reality of the site and its political and social context, a wide range of experts and stakeholders were involved. The leadership and facilitation role in coordinating, organizing, and managing the interactions among the various actors was assumed by the UfM. The definition of the academic objectives, as well as the pedagogical guidance and the organization of the student team during the on-site workshop, were jointly carried out by the faculty members of the three universities.

The Open Science Dimension

Inclusivity

Understanding local culture and indigenous know-how, along with their preservation and enhancement, has formed the foundation of the reflection since the very outset. The GIAHS framework, within which the project is situated,

highlights ingenious systems that embody both ancestral heritage and resources for the future. Within this framework, the multi-layered reading of the site was grounded in and inclusive of local knowledge and practices.

Equity

The workshop's work, echoing the traditional organization of collective efforts for the construction of underground water collection and distribution systems (the twiza), was deliberately based on a common and collaborative approach. Demonstrating that such practices remain possible today, students from

three different schools and from both shores of the Mediterranean worked together on the development, restitution, and presentation of ideas. Free from the imposition of personal egos, this represented a significant moment in the training of a new generation of architects and urban planners, capable of listening and collaborating equitably.

Sustainability

The entire reflection emphasizes the importance of what already exists: its preservation, valorization, and reuse. After long periods characterized by both excessive destruction and construction, this approach appears, here more than elsewhere, fundamental in terms of resources and means economy.

The workshop concluded with a public presentation of the materials produced by the students to the Wilaya of Timimoun.

Ancient water distributor at the entrance to the palm grove



The Knowledge Valorisation Dimension

- **Educational value:** This initiative was not only an academic exercise but also a collective human experience, shaped by exchanges of ideas and knowledge among students from both shores of the Mediterranean. The workshop further benefited from the expertise of representatives from the Algerian Ministries of Agriculture, Rural Development, and Culture, whose contributions provided essential contextual insights.
- **Social/Economic value:** In the longer term, this work could contribute to supporting Timimoun's application for recognition under the FAO's GIAHS (Globally Important Agricultural Heritage Systems) program.

Outputs & Impacts

Outputs

Two major documents were produced: a large-scale plan and section illustrating the impact of a selected foggara on the urban fabric: <https://ufmsecretariat.org/sustainable-solutions-ufm-workshop-explores-traditional-building-climate-resilience-algeria/>

Impacts

Practice: Preliminary discussion to develop a FAO GIAHS (Globally Important Agricultural Heritage Systems) nomination for the site is an anticipated outcome although it is currently under discussion.



Students preparing the presentation at the Wilaya of the work carried out during the workshop.

Sustainable water management addresses declining foggara systems by improving maintenance, safeguarding urban and agricultural supply, and reinforcing environmental quality in fragile oasis settings.

Public-realm regeneration reduces pollution and strengthens neighbourhood connections by activating residual urban voids, enhancing

public spaces, and supporting everyday mobility and social cohesion.

Integrated oasis landscape planning reinforces agriculture–settlement linkages by protecting palm-grove continuity, sustaining productive water–soil ecosystems, and maintaining the cultural landscapes that anchor community livelihoods.