

B Eng Architecture – ARC304/FYP Studio-AY 2024/25

## Brief F

Studio Tutor: Silvia Albano

# Living without water: the other side of the climate changes

*Architectural responses for Sicily*



*"a piece of heaven  
fallen on the  
flowers"*

*(paraphrasis Ovid's  
Metamorphoses,  
Book 5, Lines 385-  
424 )*

## BRIEF SUMMARY INFORMATION

<b>Themes</b>	Climate Change • Desertification • Sustainability • Agricultural Resilience • Tourism Revitalization • Community Empowerment
<b>Type</b>	Agricultural Hub • Eco-Tourism Development • Cultural and Educational Center • Environmental Conservation
<b>Site</b>	Lago di Pergusa - Sicily
<b>Context</b>	Present-day with future-proof strategies
<b>Size</b>	Target area should be: Internal Programme 4000 - 5000m <sup>2</sup> + External Public Space

## 1.0 Theme and Approach

Sicily, a region renowned for its rich agricultural heritage and stunning natural landscapes, is currently facing an environmental crisis that threatens its agricultural and tourism sectors, which are vital to the region's economy. Persistent droughts and advancing desertification are causing significant disruptions, with traditional crops like olives and citrus suffering from reduced yields due to water scarcity. This has forced many farmers to abandon fields or shift to less water-intensive crops, altering the agricultural landscape. Similarly, the natural beauty that drives tourism is under threat, with declining water bodies like Lake Pergusa and encroaching deserts potentially diminishing Sicily's appeal over time. These challenges are part of a broader climate change crisis impacting the Mediterranean, leading to ecosystem degradation, biodiversity loss, and a reduction in arable land. While local communities and governments acknowledge the urgency of the situation, implementing effective solutions such as water conservation and climate adaptation strategies remains a significant challenge.

As key objectives of this brief students need to be focus in the following three action points:

- **Architectural Innovation in Agriculture:** Design facilities and infrastructures that support sustainable agricultural practices, ensuring the preservation and enhancement of local farming methods. This includes the integration of **water management systems, climate-responsive greenhouses,** and **agroforestry** to combat soil degradation.
- **Integrated Eco-Tourism and Community Engagement:** Develop a multifunctional building or a series of buildings that serves as both a tourist and local community hub. This center should address the diverse needs of its users by creating spaces for social exchanges, cultural activities, and education. It should also promote **eco-tourism** by incorporating features like **visitor centers, eco-lodging, and nature trails** that harmonize with the landscape and educate tourists on the importance of sustainability. The flexibility and multifunctionality of the space should allow for adaptive usage, supporting the region's social and economic resilience, especially during the global economic downturn. Focus on architecture that empowers local communities by providing education, resources, and spaces that promote sustainable living and economic resilience. This includes spaces for cultural activities, markets for local products, and educational programs on environmental stewardship.
- **Integration of Traditional and Modern Techniques:** Utilize local materials and traditional construction methods, combined with modern technologies, to create buildings that are not only sustainable but also culturally relevant and resilient to the changing climate.

## 2.0 Site and Context

Lago di Pergusa, rich in historical and cultural significance, is tied to the myth of Persephone, making it a symbolically important site in classical literature. Throughout history, it has been a focal point of human activity, with nearby Enna reinforcing its significance. Biologically, it is the only natural lake in Sicily, crucial for migratory birds and designated as a Special Protection Area due to its unique ecosystem. However, advancing desertification is severely threatening the lake, impacting local biodiversity. Economically, the region's agriculture, traditionally reliant on the lake's resources, is struggling due to reduced water availability, making traditional farming unsustainable. Tourism, another economic pillar, is also at risk as environmental degradation diminishes the area's attractiveness. Despite these challenges, there are opportunities to revitalize agriculture through sustainable practices and to attract eco-tourism, potentially transforming the crisis into a chance for sustainable development and growth.

## 3.0 Programmatic Requirements

The project will focus on creating a multifunctional hub that addresses both agricultural and tourism needs, with an overall floor area of 4000-5000m<sup>2</sup>. The program should include the following spaces:

- **Sustainable Agriculture Hub (1000m<sup>2</sup>):**
  - **Climate-Responsive Greenhouses: 500m<sup>2</sup>**  
Utilize passive solar design, water recycling, and ventilation systems to support year-round agricultural production.
  - **Agroforestry and Demonstration Fields: 500m<sup>2</sup>**  
Integrate tree planting with crops to improve soil health and biodiversity while serving as educational showcases for sustainable farming.
- **Eco-Tourism and Community Hub (2500m<sup>2</sup>)**  
This multifunctional hub is designed to serve both tourists and the local community, fostering social exchanges, cultural enrichment, and education while promoting sustainability. It integrates the following components:
  - **Visitor Center and Exhibition Space (700m<sup>2</sup>):** A dedicated area providing educational exhibits on local ecology, sustainable practices, and the impacts of desertification. This space aims to engage and inform tourists while promoting awareness of the region's environmental challenges.
  - **Eco-Lodging and Nature Trails (800m<sup>2</sup>):** Eco-friendly accommodations seamlessly integrated into the landscape. These lodges offer an immersive experience in nature for **tourists and researchers** alike, ensuring minimal environmental impact. Surrounding the lodges, **natural trails** allow tourists to explore the local ecosystem, while designated observation points provide researchers with facilities to study migratory birds and other wildlife in their natural habitat.
  - **Cultural Hall (500m<sup>2</sup>):** A versatile space for hosting local cultural events, workshops, and markets that showcase Sicilian heritage and sustainable products. This area supports community engagement and economic resilience.
  - **Education and Training Rooms (500m<sup>2</sup>):** Flexible spaces for community education and training programs focused on sustainability, agriculture, and climate resilience. These programs are tailored to address local needs and encourage knowledge-sharing among community members and visitors.
- **Water Management and Conservation Systems (500m<sup>2</sup>):**
  - **Water Harvesting and Storage: 250m<sup>2</sup>**  
Design systems to collect, store, and distribute rainwater and greywater for agricultural and domestic use.
  - **Fog and Dew Harvesting Structures: 250m<sup>2</sup>**  
Innovative structures that capture moisture from the air, providing a supplemental water source in the arid climate.
- **Administrative and Research Facilities (500m<sup>2</sup>):**
  - **Offices and Conference Rooms: 300m<sup>2</sup>**  
For managing operations, conducting research on sustainable practices, and coordinating with local and international stakeholders.
  - **Research Labs: 200m<sup>2</sup>**  
Spaces dedicated to developing and testing sustainable agricultural techniques and materials.

#### 4.0 Recommended Reading and Reference Material

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