

## **TNE IMPACT: Cultivating the Future of the Mediterranean**

*An academic, scientific and business alliance for macro-regional resilience*

### **Historical roots and new geopolitical frontiers**

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The Mediterranean basin has represented, since the origins of Western civilization, a unique geographical, climatic and cultural crossroads, where the land has always dictated the rules of human development. Since classical antiquity, the destiny of Italy and the North African shores has been linked by indissoluble agricultural plots. The territories of today's Tunisia and Algeria, together with the extraordinary and fertile Nile valley in Egypt, constituted the legendary "Granary of Rome", the logistical and food backbone that guaranteed the stability and sustenance of the entire Empire. This millenary historical heritage has laid the foundations for a shared agricultural culture and for a dense network of exchanges that today, through the TNE IMPACT project, are reborn under a new macro-regional guise, uniting our countries in the enhancement and protection of some of the symbolic crops such as olives, vines, cereals and citrus fruits.

In recent years, this historic network of contacts and climatic analogies has witnessed an extraordinary acceleration, transforming itself into an unprecedented industrial, agrarian and commercial cooperation. Trade between Italy, Tunisia, Egypt, Morocco and Algeria is no longer limited to the simple purchase and sale of raw materials, but has evolved into a structural partnership driven by massive bilateral investments. Italy has confirmed itself as one of the main trading partners in the North African area, exporting advanced mechanical technologies, selected seeds of the latest generation and industrial know-how for food processing, while importing high quality fruit and vegetables, precious dates and natural phosphates essential for the fertilizer industry such as phosphorus. This commercial synergy has given rise to numerous joint ventures in the sustainable packaging and cold logistics sector, drastically reducing post-harvest losses and integrating the value chains of the two shores into a single, solid Euro-Mediterranean market. Today, this integrated economic fabric is facing the most complex of global challenges, characterized by structural water scarcity, biological soil degradation and the urgent need to ensure stable food security, according to the directives of the 2030 Agenda, in a context of geopolitical change such as today's. In this contemporary scenario, Italy historically and scientifically plays the role of ideal center of gravity of the agri-food culture of the area. Our country is able to combine the protection of food traditions — first and foremost the Mediterranean Diet, recognized as an intangible heritage of humanity by UNESCO since 2010 — with the need to guide the ecological and energy transition of the entire basin, acting as a natural bridge and technological hub between the European Union and the African continent.

### **Agronomic and ecosystem analogies**

The cooperation promoted by the TNE IMPACT project is not based on purely theoretical assumptions, but finds its scientific legitimacy in deep and structural agronomic, climatic and territorial analogies that unite southern and insular Italy with the territories of Tunisia, Algeria, Morocco and Egypt. The entire network shares the same Mediterranean climate regimes, characterized by long, hot and dry summers, mild but concentrated winters and a marked irregularity of rainfall. In recent decades, the impact of global climate change has cancelled out these common characteristics, subjecting the soils of the entire basin to identical stress phenomena: the advance of desertification, the progressive salinization of coastal aquifers and the drastic reduction of annual rainfall are now shared problems that do not respect political boundaries and that affect the entire basin from a food security perspective. Understanding the importance of these ecosystem analogies is the real keystone of the project. The technological and management solutions developed and tested in the Italian laboratories or in the experimental fields of Puglia, Sicily or Lazio are immediately transferable, applicable and scalable in the

pedoclimatic contexts of Tunisia and Algeria, since they respond to the same environmental matrix. At the same time, the historical strategies of adaptation to extreme aridity developed by North African farmers offer valuable insights for Italian animal husbandry and agriculture, which is now forced to deal with increasingly hot summers. This environmental mirroring transforms the Mediterranean basin into an immense open-air laboratory, where the sharing of agronomic data accelerates the discovery of effective responses for the conservation of biodiversity and the rational management of water. Alongside plant production, these territorial analogies also govern and unite the Mediterranean livestock sector, understood as a unique model of biological and economic adaptation. A tangible example of this is the historical tradition of buffalo breeding, which closely unites Italy and Egypt in the leadership of cutting-edge dairy processing, and the sheep and goat pastoralism of Tunisia and Algeria. In rural and semi-arid North African areas, the breeding of sheep and goats of native breeds constitutes the irreplaceable pillar of the local economy thanks to their extraordinary ability to convert poor pastures and shrubs into noble resources. The integrated scientific model intervenes exactly here, applying precision animal husbandry and genomics to improve the efficiency of meat and milk supply chains, safeguarding animal welfare in the face of heat stress and protecting pastures.

### **The UNITUS International Strategy**

The scientific and cultural engine of this impressive transnational synergy is represented by the Departments of Excellence of the University of Tuscia (UNITUS). In recent years, the University has embarked on a radical and irreversible strategic shift towards internationalization, redefining its academic identity to project it forcefully into the global scenario. No longer just a reference point for the national territory, UNITUS has structured a cutting-edge training offer entirely delivered in English, signing double degree agreements with prestigious world universities and activating master's degree courses specifically dedicated to the challenges of environmental governance, circular bioeconomy and transnational food security. This global orientation has transformed the University of Viterbo into a true international scientific hub, capable of attracting students, researchers and professors from every corner of the world, and in particular from the Mediterranean area, creating an open, multicultural academic community focused on the sustainability of the planet. The strength of UNITUS' approach lies in its ability to combine this global vision with solid applied teaching, based on the key principle of *Learning by Doing*. The University's Didactic-Experimental Agricultural Company, an infrastructural excellence at European level, functions as a direct bridge between the classroom and the real world. Here, future sustainability managers from partner countries work side by side with Italian scientists, experimenting directly in the field with the use of drones for crop mapping, the integration of IoT sensors for millimetric optimization of irrigation and Big Data analysis applied to agri-food supply chains. In this way, the skills of technological *Made in Italy* are assimilated and co-designed together with commercial and academic partners in the Mediterranean, ensuring that scientific innovation translates into concrete and sustainable economic and social progress for all the nations involved. To crown this strategic and international vision, the TNE IMPACT project expresses the absolute excellence of Italian hospitality through the structured service of Buddy Tutor. Aware that transnational mobility represents a complex human and bureaucratic challenge, the University of Tuscia has invested in an empathetic, professional and continuous reception system. Dedicated tutors support international students from their arrival in Italy, guiding them not only in the planning of studies and academic orientation, but offering concrete support in the management of visas, in the search for accommodation and in the full inclusion in the cultural and social fabric of the city of Viterbo. Through this integrated model, the transnational training investment is converted into a human experience of excellence, consolidating the role of Italy and UNITUS as a safe, welcoming and authoritative point of reference for the growth of the best talents of the entire Mediterranean macro-region.

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