



MAESTRALE Project

1^o Blue Energy Laboratory
Nicosia, Cyprus
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Outline

- The MAESTRALE project
 - Overview
 - Partnership
 - Objectives
- Important actions
 - Case studies
 - Legal framework / Funding opportunities
 - Online geo-database
 - BE potential analysis for Cyprus and results
- Blue Energy Labs
 - Purpose
 - Pilot projects

Project Overview

- Programme: Interreg MED 2014-2020;
- Priority Axis: 1. Promoting Mediterranean innovation capacities to develop smart and sustainable growth;
- Specific Objective: 1.1 To increase transnational activity of innovative clusters and networks of key sectors of the MED area.
- Type: M1 Studying & M2 Testing
- Duration: 36M – 01/11/2016 to 31/10/2019
- 10 Partners from 8 Mediterranean countries
- Lead Partner: University of Siena
- <https://maestrale.interreg-med.eu/>

Partnership

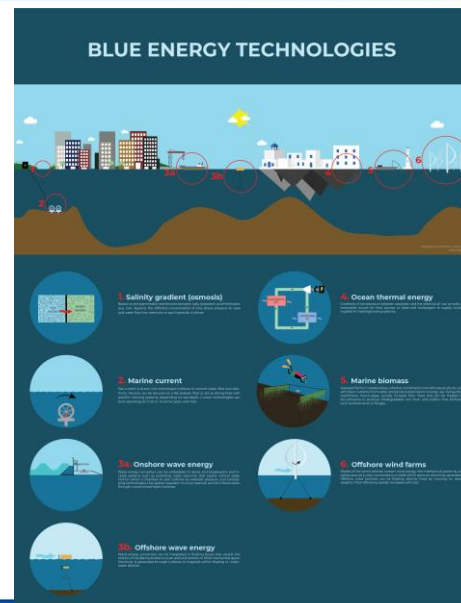
#	Name of Partner	Short name	Country
LP	University of Siena - Department of Physical, Earth and Environmental Sciences	UNISI	ITALY
PP1	Business Innovation Centre of Valencia	CEEI	SPAIN
PP2	Istrian Regional Energy Agency L.t.d.	IRENA	CROATIA
PP3	Cluster Maritimo – Marino de Andalucia	CMMA	SPAIN
PP4	Aristotle University of Thessaloniki - School of Architecture, Faculty of Technology	AUTH	GREECE
PP5	Goriška Local Energy Agency	GOLEA	SLOVENIA
PP6	University of Cyprus - Oceanography Centre	OC-UCY	CYPRUS
PP7	INFORMEST	INFORMEST	ITALY
PP8	University of Algarve - Division of Entrepreneurship and Technology Transfer	UALg	PORTUGAL
PP9	Autonomous Region Friuli Venezia Giulia - Education Area, High Education and Research	RAFVG	ITALY
PP10	Malta Intelligent Energy Management Agency	MIEMA	Malta

General objectives

- As Blue energy in the MED area is still in an early stage, MAESTRALE aims at:
 - Knowledge access and management: definition of blue energy potentials; investigation of legal/financial/environmental hindrances and possible solutions; survey of existing/innovative technologies; critical market review.
 - Transnational cooperation: building of scientific and technical skills based on different territorial vocations for specific solutions; sharing of a common MED strategy for blue growth; knowledge transfer from Northern to Southern Europe through field visits to operating plants.
 - Capacity building: creation of Blue Energy Labs (BELs) as cluster networks to play a key role in developing business and prompting the transition to renewable sources; performing of participative processes involving policy makers, research institutions, entrepreneurs and citizens (“quadruple helix”) in order to raise awareness, decrease uncertainty and facilitate social acceptance; planning and management of pilot projects to be concretely implemented in the future.

Blue Energy Technologies

1. Salinity gradient (osmosis)
2. Marine currents
3. Wave Energy
 1. Onshore
 2. Offshore
4. Ocean Thermal Energy
5. Marine biomass
6. Offshore wind farms
 1. Floating
 2. Fixed



Specific objective #1/3

- **Knowledge transfer:** based on the exchange of experiences and knowledge among partners and between actors in Southern and Northern Europe (field trips to operating plants), this will concern a comprehensive and exhaustive survey of regulations, existing and innovative technologies, best practices and hindrances, Strengths, Weaknesses, Opportunities and Threats. This will act as the essential knowledge basis for blue growth considering both transnational common aspects and specific features of regional areas.
- **Planned actions and expected results**
 - Overview of regulations/ funding opportunities, hindrances and benefits
 - State-of-art, survey of existing technologies, previous studies and (EU) projects
 - Field visits (northern Europe and Atlantic coast)
 - Online geo-database
 - Energy potential analysis including a catalogue/roadmap of possible solutions
 - Communication/dissemination

Specific objective #2/3

Blue Energy Labs BEL: transnational network among key actors in Blue Energy at the MED/EU level including public authorities, research centers, energy agencies, enterprises, and groups of citizens. BELs will take place in each participating region to support the creation of public-private partnerships, ensure knowledge and innovation exchange among actors and lay the basis for concrete initiatives for blue growth.

Planned actions and expected results

- Transnational BEL meetings (kick-off meeting + n.5 BEL meetings + final conference)
- Regional BELs (including training activities, clustering and start-up launching)
- Communication/dissemination (communication tools, press releases)
- Map of target groups
- Coordination with horizontal projects (n.6 meetings)

Blue Energy pilot projects in MED regions: Regional BELs will elaborate 2 or more pilot projects of blue energy plants in each regional area, providing the best conditions to ensure feasibility, financial support, technological means, social acceptance, and involving administrators, enterprises and groups of citizens. The expected result is the creation of at least 20 projects to be potentially implemented in the future based on a stronger partnership between public and private subjects and the use of Structural Funds. These projects will serve as prototypes for innovative startups and further EU developments.

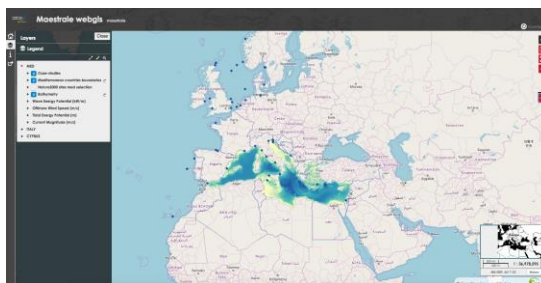
Planned actions and expected results

- Capacity building (awareness, climate mitigation, energy self-sufficiency)
- Feasibility studies and business plan of 20 pilot projects (to be funded by ERDF)
- Communication/dissemination (including n.10 open day events)

- Regulatory Framework Analysis
 - Report on existing regulations in Cyprus for RES and funding opportunities
- Case studies and best practices analysis
 - For the transfer of knowledge and expertise from North Europe to South
 - Study visits (3 study visits, Rome and Sweden)
- Blue Energy Potential Analysis (OC-UCY leader)
 - BE GEODatabase and webgis
 - BE Potential and SWOT analysis for MED area
- Mapping of key actors in BE and RES sectors
 - Stakeholders map
 - Prepared list of stakeholders for Cyprus

- Two main legislative measures that derived from the implementation of EU Directives:
 - 2009/28/EC for the promotion of renewables (is implemented in Cyprus through the national **Law N.112(I)/2013** and its amendments)
 - 2014/89/EU for **establishing a framework for maritime spatial planning** (is implemented in Cyprus through the national **Law N.144(I)/2017** and its amendments)

- Presentation of:
 - Case studies database
 - BE potential for the whole Mediterranean
 - Bathymetry
 - Natura2000 sites
 - Wave Energy potential
 - Offshore wind speed
 - Tidal Energy potential
 - Current Magnitude

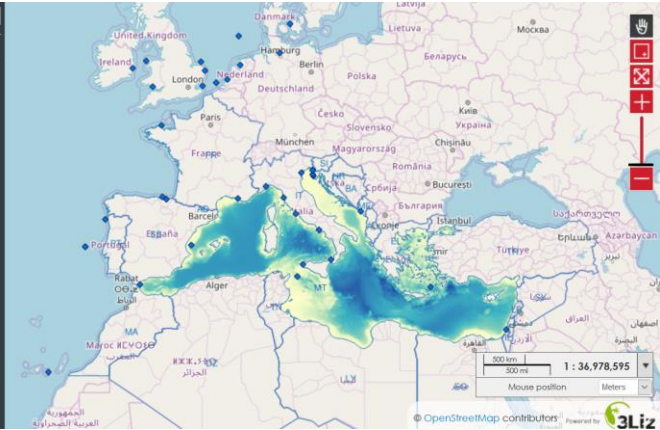


<http://maestrale-webgis.unisi.it/>

Interreg Mediterranean MAESTRALE Webgis: Case studies

Pop-up Case-studies

Field	Value
N_scheda	22
Name	W2Power combined with Aquaculture (biomass & fish)
Loc	Mediterranean Sea Crete (Greece)
c_original	35° 53' 01.85" 26° 29' 10.32"
X	26.4863970850
Y	35.8841516000
Pdf_file	scheda 22.pdf



Interreg Mediterranean MAESTRALE Webgis: Case studies

Interreg Mediterranean MAESTRALE

W2Power combined with Aquaculture (biomass & fish)	
Type of Blue energy source	Offshore wind energy
Type of energy output	Electricity
Type of project/ plant	Research project
Status	Study finished, prototype and demonstration phase under preparation
Location	35° 53' 01.85" N, 26° 29' 10.32" E Mediterranean Sea Crete (Greece)
Nominal power	From 3.6 MW x 2 (Wind Power) + 350 Kw (PV) up to 2x6 MW + 400 kW . From 7.5 MW to 12.5 MW per platform
Size	Platform base: 99 x 72, Diameter rotor: 2 x 128-132 m.
Year	Marina: 2010-2014; Tropos 2012-2015. Additional testing during 2015 and 2016
Implementation cost	A single platform price range between 30 and 35 ME
Web link	www.troposplatform.eu
Description	The W2Power is a floating wind platform that can include wave energy extraction or be combined with aquaculture or other revenue generating activities like energy storage, sea monitoring and surveillance. The combination of the platform with aquaculture has been studied in the FP7 MARINA (wind, wave and salmon farming) and in the TROPOS project (wind, finfish aquaculture and microalgae production).

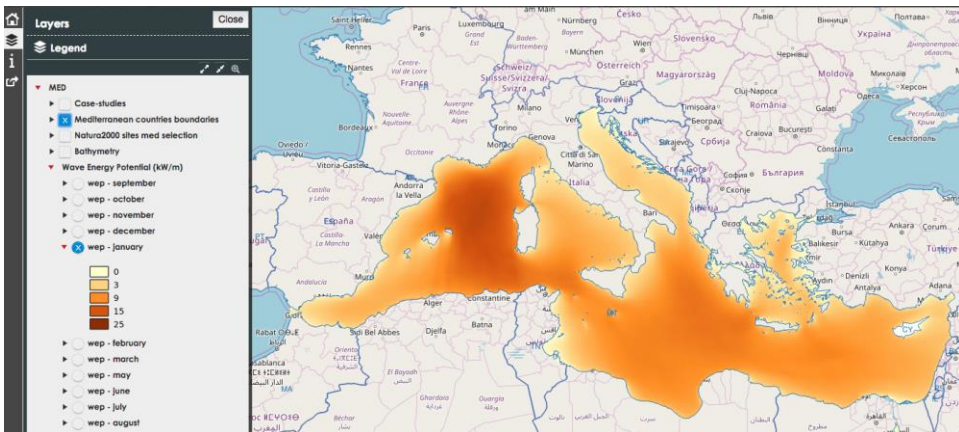


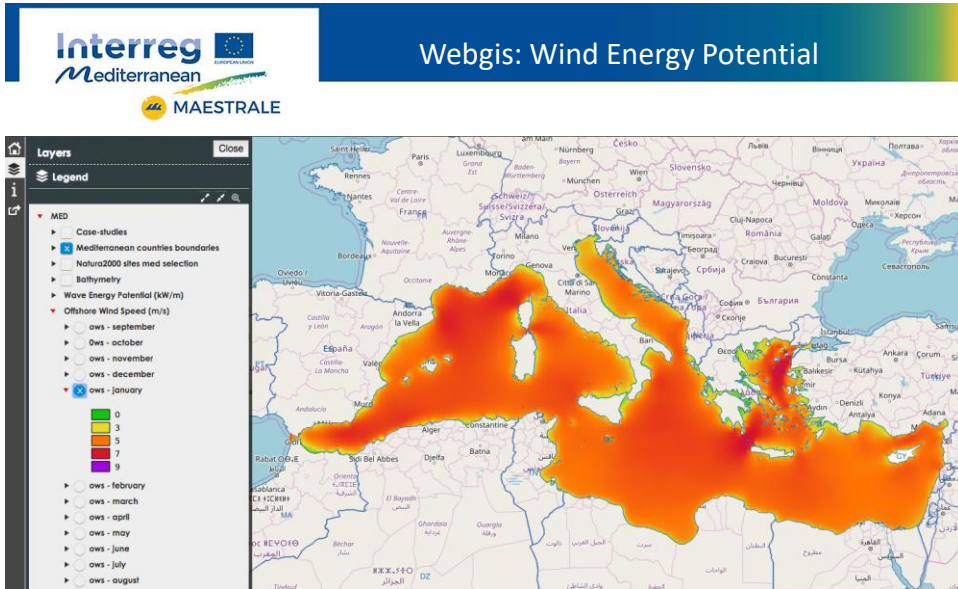
Webgis: Bathymetry + Natura2000



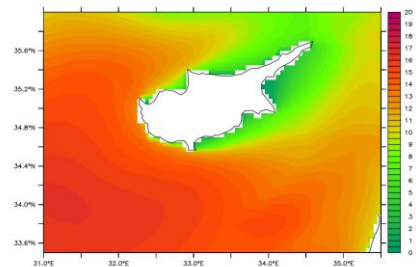


Webgis: Wave Energy Potential



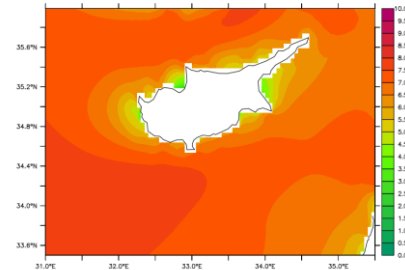


- **Wave Energy**
 - The highest energy potential values are in the south offshore parts of Cyprus, near Eratosthenes.
 - The northern and eastern parts of Cyprus are characterized by an annual low energy potential of around 1 kW/m.
 - The western part of Cyprus near Paphos has an annual average energy potential of : kW/m
 - The area near Eratosthenes has an average of 4 kW/m.
 - At both areas, it can reach peak values of 10 kW/m during the winter months



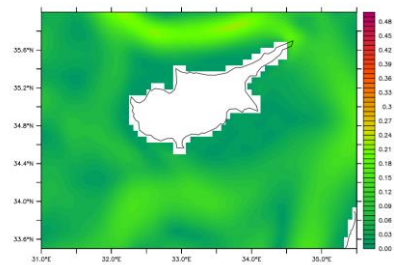
- Wind Energy

- Highest wind velocities found near Eratosthenes and Akrotiri bay with peak values of 5.8 m/s.
 - Peak values appear during winter months, with a persistent trans-seasonal high wind presence in the Akrotiri bay area
 - Acceptable threshold of wind velocity (*Soukissian Takvor H., 2017*) to approximately 4.5 m/s.
 - Cyprus is characterized by moderate (4-6 m/s) wind velocities



Maximum mean wind speed (m/s) in February averaged over the period 2010-2017

- Low energy potential
 - Marine Currents
 - Salinity gradient
 - Not mature technologies
- Other technologies to be investigated
 - Marine biomass
 - Ocean Thermal Energy



Maximum mean surface currents (m/s) in February averaged over the period 1987-2016



Blue Energy Labs

- 4 BELs to be organized in Cyprus
 - 1st BEL is being held today
- Purpose of BELs
 - Engage enterprises, public administrations and civil society through events, workshops, focus groups
 - Promote technological transfer
 - Training course for regional enterprises focusing on BE technologies, funding opportunities, regulations, procedures to build BE plants
 - Design of a set of pilot projects (2 in each region) for the development of innovative BE plants



Thank You

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