



### Summary

This 4<sup>th</sup> issue of the MAESTRALE newsletter marks the conclusion of the “studying” phase and the start of the “testing” phase of the Project. In fact, on the one hand, all the Deliverables of the “studying” phase have been completed and uploaded in the MAESTRALE website (see below). On the other hand, the “testing” phase began with the launch of the 1<sup>st</sup> Blue Energy Labs (BELs) meetings, promoted by INFOR-MEST in the Friuli Venezia Giulia Region (15<sup>th</sup> February) and by the University of Algarve (UALgria) in the Algarve Region (5<sup>th</sup> March). The next BEL meeting, organized by the University of Siena (Tuscany Region), will be held next 3<sup>rd</sup> May. Unfortunately, at the time of writing this newsletter, only the results of the BEL Meeting of the FVG Region can be published. However, the next issue will focus on the results of the BELS meetings in Algarve and Tuscany, as well as to those that will follow in the other regions of the Project Partners.

#### In this issue

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- The BEL FVG
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- The International Conference ICOE 2018

### THE STATE OF THE ART OF MAESTRALE

The **Blue Energy Regulation and Funding framework** has been completed and uploaded in the Project website on 21<sup>th</sup> September 2017. Briefly, it’s an updated report that illustrates the regulatory and funding situation at national and regional level existing in the 8 Partner Countries of the Project for the development of the Blue Energy: (i.e. general Plans or Strategies,

**BLUE ENERGY REGULATORY AND FUNDING FRAMEWORK**

The Report is structured in 2 parts: Country profiles describing current...

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laws on spatial planning, authorization procedures, maritime domain and seaports, natural protected areas, etc.), The methodology of data

gathering was unified based on a shared template in order to obtain coherent document with easily comparable statuses of different Countries.

The **International Catalogue of Blue Energy Best Practices and Case Studies** has been also uploaded in the Project website on 21<sup>th</sup> September. The Catalogue describes the 42 cases selected by the Project Partners that include the six potential sources of the Blue Energy (off-shore wind, waves, salinity gradient, thermal, tidal and biomass). The final aim of the Catalogue is to evaluate the possible transferability of the

**UPDATED INTERNATIONAL CATALOGUE OF BLUE ENERGY...**

Is an updated catalogue of successful Blue Energy initiatives in Europe,...

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selected case studies in the Mediterranean area, taking into account not only the technological implications, but also the environmental, regulatory and

administrative ones.



- The **GEO database** has been uploaded on the MAESTRALE Project website from 15<sup>th</sup> September. This tool collects and displays on maps information on the potential for Blue Energy development, as well as the localization of key actors and operating existing Blue Energy plants. The GEO database (webgis platform) collects data on Blue Energy potentials in the Mediterranean area, especially regarding environmental aspects - bathymetry, monthly data on wave energy potential (kW/m), offshore wind speed (m/s), tidal energy potential (m), current magnitude (m/s), the placement of the case studies analyzed by MAESTRALE, of the protected areas, and NATURA 2000 sites, etc. The GEO database will be continuously updated during the MAESTRALE life span. For more details, see: <http://maestrale-webgis.unisi.it>
- The **MAESTRALE Stakeholders Map** has been completed in November 2017 and uploaded in the MAESTRALE website. This Map is the result of a survey of the public and private actors operating in the sectors of Renewable Energy Sources in general and of Blue Energy in particular in each involved region. A special attention has been dedicated to existing technological and industrial districts, research centres, energy agencies, Energy Saving Companies – ESCOs, Non-Governmental Organizations - NGOs, enterprises, etc. in order to identify the key stakeholders to be targeted during the MAESTRALE Project. The survey was conducted using a Stakeholder information form especially conceived for the MAESTRALE Project.

***The MAESTRALE Stakeholders map:  
a support tool for involving key actors  
in the development of BE  
in Mediterranean Countries***

The analytical activities of the MAESTRALE Project included a survey of decision-makers, potential investors, supporters or even opposers can influence the development of the BE sector in the Partners' Countries. The Malta Intelligent Energy Management Agency (MIEMA) coordinated the Project partnership in the implementation of this task with the objective to identify the key stakeholders to engage in the future activities of the Project. The result of the survey is a synthetic document – the MAESTRALE Stakeholders Map - listing and analysing these key stakeholders, providing their main contacts, and highlighting their relevance towards the Project objectives, their reasons of

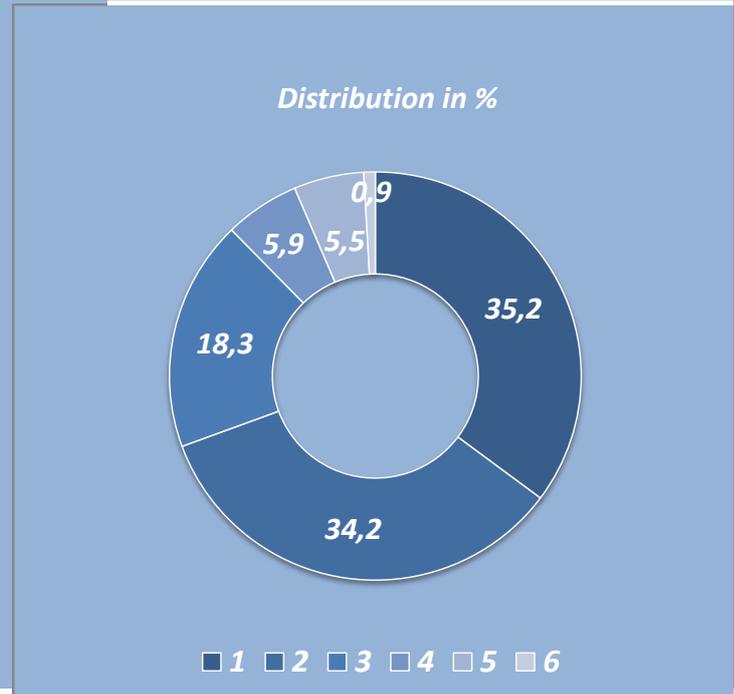
interest in the Project and the contribution they can bring to ensure its successful implementation. To date, the Map includes 219 Stakeholders from eight different Countries, belonging to a wide range of typologies: local, regional or national public authorities, business support organizations (i.e. chambers of commerce), enterprises, private no profit organizations such as NGOs and associations, training centres, research centres, universities, and international thematic networks. The majority is represented by enterprises and public authorities, both categories covering around 35% of the total. The educational sector is also well represented (18%) and is mainly embodied by Higher Education Institutions. This proportion appears as a good result in itself, since the Project focus is the promotion of Blue Energy initiatives resulting from



collaboration among the public sector, the business sector and the research world. The map is completed by 12 business support organizations, 13 no-profit entities (mainly environmental associations) and 2 international thematic networks. Interaction and collaboration among the key actors identified will be further pursued and strengthened in the prosecution of the project: a good majority of the stakeholders identified (74%) will be involved and/or has expressed interest in taking active part in the Regional BELs - informal networks that will work to identify feasible BE projects to implement in target regions - while 21% will be also engaged in the Transnational BEL – the Med level network providing coordination, support and scientific background to the regional initiatives. The remaining Stakeholders will be kept informed on Project developments, in order to disseminate. The achieved results and hopefully gain their further interest and participation. The Stakeholders Map is incorporated in the MAESTRALE online MED BE GEOdatabase: geographic and the coordinates of each Stakeholder seat have been included.

**The Stakeholders Map**

Category	Number
1 - Private profit	77
2 - Public Authorities (Local, Regional, National)	75
3 - Research Centers, Universities, Training Centers	40
4 - Private no profit	13
5 - Business Support Organisations	12
6 - International Thematic Networks/Associations	2
<b>TOTAL</b>	<b>219</b>





**THE 1<sup>ST</sup> REGIONAL BLUE ENERGY LAB MEETING IN FRIULI VENEZIA GIULIA REGION**

INFORMEST (partner of MAESTRALE), and the Maritime Technology Cluster MARE FVG (technical partner of INFORMEST), with the support of the Friuli Venezia Giulia (FVG) Region (associated partner of MAESTRALE), have organized the 1<sup>st</sup> working table among the regional stakeholders already active or interested in operating in the Blue Energy for the establishment of the Friuli Venezia Giulia regional BEL. This BEL Meeting was held on 15<sup>th</sup> February 2018 at the headquarters of MARE FVG in Monfalcone (Gorizia), with the participation of 18 representatives of universities, research institutions and SMEs/LEs.

The BEL FVG Stakeholders

*Universities*

- *University of Trieste - Department of Architecture and Engineering.*
- *University of Udine - School of Introduction to Renewable Energies – SIER.*
- *Politecnico of Turin - Department of Mechanical and Aerospace Engineering.*

*Research institutions*

- *Area Science Park (Trieste) - National body for interaction between Research and Industry (President of the Republic Decree n. 102/1978)*
- *National Institute of Oceanography and Experimental Geophysics - OGS (Trieste)*

*SMEs/LEs*

- *Wärtsilä Italia S.p.A. (Trieste) - Design and production of biofuel machinery.*
- *Goriziane Groups S.p.A. (Villesse – Gorizia) - Design and production of off-shore equipment.*
- *CETENA S.p.A. - Center for Naval Technical Studies (FINCANTIERI Group – Trieste) - Design and production of turbines for waste treatment, biomass, cogeneration.*
- *NMG EUROPE S.r.l. (Gorizia) - Certification of eco-sustainable materials.*
- *AIRWORKS S.r.l. (Monfalcone - Gorizia) - Developing technologies to support Wind Power turbine manufacturers in the segment of large rotor blades.*

The meeting has begun with the presentation to the FVG stakeholders by INFORMEST and MARE FVG of the MAESTRALE Project, and what was achieved during the first 16 months of Project activity: i.e. the results of the case studies analysis and the technological solutions for offshore wind, wave and energy applied to the plants visited during the MAESTRALE study visits (Port of Civitavecchia - Italy, Göteborg and Kristineberg – Sweden), Following, the Politecnico of Turin some technologies and related experimental phases (ISWEC - Inertial Sea Wave Energy Converter, installed in Pantelleria/Sicily, the prototype PEWEC – Pendulum Wave Energy, the PIGAL project – 1.8 scale prototype of wind turbine (3kW) on the Lake Maggiore/Piedmont), the technological solution of the hybrid platform at sea



(wind and wave), as well as the contents of the interactive Wind Atlas realized by RSE (Energy System Research) and the wave resources in the Mediterranean Sea and in the Northern Adriatic Sea in particular.



Furthermore, the Politecnico presented the laboratory study on Microbial Fuel Cells and the study carried out by the Department of Mechanical Engineering in the field of energy conversion and storage, through the development of fuel cell energy generators and the recovery of energy through ORC (Organic Rankine Cycles) technology. Subsequently, both MARE FVG and the University of Udine outlined the great divergences between the technological solutions applied in an open ocean respect to those applied in a closed sea like the Adriatic Sea. To conclude the interventions of the Universities, the Department of Architecture and Engineering of the University of Trieste expressed its willingness to collaborate with the Politecnico of Turin on the redesign of the converters, while the University of Udine mentioned some studies related to the algal sources elaborated by the Department of Agriculture.

Subsequently, representing the regional research bodies, the National Institute of Oceanography and Experimental Geophysics - OGS (Trieste) presented the studies that the Department of Oceanography has elaborated on the microalgae component, on the photobioreactors and the analysis of the types of algae suitable for producing energy, but stressing that the studies on the algal sources of the OGS are more oriented towards other sectors, compared to that of energy exploitation (production of biofuels).

AREA Science Park (Trieste) explained that it is active in the supply chain of materials / components of plants for the exploitation of renewable energy sources. The following were the representatives of the SMEs/LEs, mainly active in the design, production and certification of components and machinery, which showed their interest in transferring their knowledge to the MAESTRALE Project.

Subsequently, a summary is made of what emerged from the regional stakeholders' reports in view of the setting up of the 2 Pilot Projects foreseen by the MAESTRALE Project on the regional territory. Assuming that the technological solutions based on the exploitation of wind, wave and tides as unprofitable in the northern Adriatic Sea are not considered, it was agreed that the 2 Pilot Projects could focus on:

**Pilot Projects  
of BEL FVG**

- PP 1 - The production chain of the metalworking / new materials sector, particularly active in the regional area, also thanks to the study/development activity of the regional research bodies.
- PP 2 - The study of the possibilities offered by the exploitation of microalgae.

The discussion continued by analysing two other hypotheses to be explored in the future:

**Study  
Hypothesis**

- Saline gradient energy (osmotic energy), or the energy obtained from the difference in the concentration of salt between sea water and fresh water, for example, at the mouth of the river Isonzo.
- The energy of the marine thermal gradient, in particular through the thermal recovery of hot water discharged in the sea from thermal power plants.



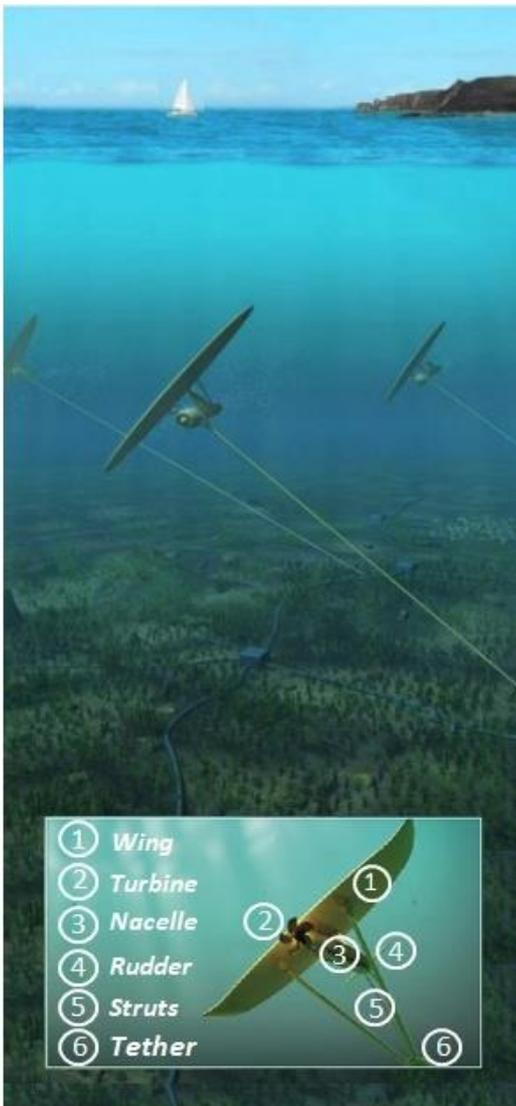
**MAESTRALE is networking with the FVG Scientific Community!**

At the annual conference of the Scientific and Innovation System of the FVG region (SIS FVG), which was held at the premises of the Area Science Park (Trieste), on March 27, MAESTRALE representatives had the possibility to meet many relevant stakeholders engaged with regional sustainable growth (3 Universities, 10 research centres and technology parks and 5 institutions and authorities). Among them there is, in particular, the OGS of Trieste, which has been involved in the setup of the MAESTRALE BEL in the FVG Region. The OGS is running an Advanced Master in Sustainable Blue Growth, as well as a Summer School on Sustainable Blue Growth in the Euro-Mediterranean region (<http://bluegrowth.inogs.it/>). The MAESTRALE Project and the OGS are going to cooperate within the regional BEL in order to deepen the knowledge on blue energy solutions related with the salinity gradient of the ocean.

**Good News from MINESTO**

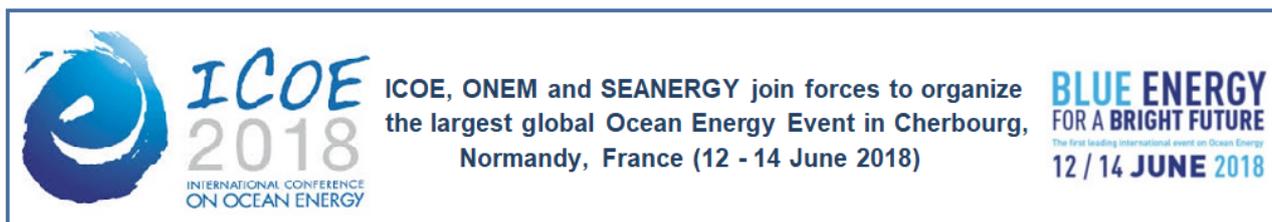
In February 2018 Swedish developer MINESTO of Västra Frölunda (Gothenburg), visited by the MAESTRALE Project Team on 5<sup>th</sup> July 2017, took an important step forward in developing its business. MINESTO, developer of the *Deep Green* prototype for the exploitation of the slower tidal waves and sea currents, has

raised nearly € 7.2 mln. (SEK 72.5 mln.) in a share rights issue that will be used to support the company's upcoming tidal energy activities. A total of 5,272,018 units were subscribed, corresponding to approximately € 5.8 mln. (SEK 59 million), which means that nearly € 1.3 mln. (SEK 13.5 million) is allocated to guarantors of the rights issue which closed on 16 February 2018, MINESTO informed. Also, the funding will be used for the enhancement of MINESTO's product range, and for site development and market penetration activities in the UK, EU and Taiwan. To remind, MINESTO recently announced plans to offer a smaller *Deep Green* tidal energy device (DG100) with a rated power of up to 100kW and a 4-5 meter wing span, as it aims to open new markets (Asia as well as in other regions) and business opportunities. At the same time the 500kW *Deep Green* tidal power plant will be installed this April 2018 off the Anglesey island, in Wales. Holyhead Deep is the name of a large depression in the seabed, located



requirements, the area also benefits from good port facilities in Holyhead Port, onshore grid connection possibilities at Holy Island as well as good transport links and access to installation and maintenance services. The area matches all the site requirements by providing low-flow tidal velocities (1.5–2 m/s mean peak flow) at a depth of 80–100 meter, only approx. 8 km from Holyhead, where MINESTO UK head offices, as well as a soon-to-be-built assembly hall is located.

### ***A not to be missed Conference!***



This International Conference ICOE 2018 is organised by BlueSign (see below) in partnership with the Normandy Region, Manche Department, Le Cotentin Communauté d'Agglomération and Cherbourg-en-Cotentin, ICOE will be held in Cherbourg, Normandy, from June 12<sup>th</sup> to 14<sup>th</sup> in La Cité de la Mer. Held every two years since 2006, ICOE aims at gathering stakeholders from the sector of ocean energies (tidal, wave, salinity gradient, ocean thermal energies) and sharing the most recent experiences on research, technology transfer efforts and technological demonstration. The purpose of the event is to accelerate development by stimulating collaboration between companies, researchers and development centres. In 2018, ICOE will join forces with Seanergy – the largest event on Marine Renewable Energy (MRE) in Europe – which brought together in 2017, 3,500 experts and professionals, 220 exhibitors and helped organizing more than 800 business meetings. The complementarity of these two events aims to combine scientific content and business opportunities in order to:

- *Disseminate recent technical experiences and demonstration from ocean energy research*
- *Generate business for companies of the MRE sector*
- *Promote the economic and societal dimension of MRE*
- *Attract young people to work in the MRE field.*



**About Blue Sign:** BlueSign (Paris – Bordeaux) is the provider of specialist conferences and exhibitions business on MRE. BlueSign helps organizations to make connections, do business effectively and communicate on and develop their image.

BlueSign allows business professionals to succeed by delivering high value networking opportunities. Each year BlueSign organizes the above mentioned event Seanergy, an international echo chamber of the multiple contributions of Marine Renewable Energy.



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### ***Next Steps***

At 16 months from the start of its activity the MAESTRALE Project is going through the perhaps most important phase: the establishment of the BELs that will lead to the identification of the Blue Energy Pilot Projects in each region of the Project Partners. In this sense it is recalled that the next BEL meeting promoted

by the LP will be held on May 3 in Grosseto (Tuscany). The opportunity for a comparison between the individual Partners will be given by the 1<sup>st</sup> Transnational BEL to be held from 7-9 May 2018 in Nova Gorica, Slovenia.. Stay in tune!

## OUR COMMUNICATION ACTIVITIES

In order to disseminate the Project development and a more comprehensive understanding of Blue Energy on various aspects: actual potential, existing regulations, availability of innovative technologies and perspectives, a Facebook page and a Twitter account have been created. We are going to share all important updates of the Project, news and research articles on Blue Energy and the practices that have been successfully implemented in that field. Moreover, we aspire to create a virtual community where scientists, policy makers, entrepreneurs and citizens can contribute with their knowledge and ideas with regard to prompt effective actions and investments for Blue Growth.



<https://maestrale.interreg-med.eu>



@maestrale.project



@MAESTRALE\_MED



maestrale@unisi.it

## We are online!

