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Italy – Croatia

 BEYOND

BEYOND

Blue Economy sYnergies fOr sustaiNable Development

IRENA / Dalibor Jovanović

MEDAC, 4.12.2024.



ACRONYM

BEYOND

TITLE

Blue Economy sYnergies fOr sustaiNable Development

PROGRAMME PRIORITY

Sustainable growth in the blue economy

SPECIFIC OBJECTIVE

1.1: Developing and enhancing research and innovation capacities and the uptake of advanced technologies

DURATION

1.3.2024. – 31.8.2026. (30 months)

BUDGET

1.760.015,50 EUR



Project overall objective

Project BEYOND aims to develop alternative offshore wind power use model moving these systems from single minded orientation towards grid electric energy production towards multifaceted evaluation and use of their infrastructure thus creating synergies with other blue economy sectors and renewable energy production forms. These synergies will result with improved quality of marine ecosystems, increased opportunities for aquaculture and fishing and increased production and use of green hydrogen.





LP

IRENA - Istrian Regional Energy Agency Ltd. (IRENA)



PP2

National Institute of Oceanography and Applied Geophysics - OGS



PP3

University of Rijeka - Faculty of Engineering



PP4

Apulia Region



PP5

Split-Dalmatia County



PP6

T2i – TECHNOLOGY TRANSFER AND INNOVATION S.C.A R.L.



PP7

SINLOC SpA



PP8

Ministry of Regional Development and EU funds





- 22% of marine species in Adriatic sea are in an unfavourable state of conservation and marine habitats show favourable status in only 63% of cases (ISPRA 2021 Adriatic report)
 - Mediterranean Sea is the most overexploited sea in the world 75% of fish stocks are overfished in the Mediterranean, rising to 93% within EU waters, and total fish populations have fallen by more than a third over the past half-century (WWF and Mediterranean Marine Initiative)
 - Within Mediterranean, Adriatic Sea is most utilized and overfished section. Most of the threats these ecosystems are facing are anthropogenic, either directly such as afore mentioned fishing activities, or indirectly through climate change.
- 



- Adriatic Sea is deeply affected by the changing climate resulting in tropicalization, presented by permanent settling of alien species origination in warmer seas, and meridionalization which occurs when species already present in the Southern Adriatic migrate North to find cooler water.
- Since Adriatic is semi-closed sea, long term migration to North is not possible and if the issue is not resolved, those species will perish.
- 30% of European seas need to be defined as MPAs by 2030. Mediterranean Sea as a whole performs poorly in this aspect with only 9.68% currently designated for protection. Condition in Adriatic Sea, with only 6% level, is even worse change.
- Adriatic Sea is particularly vulnerable to pollution, particularly one related to possible oil spills caused by sea transport activities. According to Medtrends Blue Growth Trends in the Adriatic Sea – The Challenge of Environmental Protection report, NAPA ports, expected increase in shipping market is 11.3% by 2030.

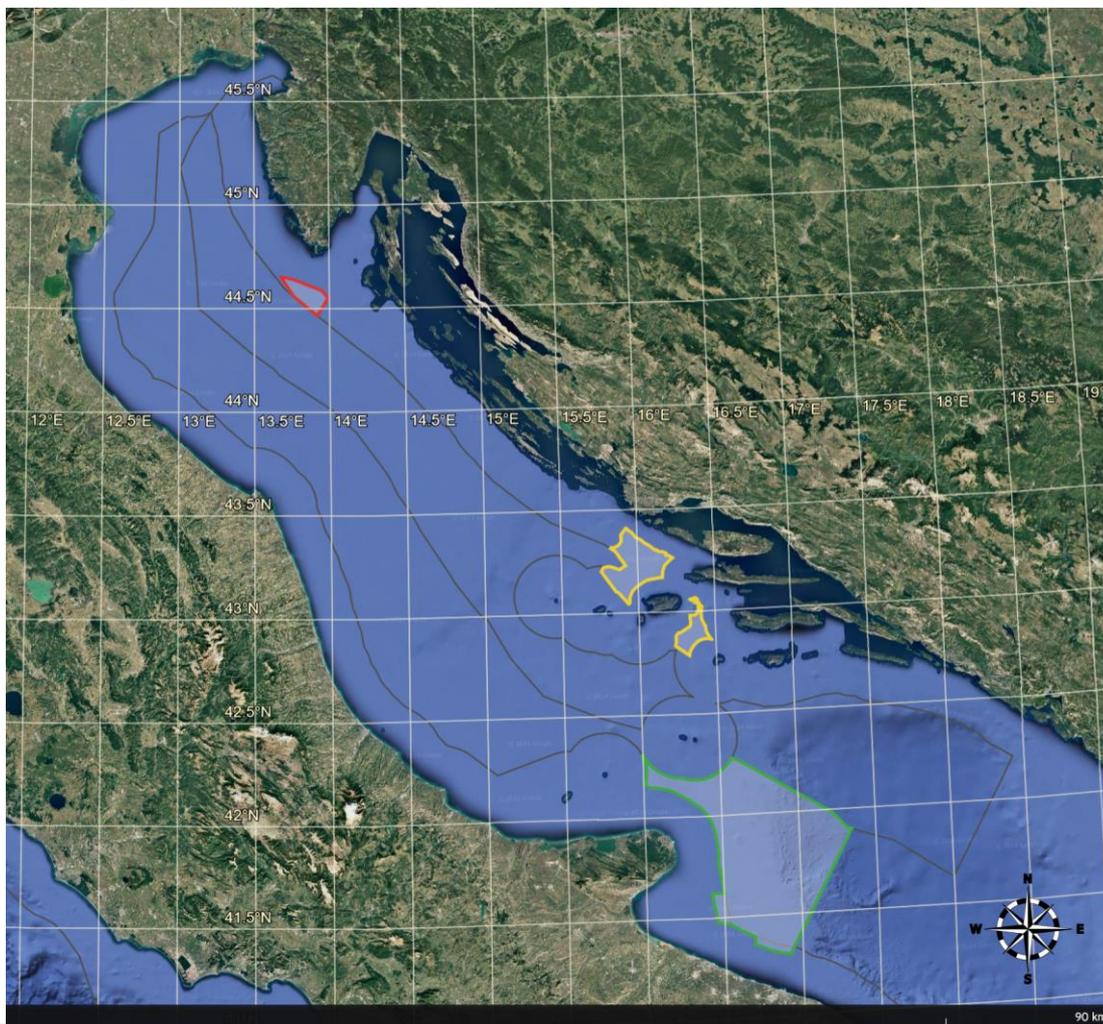
BEYOND

- Adriatic Sea has broad influence on economic activities and overall climate conditions of the area, but also has unique influence on culture and lifestyle
- As some Adriatic blue sectors such as fishing industry and tourism are over utilized, blue energy sector is underutilized
- Italy is reliant on import of around 75% of its energy consumption thus making it, in terms of energy security, one of most vulnerable EU countries. Croatia's import is also significant at 52,9% of the total energy consumed annually.
- Tourism has a significant economic impact across the cooperation area

- Due to presented context, OWFs in Adriatic see cannot be introduced as disruptive factor.
- Main goal: Definition of model of off-shore wind farm (OWF) as singular facilitator for development of multitude of blue economy sectors within overarching contexts of environmental protection and sustainable development of Adriatic regions
- Four microlocation tailor-made Adriatic OWF models to be developed within four pilot areas









- Modeling to be done in two phases for each location



Phase 2: Adriatic OWF

1. Alternative OWF design for each pilot region will be proposed

2. Specific for micro-locations in relation to their marine ecosystem characteristics

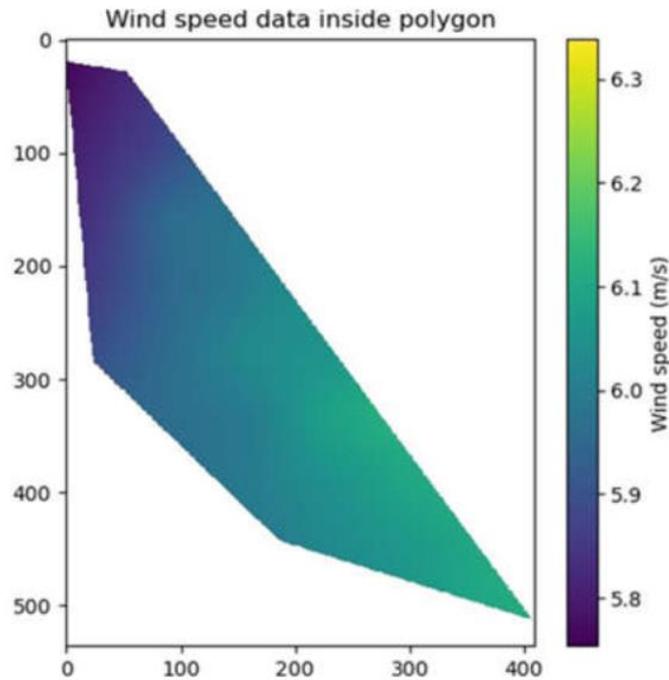
3. Primary design goal - ecosystem recuperation and maximization of different BES benefits

4. Alternative OWF design for each pilot region will be proposed

Sum of economic outputs

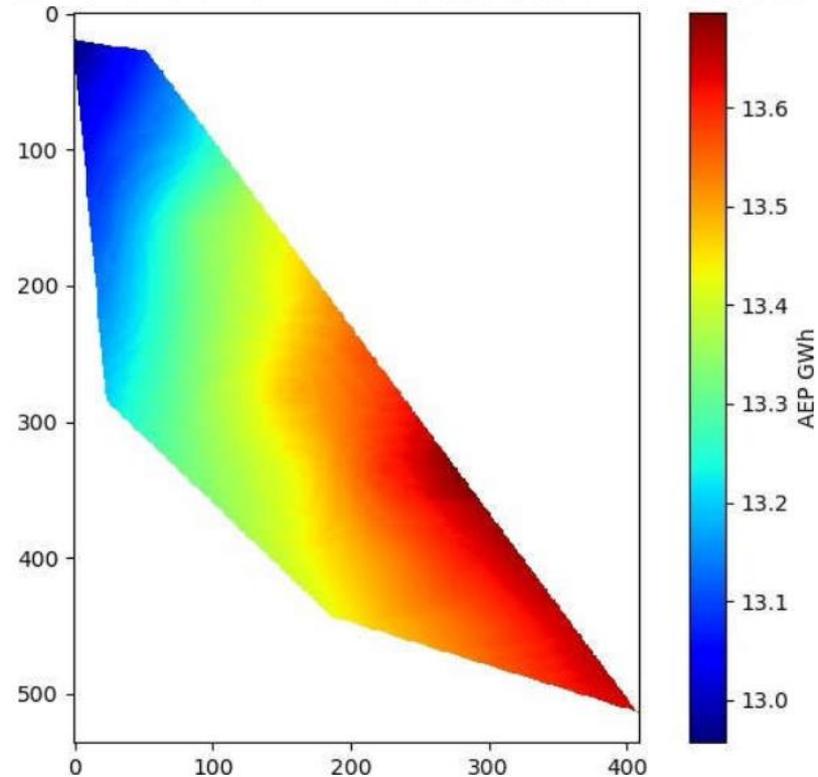
Annual energy production (AEP) calculation

Average wind speed data for the western Istrian area is shown in the picture below.

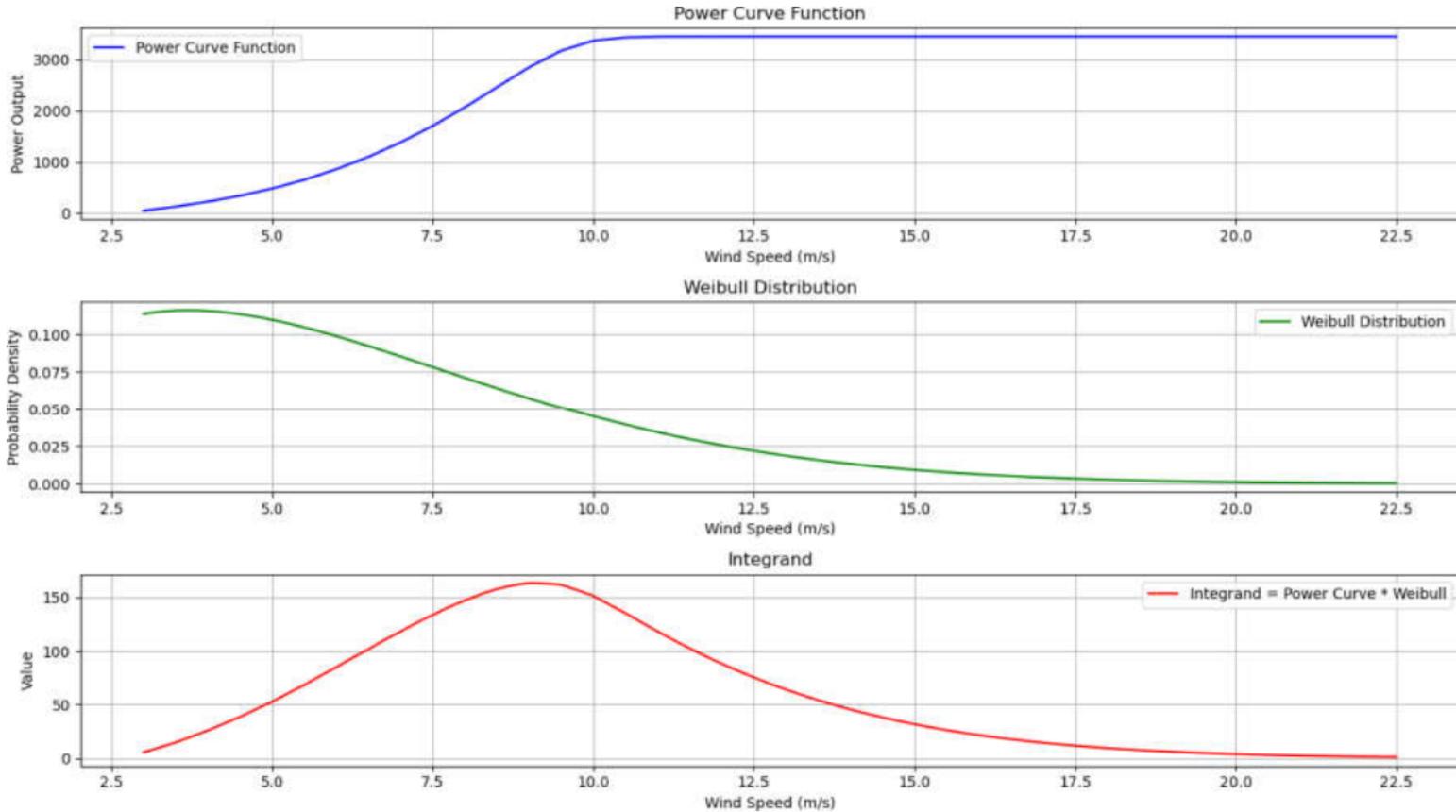


Preliminary investigation of energy production and natural
conditions for the Istrian region

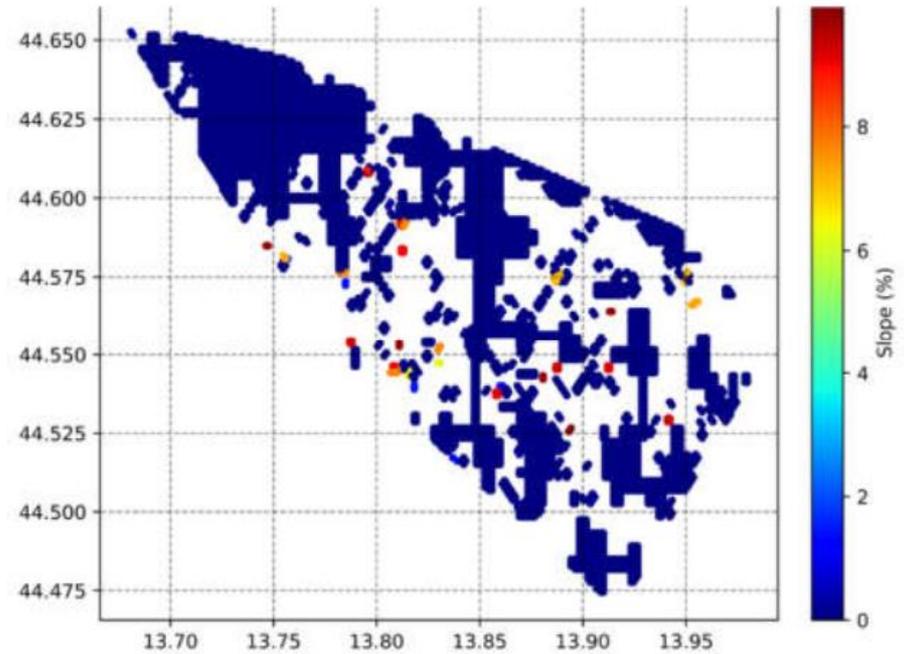
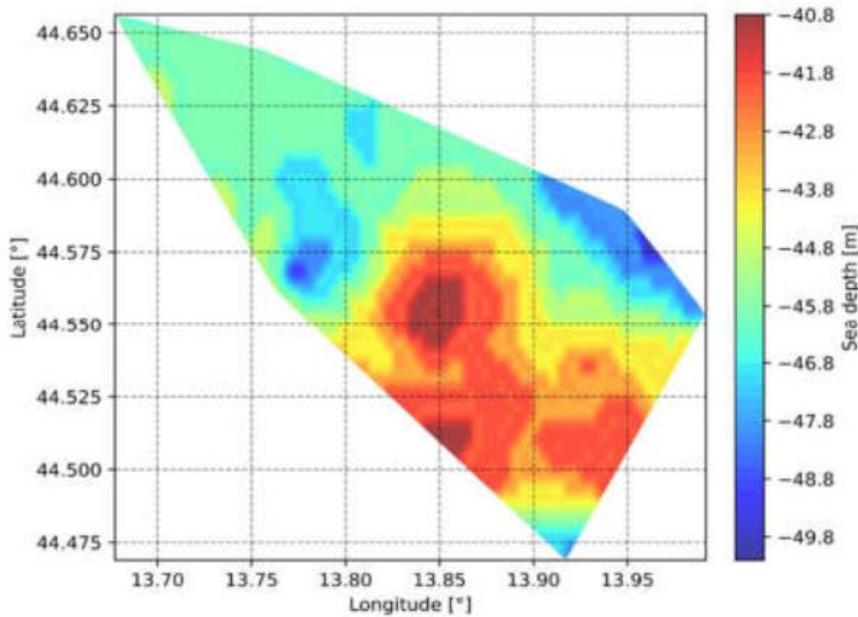
AEP can be calculated for every point inside of the polygon, using matching Weibull A and k parameters as shown in the picture below. This AEP calculation does not consider any kind of losses. The power curve for a 3.45 MW IEC Class 3 turbine was used.



Preliminary investigation of energy production and natural conditions for the Istrian region



Sea depth and slope of the seafloor



OWF as BES development facilitator

Main targeted sectors



MARITIME
TRANSPORT



GREEN HYDROGEN



FISHERIES



AQUACULTURE



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