The UNITED Project and Multi-Use

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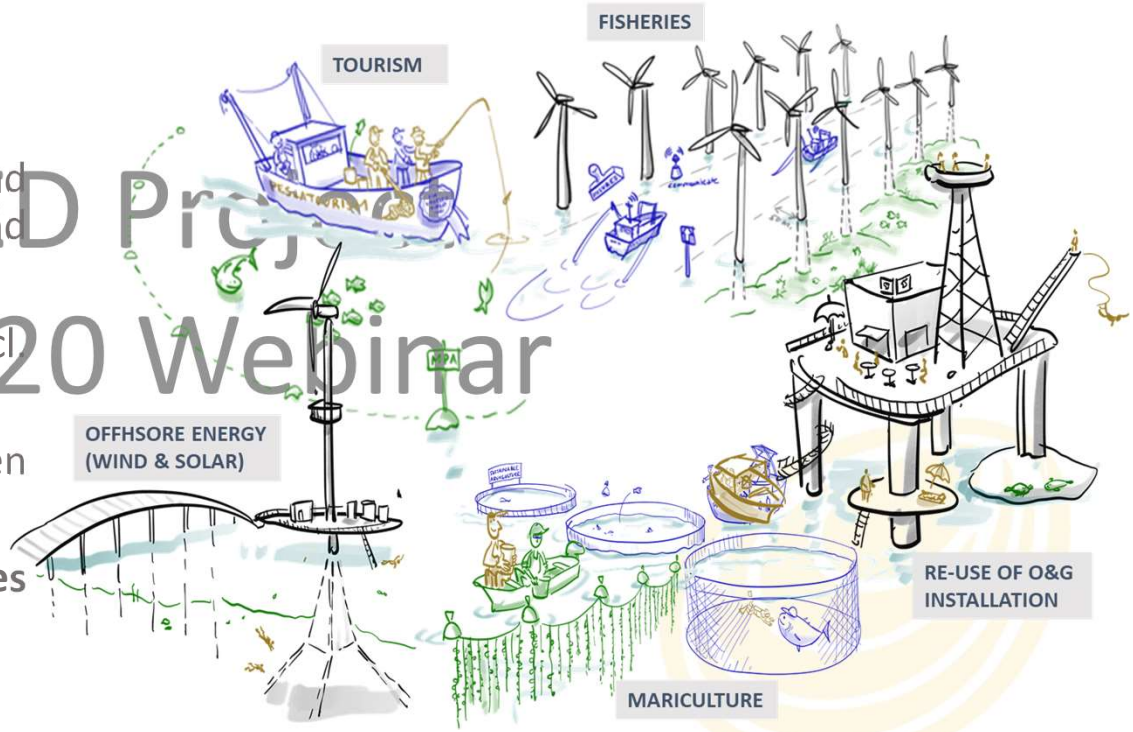
The Multi-Use Concept

In the realm of marine resource utilization, multi-use should be understood as the intentional joint use of resources (physical space, platforms, logistics, etc.) by two or more users. This is a marked change from the traditional concept of exclusive resource rights to include sharing of resources by multiple users.

Benefits:

- The more **efficient use** of ocean space and resources (more space left for protection and future generations);
- Derive synergies, added values incl. **economic benefits** to marine users;
- Reduce the **environmental impact** of a given use by merging it with another activity;
- Provide additional **socio-economic synergies** to the coastal region.



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Project Mission

- UNITED will provide **solutions** to **improve operation, planning, and management** of multiple marine off-shore activities including propose **business models** to reduce costs and generate benefits to multiple sectors sharing marine space.

- UNITED will be **harmonizing the logistic support**, service vehicles, equipment and infrastructures required by the multiple users within the pilots, the **streamlined ICT** and information systems will be capable of supporting simultaneous activities and addressing **risk management**, juridical and **governance** aspects in operational facilities

- UNITED will build upon **five core pilot** projects spanning the North Sea, the Baltic Sea and the Mediterranean involving industrial actors and **integrating the knowledge, technologies and facilities**, in multi-use platforms and co-location activities for **multiple sectors** including mixed energy production, mariculture, ecological restoration, and tourism

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Project Objectives

- The overall objective of UNITED is to provide evidence of the viability of multi-use by the development of large-scale pilots that showcase technical, regulatory, economic, social and environmental solutions from the **development state (TRL5) to demonstration in an operational environment (TRL7)**.

- Achieve on operational environment within each of the 5 pilot sites exhibiting multi-use and co-location activities. Not only should the co-location and multi-use activities co-exist, **added benefits** resulting from multiple activities should be highlighted, **through implementation or operational cost savings**.

- Stakeholders at all levels should have **awareness increased** and issues of **acceptance addressed** ranging from industry actors (commercial, financial, and regulatory) to local communities and society at large.

- Total **capacity, professional skills, and competencies** for those working **in Blue Economy** should be raised through project training and work as well as an increase in young sector actor participation (ex: floating solar)

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Building On Lessons To Move Forward

Making use of past FP7 Oceans of Tomorrow, European Horizon 2020, and smaller national projects to make a leap to practical demonstration

SPACE@SEA

UNITED Project June 2020 Webinar

TROPOS

MUSES Multi-Use in European Seas

MARIBE Marine Investment for the Blue Economy

PLATFORM MARINA

MERMAID

H2Ocean

IMPAQT Intelligent Management System for Integrated Multi-trophic Aquaculture

MUSICA

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The Concept

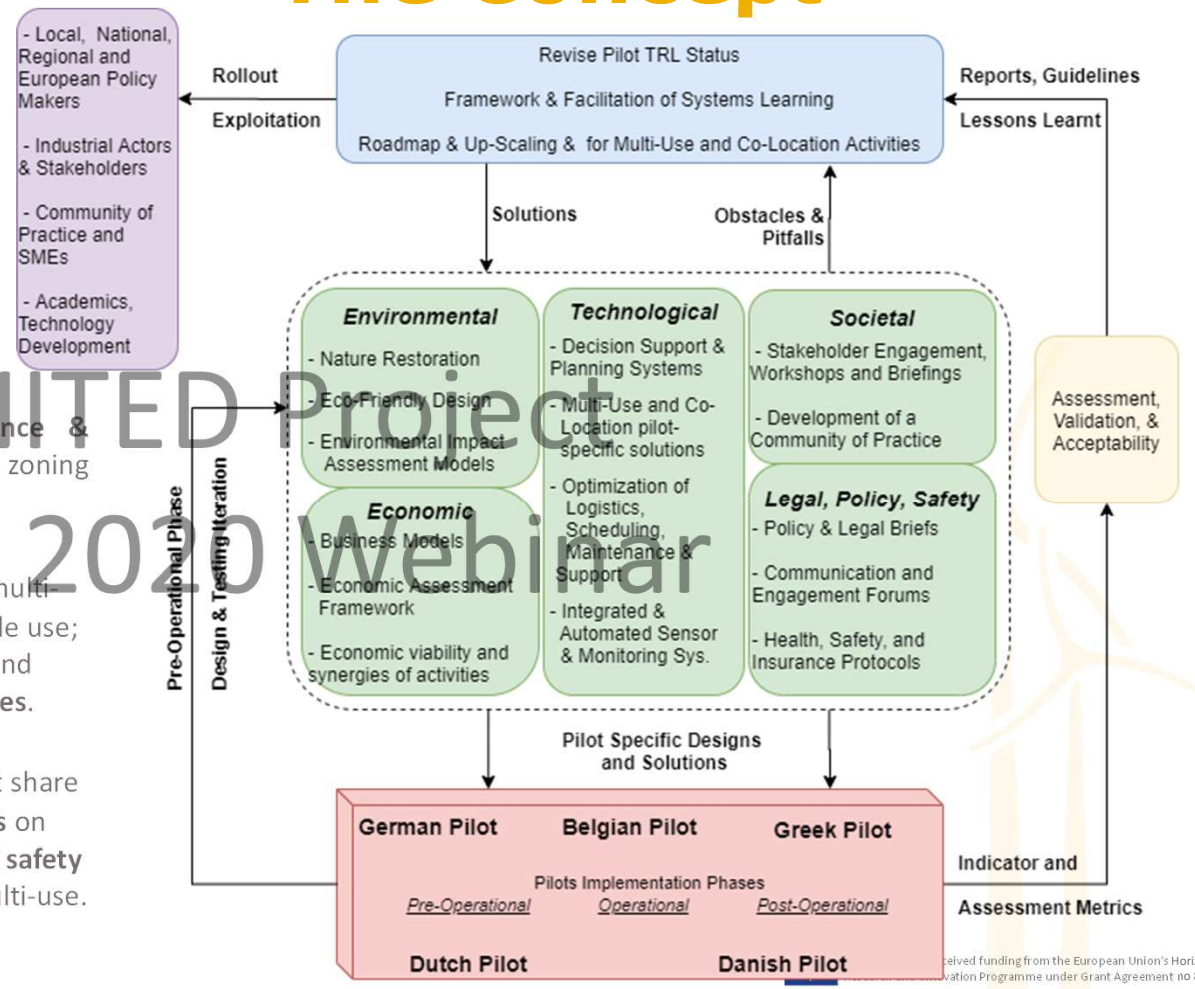
Environmental pillar: measure/assess the **impact of cumulative environmental impacts** of multi-use at the local and at a broader ecosystem level

Technological pillar:
synchronization of multiple operations and maintenance systems, support in management and **planning** decisions for new developments, as well as improvements in current **design**, **safety** and infrastructure set-ups for multi-use extensions.

Economic pillar:
Insurance issues, profitability & threshold to **finance** & **investment** pay off, risk & health impact on business, zoning and offshore, as well as **economic sustainability**.

Societal pillar: societal concerns and **perception** of multi-use; increasing social preference of multi-use versus single use; ownership, **acceptance**, and trust issues among sectors and identifying required improvements **skills and competences**.

L-P-G pillar: dialogue between public institutions that share responsibility for issuing **permits**. Baselines for **regulators** on evaluation activities in marine environments. **Health and safety** regulation and a framework for **legal responsibility** in multi-use.



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Demonstration Pilots

German Pilot: Blue mussels, seaweed and Off-shore wind

- 80 km off the North-German coast (high energy environment)
- Research platform focused on multi-use
- TRL 5 – TRL7
- Demonstrate the technological, environmental and financial feasibility of far off-shore cultivation of seaweed, mussel longlines
- Expected synergies: logistics, transport, planning and maintenance far off-shore; monitoring and surveillance program far off-shore; security of tenure and insurance
- Challenges: extreme weather conditions; automation of remote monitoring; anchoring and mooring maintenance far off-shore; lack of economic procedures and insurance procedures; unclear legal status of multi-use

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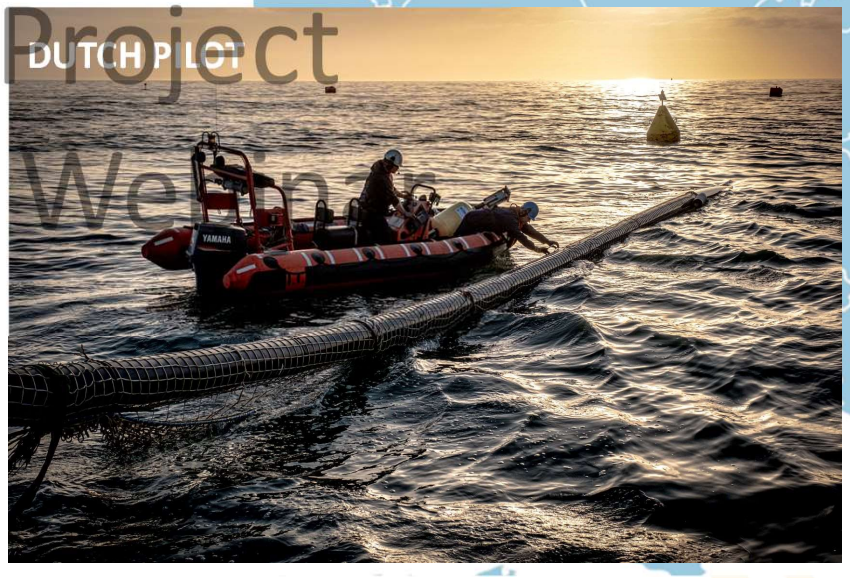
Demonstration Pilots

Dutch Pilot: Seaweed, floating solar and off-shore wind energy

- 12 km from the Dutch coast (moderate energy environment)
- Research site focused on upscaling innovation
- TLR5-TLR7
- Demonstrate integration offshore floating solar; commercial roll-out of seaweed; quantify effects of wave dampening of floating solar array; transfer of energy and communication
- Expected synergies: wave dampening effect floating solar; cost reduction in logistics and monitoring
- Challenges: damage extreme weather; high insurance and grid connection costs; lack of legal and governance procedures



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Demonstration Pilots

Belgian Pilot: Off-shore wind, seaweed and flat oyster aquaculture and restoration

- 50 km from Belgian coast (moderate energy environment)
- Commercial multi-use site
- TRL5 – TRL7
- Demonstrate improvement of design and deployment methods of off-shore aquaculture activities at OWFs; flat oyster culture and oyster bed restoration
- Expected synergies: remote monitoring, logistics and maintenance; port facilities
- Challenges: damage extreme weather conditions; insurance and maintenance; invasive species; conflicts of interest of sea users

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Demonstration Pilots

Danish Pilot: Off-shore wind and tourism

- 3.5 km off the Danish coast (high energy environment)
- Commercial multi-use site
- TRL6 – TRL 8
- Demonstrate logistic and financial feasibility of tourism activities (such as OWFs sightseeing, diving, leisure fishing, education on green energy) and OWFs
- Expected synergies: cost reduction in logistics, monitoring and information management technology; societal acceptance
- Challenges: high costs of operating staff; waste pollution visitors; lack of safety assessments; low individual financial power and capacity to join multi-use from local collaborators

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Demonstration Pilots

Greek Pilot: Aquaculture and tourism

- 850m from the Greek coast (low energy environment)
- Commercial multi-use site
- TRL5 – TRL7
- Demonstrate combined tourism and aquaculture activities; remote monitoring and management technologies; logistic support; societal acceptance of aquaculture
- Expected synergies: combined monitoring and management systems, synchronized logistics
- Challenges: network connectivity; damage due to extreme weather; lack of expertise with business models; pollution events and seabed disturbance; security regulations

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