Challenges of innovation in maritime economy
for the Mediterranean

	INNOVATION POTENTIAL	CHALLENGES
Marine Aquaculture (MA)	Economies of scope	Diversification with larger-size, higher-value-added finfish species/ new product development with a consumer focus
		Development of practices adapted to multipurpose facilities (e.g. bioremediation, biomass production not for humans consumption, …)
		Development of feasible systems adapted to deeper waters and shared with other facilities, like offshore wind turbines
	Qualified production	Technological optimisation of production (improved husbandry, biosecurity, control of escapes, traceability)
		Reduction of feed costs combined with feed improvements (high quality sustainable feed, reduction of fishmeal/fish oil use)
		Friendly production, animal welfare, health and naturalness
		Sustainable zoning of production sites
		Sustainability certifications, geographical designations, labelling and branding
Small Scale Fisheries (SSF)	Co-existence with different uses and activities	Co-management in spatially allocating areas within fishing grounds
		Co-management of new organizations (e.g. aquaculture, renewable energy for fishing boats and/or onshore processing facilities)
		Diversification from the traditional activity
	Qualified production	Control and monitoring of SSF activities
		Sustainability certifications, geographical designations, labelling and branding
		Valorisation of underutilised species/waste or by-products

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Marine Biotechnology	Micro-and macro-algae mass culture (for healthcare, pharmaceuticals, agriculture and livestock)	Innovative solutions for biomass production, cost effective high value end products and services Bring laboratory protocols at the industrial level
	Environmental biotechnology in exploring, exploiting, monitoring, preserving, protecting the marine environment	New organisms to screen for novel compounds Development of novel bioremediation agents, antifouling agents Detecting and deterring marine hazardous substances: Bio tools and sensors for pollutants, toxins and pathogens
	Valorization of fisheries and aquaculture by-products and wastes	Development of integrated waste management schemes
Coastal and Maritime Tourism	Better understanding tourism's impact and sustainability	Sustainable zoning (robust assessments of maximum carrying capacity of the natural and physical environment) Sustainability measurements (measurements of the impact of mass tourism on the environment), certifications and labelling, in particular of ecotourism Stress (high peak-high pressure) management (e.g., of waste, water, energy) Responsible consumption (savings of food, water, energy) Big or smart data compiling tourism statistics Adaptation to climate change
	Nautical routes and Marine Protected Areas (MPAs) for tourism	Islands connectivity, maritime routes and networking Safety of boating Innovation for marinas and boating development – Accessibility to an ageing and/or disabled population and attractiveness to younger people and families Accessibility of MPAs and underwater archaeological sites, synergies and conflict resolution management, and implementation of sustainable use mechanisms including improved surveillance

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Marine Renewable Energy (MRE)	Offshore energy	Sensing, instrumentation and monitoring Computational dynamics Material strength and fatigue characteristics Multi-functional platforms
	Smart Energy Systems	Onshore demand response for MRE integration Shore-to-ship (SSP) power and smart ports Energy storage systems and facilities Load balancing in insular Smart Microgrids Digitalisation and blockchain applications
Maritime Surveillance (MS)	Intelligent systems for maritime transport, security and surveillance - Information on ships, cargoes and ship movements	Development of automated behaviour monitoring, detection and alert tools Vessel detection and classification from space borne optical images Vehicle detection video through image processing
	Environmental emergency preparedness and response systems	Emergency reporting features and data plus real time incident alerts, easy-to-update information and critical messaging Marine Casualties Investigation and Oil Spill Response Services Operations & Compliance Tests - Air Pollution Control Systems Specialized social networking services and big data as sources with potential for maritime crisis management
	Management, quality control resources and communication plans	Integrated Maritime Data Environment (IMDatE) Implementation of the Common Information Sharing Environment (CISE) Quality and Management Plans for successful data governance Technologies and networks supporting maritime wireless mesh communications Data processing systems from remote sensors Maritime support services providing continual monitoring of these systems, facilitating early incident management and high availability and performance