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BLUE ECONOMY SMEs AND SEA JOBS INNOVATION ACTION PLAN

Aquaculture and small-scale fishing

PP5 - UNISALENTO

Summary

The approved European project falls within the scope of the Blue Economy, with the aim of strengthening the competitiveness, sustainability, and innovation of SMEs operating in maritime and coastal sectors.
The present report proposes an overview of innovative services and solutions that can be included in an innovation catalogue, designed to facilitate technology transfer, digitalization, and sustainable development among the target Small & Medium Enterprises (SMEs) in aquaculture and small-scale fishing.

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1. Introduction

The blue economy spans sustainable fishing, aquaculture, and nautical services.
Stakeholders face fragmented innovation support (incubators, calls, labs, data portals, mentorships, training), making it hard for SMEs and job seekers to find relevant offerings.
We need a Innovation catalogue that includes services and aligns them with targeted sea jobs and SME needs, improving discovery, personalization, and impact measurement.
An Innovation Catalogue is a strategic tool for mapping, enhancing, and making accessible technological solutions, best practices, and innovative support services for stakeholders.
Our general objective is to promote the sustainable development of aquaculture and small-scale fishing as a strategic lever for the growth of SMEs within the Blue Economy.
Basandoci sull'Innovation Catalogue of advisory and supporting services Report already produced within the WP1 (D1.2.1), here an innovation action plan is produced for sea jobs in aquaculture and small-scale fishing.
The specific objective is to design a reusable framework to catalogue and cluster services and map them to user needs, enabling search, filtering, and recommendations across regions and subsectors:

- map existing technologies, tools, and best practices for the key sectors of the Blue Economy;
- provide operational support to SMEs in accessing innovation;
- stimulate digital and green transformation processes;
- strengthen collaboration between regional ecosystems, research centers, and businesses.

2. Definitions

- **Action Plan (AP):** strategic document that outlines a set of coordinated measures, timelines, and responsibilities aimed at implementing specific objectives within the Blue Economy.
- **Innovation Catalogue Service (ICS):** any offering that accelerates innovation and employability (e.g., funding calls, accelerators, living labs, datasets, training courses, equipment access, standards, mentoring).
- **Targeted Sea Jobs (TSJ):** Occupational roles in the blue economy (current or emerging), from deck officers and port electricians to marine data scientists and offshore wind technicians.
- **Small and Medium-sized Enterprises (SME):** definition in according to EU recommendation 2003/361, Document 32003H0361R(03)
- **Cluster:** a group of catalogue services with high similarity in scope, eligibility, resources, outcomes, and/or target personas.

3. Strategic Guidelines

The Strategic Guidelines represent the fundamental pillars on which the action plan for the sustainable development of aquaculture and small-scale fishing is based.

They integrate environmental, economic, and social objectives, addressing the current challenges of the maritime sector within the broader framework of the Blue Economy. Each guideline directs concrete actions toward a balance between economic growth, marine resource protection, and social inclusion.

a) Environmental and social sustainability
b) Technological innovation
c) Human capital enhancement
d) Market access and internationalization
e) Blue Finance and EU Funding

a) The first guideline highlights the importance of preserving marine and coastal ecosystems through responsible aquaculture and fishing practices. Environmental

sustainability means reducing the impact of production activities on habitats and biodiversity by promoting systems that respect natural cycles and use resources regeneratively. At the same time, social sustainability ensures decent working conditions, the inclusion of local communities, and the enhancement of traditions linked to small-scale fishing.

b) The second guideline emphasizes the crucial role of technology as a lever to improve productivity, traceability, and sustainability in aquaculture and artisanal fishing businesses. The introduction of digital tools, environmental monitoring systems, and new production techniques can reduce waste, increase product quality, and open new market opportunities.

c) This point focuses on human capital as a strategic resource. Continuous training, acquiring new skills, and engaging new generations are indispensable for innovating the sector and keeping the culture of fishing and aquaculture alive.

d) This guideline concerns the importance of connecting SMEs to broader markets, both local and international, to enhance quality products and ensure profitability. Effective marketing strategies, sustainability certifications, and short supply chains can increase the perceived value of products and stimulate responsible consumption. Internationalization, on the other hand, offers growth and diversification opportunities but requires support in terms of training, innovation, and knowledge of foreign regulations.

e) Financial support is essential to turn ideas and projects into concrete realities. Facilitating access to the funds and guiding SMEs in preparing competitive projects is crucial to accelerate the transition toward a greener and more innovative production model.

4. Key results of D1.2.1

Here the key solutions, merged from the questionnaire given to the innovation hubs, are reported. These proposed solutions have been considered for drawing up the action plan and designing the innovative services.

*In order of importance the **current specialized services** for the Blue Economy offered by the Italian and Croatian service centers involved in the project are:*

- *Aquaculture (88.9%)*
- *Fisheries (66.7%)*
- *Nautical sector and related services (55,3%)*
    - *Fishery Tourism (33.3%)*
    - *Nautical Sectors (22%)*
- *Tourism (22%)*
- *Environmental sustainability (11.1%)*
- *Information, promotion and technical assistance service for participation in European calls for tenders/contributions (11.1%)*

*The **recent noteworthy innovations** realized by the service centers are in the following sectors:*

- *Aquaculture (77,8%)*
- *Fisheries (55,6%)*
- *Fisheries tourism (22,2%)*

*with the following main **outputs** realized recently:*

- *University courses on Blue Economy specializations.*
- *Food services/processing/trade improvement.*
- *Ecosystem services (MPAs, wind farms, port authorities, etc.).*
- *Arranging and equipping purification centers for shellfish. Realization of laboratories for testing the quality of mariculture products, monitoring the state of the environment and for experimental spawning.*
- *Digitalization of the production process.*

*The **main deficiencies of companies** working in the Blue Economy sectors are:*

- *ability to develop fruitful sustainable processes for economy, society and environment (100%);*
- *adoption of regulations and their complexity (66,7%)*
- *lack of specific skills (55,6%)*
- *resistance to digital transition (44,4%)*
- *production diversification (11,1%)*

***Strengthened services** for empowering the service centers in the light of the Blue Growth works of the future should be:*

- *collaborations with research institutions (88.9%)*
- *funding for innovation projects (77.8%)*
- *advanced digital platforms (66.7%)*
- *upgraded training and skills development (55.6%)*
- *assistance for ecological transition and economic diversification (11.1%)*

5. Types of Innovative Services

The Innovation Catalogue brings together a wide range of services designed to foster sustainability in aquaculture and fishing sectors. These services can be grouped into the following main categories:

- **non-technological services:** these services aim to boost business skills, tourism capacity, and cultural valorisation through human development, business support, and networking – without relying on advanced technologies;
- **technological services:** this category focuses on the use of digital tools and smart technologies to improve digitalization, automation, and the use of sensor systems in aquaculture and fishing sectors;
- **technology transfer services:** these services promote the uptake of innovation through access to external expertise, funding mechanisms, and cross-sectoral knowledge transfer;
- **environmental and circular sustainability services:** this category supports the environmental responsibility of aquaculture and fishing sectors, promoting low-impact practices, conservation, and circular economy principles.

6. Operational Action Plan and Services

Building on the contents of the Innovation Catalogue of Advisory and Supporting Services for Enterprises/SMEs of the Blue Economy (D1.2.1) and the Cross-Border Strategy (D1.4.2), we can define the actions and innovative services to be proposed to SMEs operating in sea-related jobs within aquaculture and small-scale fishing. These services have been categorised into four distinct types.

Non-Technological services

Actions	**Key Catalogable Innovations**	**Related Services**
Design and deliver capacity building programs	Vocational training on sustainable fishing practices and aquaculture operations	Workshops, online courses, field training for SMEs and workers
Facilitate networking among SMEs and institutions; enhance collaboration	Regional clusters and cooperation platforms; establishment of consortia	Brokerage events, thematic networks
Promote access to funding and administrative support	Guidance tools for EU and national funding	One-stop-shop services, support for proposal writing and project management
Raise awareness on innovation benefits	Use cases and success stories tailored to small fisheries and aquaculture	Awareness campaigns, stakeholder engagement meetings

Promote responsible fishing practices	Training in ecosystem-based management	Workshops on fishing regulations
Promote professional development	Training on emerging trends and technologies, digital tools for data management, circular economy practices	Certifications in new methodologies and data management, implementation of sustainable practices

Technological services

Actions	**Key Catalogable Innovations**	**Related Services**
Deploy digital solutions for smart farming/fishing	IoT sensors for monitoring environmental conditions and fish health, automated feeders, underwater drones	Installation, configuration and maintenance of digital tools
Improve traceability and food safety	Blockchain for catch traceability, QR-based consumer info	Digital traceability systems, mobile apps for supply chain actors
Enhance operational efficiency	AI-powered analytics for feed optimization	Remote monitoring services, real-

	and health monitoring (optimize resource management, reduce antibiotic use, and improve traceability)	time data dashboards
Support digital transformation of SMEs	Digital assessment tools and roadmaps	Digital maturity audits, tailored innovation plans

Technology transfer services

Actions	**Key Catalogable Innovations**	**Related Services**
Bridge the gap between research and market	Demonstration of modular RAS (Recirculating Aquaculture Systems)	Pilot sites, living labs, technology validation support
Facilitate access to Research & Development infrastructure	Access to testing tanks, labs, aquaculture platforms	Research collaborations, co-development agreements
Match innovators with end users	Platforms for innovation brokerage and tech matchmaking	Innovation vouchers, licensing support, IP advisory

Evaluate innovation readiness	TRL (Technology Readiness Level) assessment tools	Technology audits, roadmap development for implementation

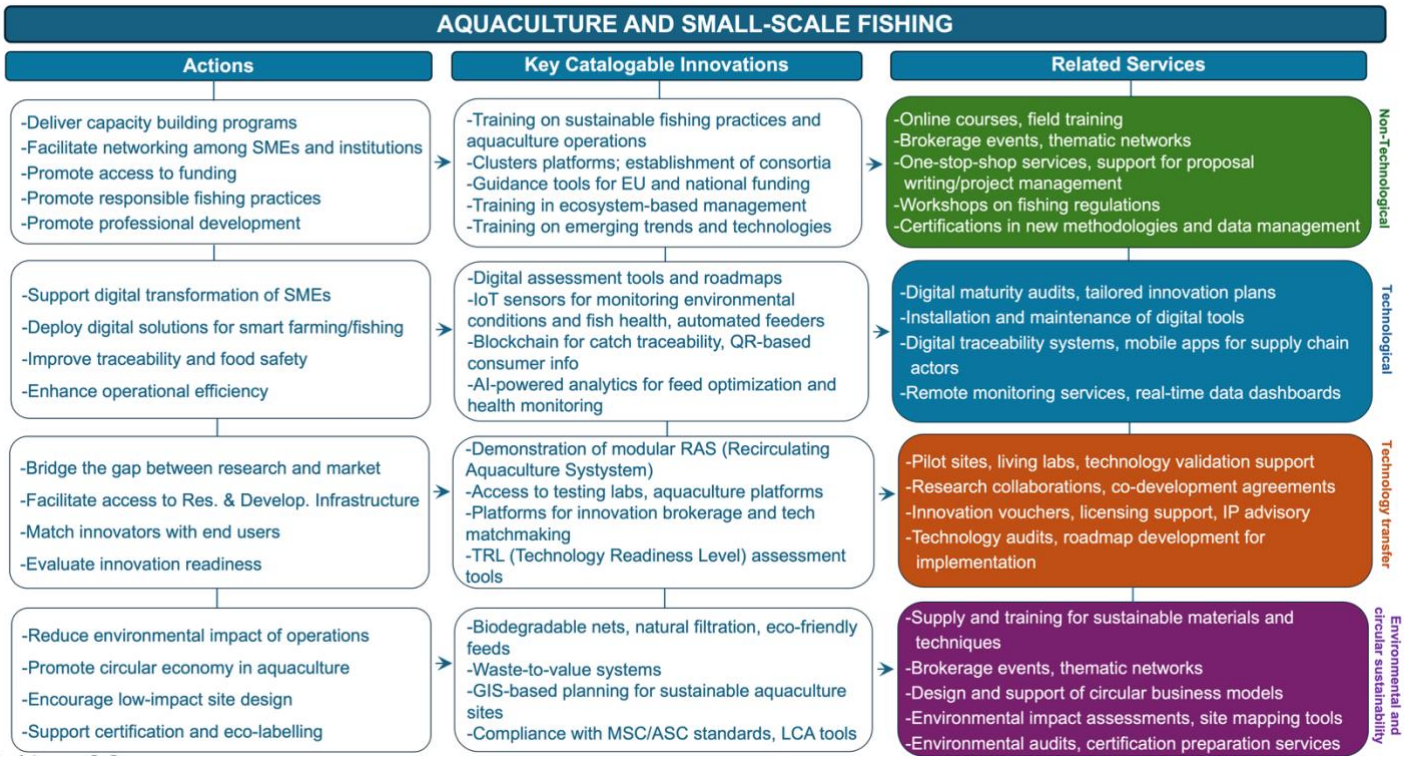
Environmental and circular sustainability services

Actions	**Key Catalogable Innovations**	**Related Services**
Reduce environmental impact of operations	Biodegradable nets, natural filtration, eco-friendly feeds	Supply and training for sustainable materials and techniques
Promote circular economy in aquaculture	Waste-to-value systems (e.g., fish sludge into fertilizer)	Design and support of circular business models
Encourage low-impact site design	GIS-based planning for sustainable aquaculture sites	Environmental impact assessments, site mapping tools
Support certification and eco-labelling	Compliance with MSC/ASC standards, LCA tools*	Environmental audits, certification preparation services

** IoT: Internet of Things*
QR: Quick Response
AI: Artificial Intelligence

RAS: Recirculating Aquaculture System
TRL Technology Readiness Level
MSC: Marine Stewardship Council
ASC: Aquaculture Stewardship Council
LCA: Life Cycle Assessment
R&D: Research and Development

Act. 2.1 Cluster of innovation catalogue services for targeted seajobs and SMEs



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