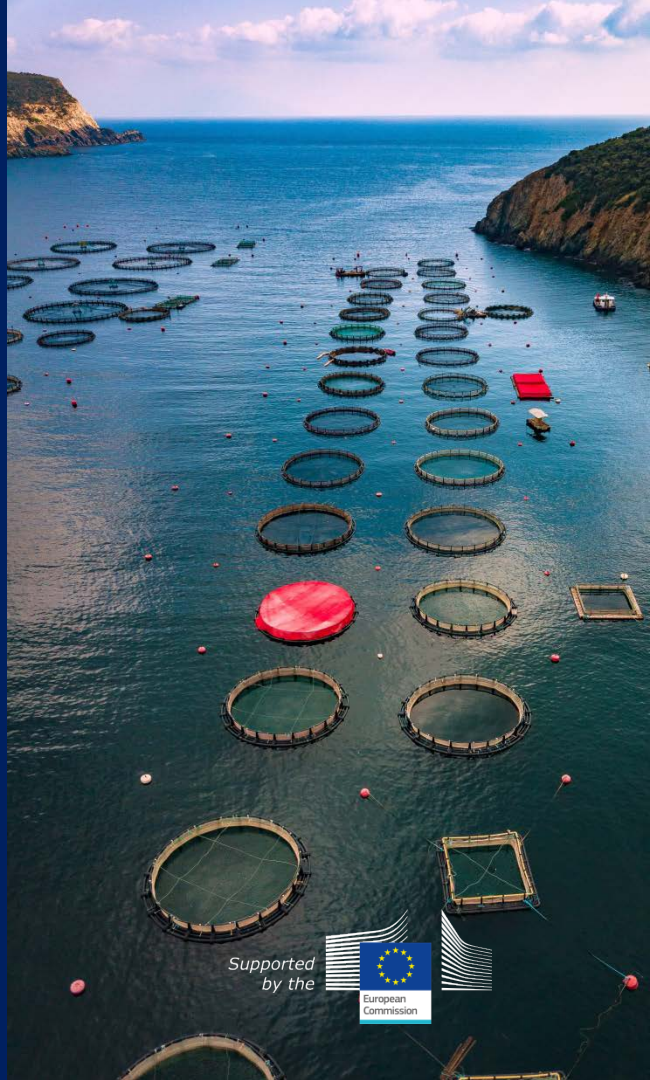
WESTMED
blue economy initiative

Sustainable Aquaculture in the western Mediterranean
Strengthening ties and opportunities with southern partners

BUILDING A FULLY SUSTAINABLE AQUACULTURE SECTOR

Webinar
11 December 2020



House Keeping rules

A few rules before we begin:

- Stay muted at all times
- You can ask questions by using the Chat section
- This webinar will be recorded

If you have any technical issues, you can send an email to events-westmed-initiatives@ecorys.com

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Agenda

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13:30 – 14:00	**Opening of the Event** Time allocated for participants to connect. Event starts at 14:00 sharp.
14:00 – 14:05	**Welcome and Introduction** WestMED National Hubs (Algeria, Morocco and Tunisia), Chairs of the webinar
14:05 – 14:15	Boosting sustainable Aquaculture in the southern Mediterranean Introducty remarks by ***Maria Groueva,*** INTERREG-MED & ***Céline Dubreuil***, Plan Bleu
Building a fully sustainable Aquaculture Sector : Learning from existing projects	
14:15 – 14:45	**Diversification of products and new technologies** • NewTechAqua: **Alessio Bonaldo**, Bologna University (Italy) • BYTHOS: Dr. ***Alexia-Massa Galluci***, AquaBioTech SME (Malta)
14:45 – 15:00	Q&A Session (with southern panelists and audience)
15:00 – 15:30	**Small-scale production, circularity and safety** • Aqua Food Living Lab : ***Michele Colavito***, Project Manager (Italy) • POLE MER : Bluefasma project Tools, ***Colin Ruel*** (France)
15:30 – 15:45	Q&A Session (with southern panelists and audience)
15:45 – 16:15	Role of clusters in fostering sustainable innovation • ACUIPLUS : ***Angela Debenedetti***, Cluster Manager (Spain) • VALORMAR : ***Ana Nobre*** (Portugal)
16:15 – 16:30	Q&A Session (with southern panellists and audience)

Agenda

16:30 – 16:45	**BREAK**
CAPITALISING THE EXPERIENCES IN THE SOUTH: Opportunities ahead for southern partners	
16:45– 17:15	**'Tour de table' and discussion on southern opportunities** Southern stakeholders commenting the projects proposed, WestMED NHs to moderate the exchange through a set of pre-defined questions: • What is the relevance of the presented practices for the southern Med? • Do you foresee specific capitalisation projects to be generated? • What other areas are critical for project development in the south Med? 9 participants selected in exchange with WestMED NHs: • ***Rachid ANNANE***, Ministry of Fish and Aquaculture Administration, Algeria • ***Toufik MILLA***, National Research Centre for Fisheries and Aquaculture Development (CNRDPA), Algeria • ***Romdhane NAOUFEL***, DGPA/Sub-director for Aquaculture, Tunisia • ***Kamel Haj MBAREK***, Technical Centre of Aquaculture, Tunisia • ***Mohamed Salah AZAZA***, Director of Aquaculture laboratory INSTM, Tunisia • ***Mansouri Mohamed AMINE***, Head of Studies at National Agency of Aquaculture Development, Morocco • ***Jahid ASMAE***, Head of Planning at National Agency of Aquaculture Development, Morocco • ***Chadli HOUSN***, Director of AQUA M'DIQ SA – President of Aquaculture Association Morocco – President of Aquaculture Commission at Mediterranean Maritime Fisheries chamber. • ***Brahim MAHFOUDH,*** Director of inland fishing and aquaculture, Mauritania
17:15 – 17:30	Wrap-up and Conclusion: ***WestMED National Hubs (Algeria, Morocco and Tunisia)***

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Strengthening ties and opportunities with southern partners

Welcome and Introduction

Chairs of the webinar

WestMED National Hubs
(Algeria, Morocco and Tunisia)

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Boosting sustainable Aquaculture in the southern Mediterranean

Maria Groueva, INTERREG-MED
Céline Dubreuil, Plan Bleu

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Learning from Existing Projects
Diversification of products and new technologies

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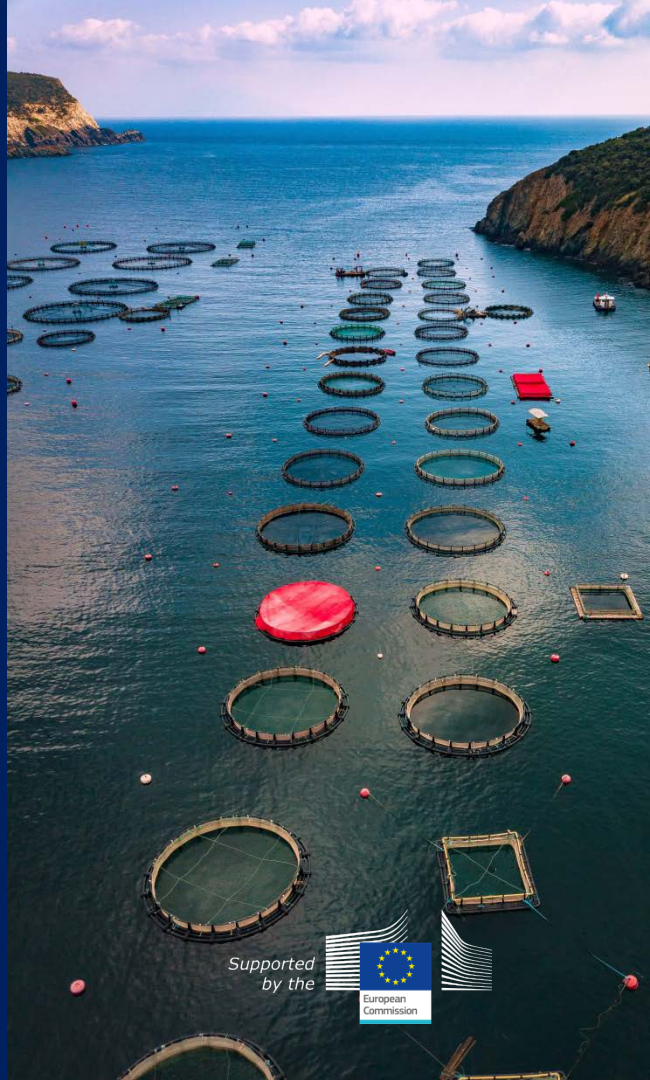

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NewTechAqua : New technology Tools and Strategies for a Sustainable, Resilient and Innovative European Aquaculture.

Alessio Bonaldo, Bologna University (Italy)

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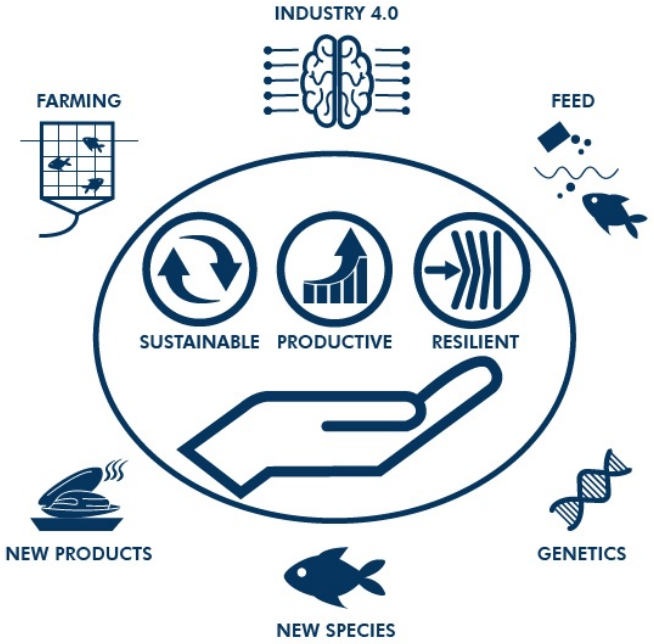

INTEGRATED SOLUTIONS FOR A NEW AQUACULTURE

NewTechAqua

To expand and diversify aquaculture production of finfish, molluscs and microalgae by developing and validating technologically-advanced, resilient and sustainable applications

- 4 commercially most **important finfish** species (salmon, trout, seabass and seabream)
- 4 economically **emerging new species** (amberjack, meagre, sole and mullet)
- 2 **molluscs** (oyster and mussels)
- 3 **microalgae** species

NewTechAqua is a project funded by the European Commission.
This project has received funding from the European Union's Horizon 2020 Research and Innovation programme under Grant Agreement n° 862658.

Challenges

- Three innovative sets of **aquafeeds**, each targeting a specific issue (**pro-health, organic, zero waste**)
- Monitoring systems will aggregate and combine spatiotemporal information (**Big data**) in dynamic complex statistical and **Artificial Intelligence** models for disease prediction and health management
- Welfare indicators, and microbiome analyses (NGS) will be used to evaluate the impact of different rearing systems (**RAS, biofloc technology, aquaponics, ELOXIRAS**) on fish condition.
- **Satellite imagery** by the development and validation of **biosensors** for supporting shellfish industry
- **Innovative breeding programmes** to improve performance, robustness and quality of farmed fish, mollusc and microalgae, using different genomics methods.
- Enhanced know-how of **the reproductive physiology** and on the reproductive dysfunctions of three emerging species**: greater amberjack, meagre and Senegalese sole** under rearing conditions.
- Development of **innovative high-quality seafood** products and of tailored sustainable techniques for **valorisation of by-products** through the preparation of functional ingredients.

NewTechAqua is a project funded by the European Commission.
This project has received funding from the European Union's Horizon 2020 Research and Innovation programme under Grant Agreement n° 862658.

Replicability potential

NewTechAqua is structured in **9 WPs**

The core of the overall methodology are **the WPs 1 to 5**, which represents as a whole the Industrial Innovation

WP6 for impact assessment (Solution Integration)

WP7 for exploitation (Result Capitalization)

WP8 for communication, dissemination and training activities (Education and Outreach)

NewTechAqua is a project funded by the European Commission.
This project has received funding from the European Union's Horizon 2020 Research and Innovation programme under Grant Agreement n° 862658.

NewTechAqua

https://www.newtechaqua.eu/

Alessio.bonaldo@unibo.it

NewTechAqua is a project funded by the European Commission.
This project has received funding from the European Union's Horizon 2020 Research and Innovation programme under Grant Agreement n° 862658.

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BYTHOS : Biotechnologies for Human Health and Blue Growth.

Dr. Alexia-Massa Galluci, AquaBioTech SME (Malta)

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PROJECT

General aims of the project

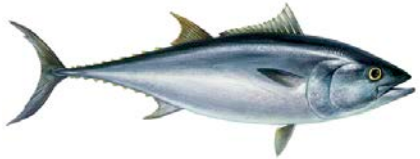
- **Promote integration between research and the business sector** so that results from research in the field of *biotechnology for human health* are taken forward to the market, thereby contributing to generating jobs and business opportunities, and increase investment in research and innovation in the economies of Sicily and Malta.
- **Promote sustainable management of resources and 'cleaner production'** in the fishing industry and food services sector in Sicily and Malta, thereby minimizing risks associated with waste for the environment.

Specific aims of the project

- **Set up a joint living lab** with 'spaces' in Malta and Sicily to work at the interface between research and enterprise.
- **Define biotechnologies and procedures** for the production and commercial exploitation of a range of innovative, stakeholder-driven health products, such as marine collagen and Omega-3 & 6 fatty acids.
- **Minimize the quantity of fish waste** from the fishing sector and food services sector.

CHALLENGES/ LESSONS LEARNT

Engraulis encrasicolus



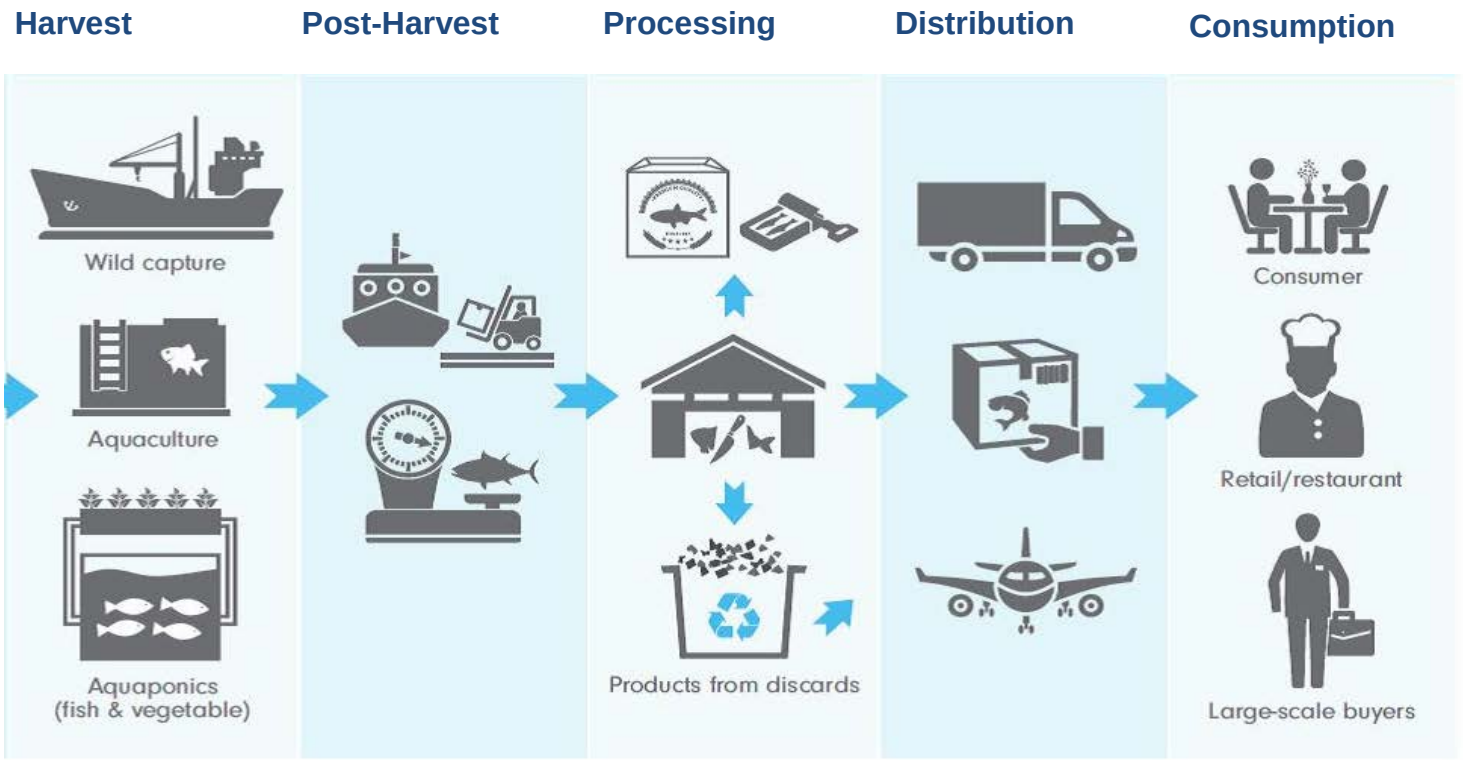
Thunnus thynnus

Mix Fish Scraps

Fishmeal/Fish oil

Marine collagen

REPLICABILITY POTENTIAL

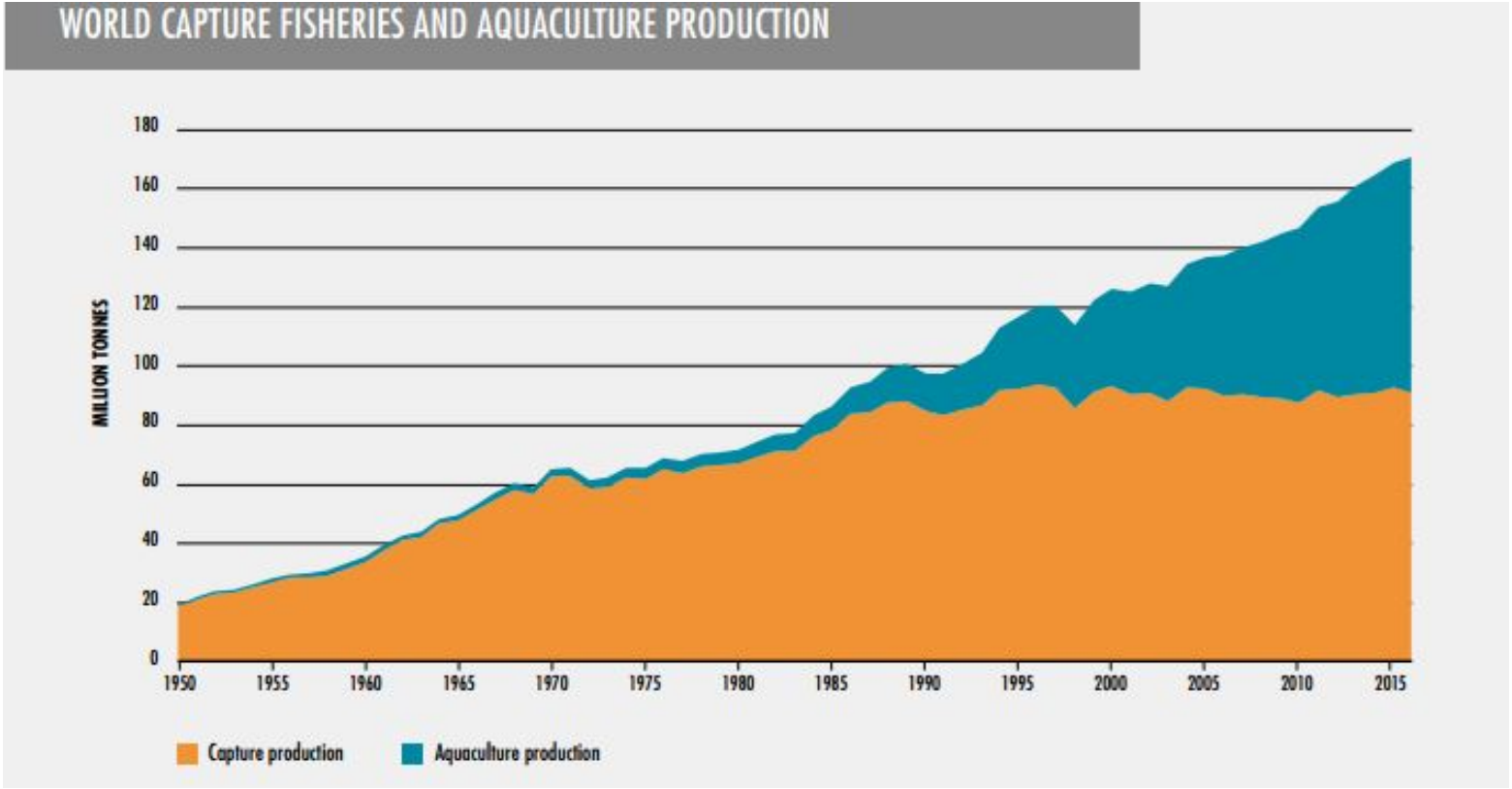


Modified from Manta Inc. 2013

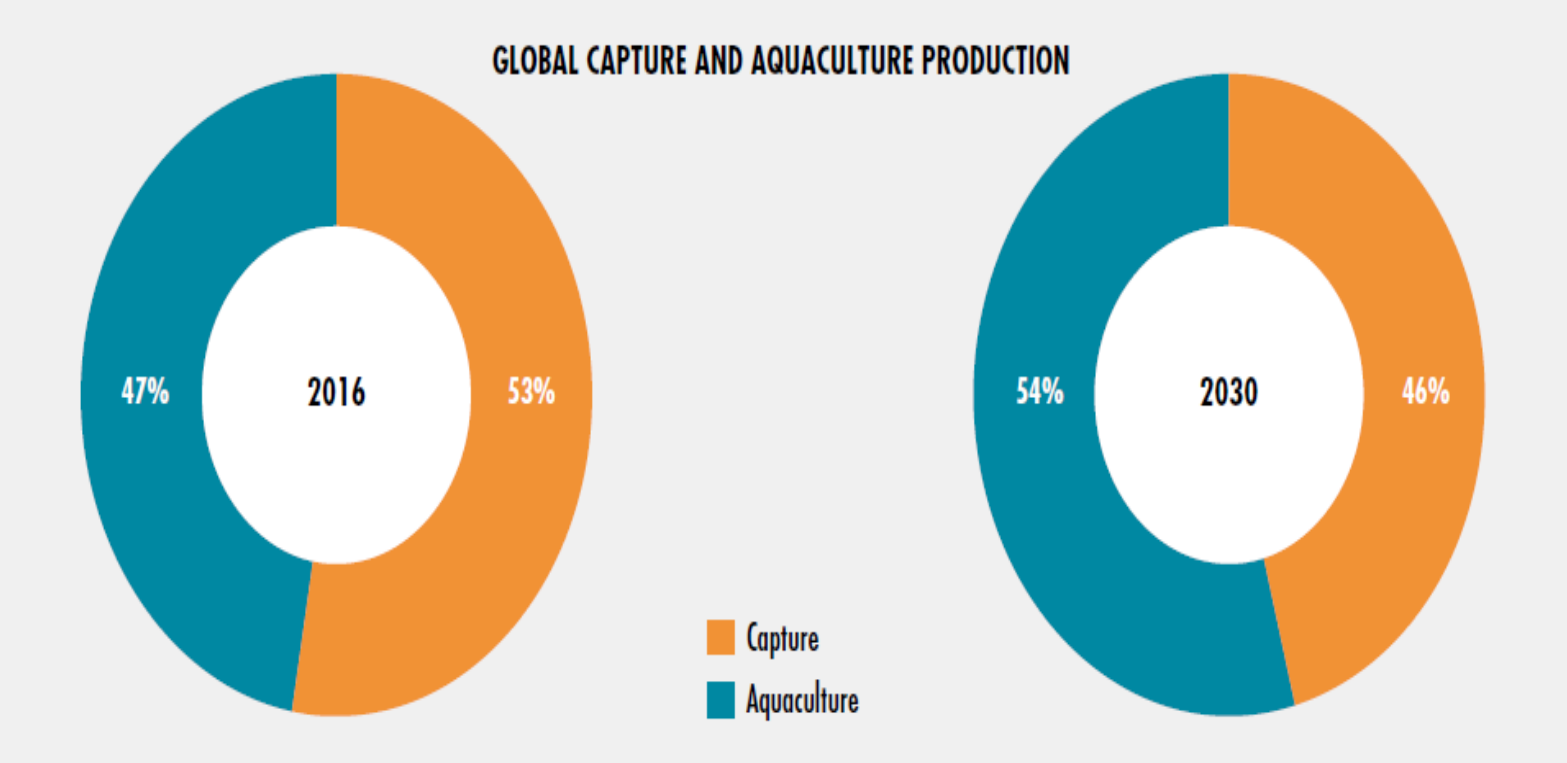
Loss & Waste

35%

REPLICABILITY POTENTIAL



REPLICABILITY POTENTIAL



Contact Details

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AquaBioTech Group

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BUILDING A FULLY SUSTAINABLE AQUACULTURE SECTOR

Learning from Existing Projects
Small-scale production, circularity and safety

Webinar
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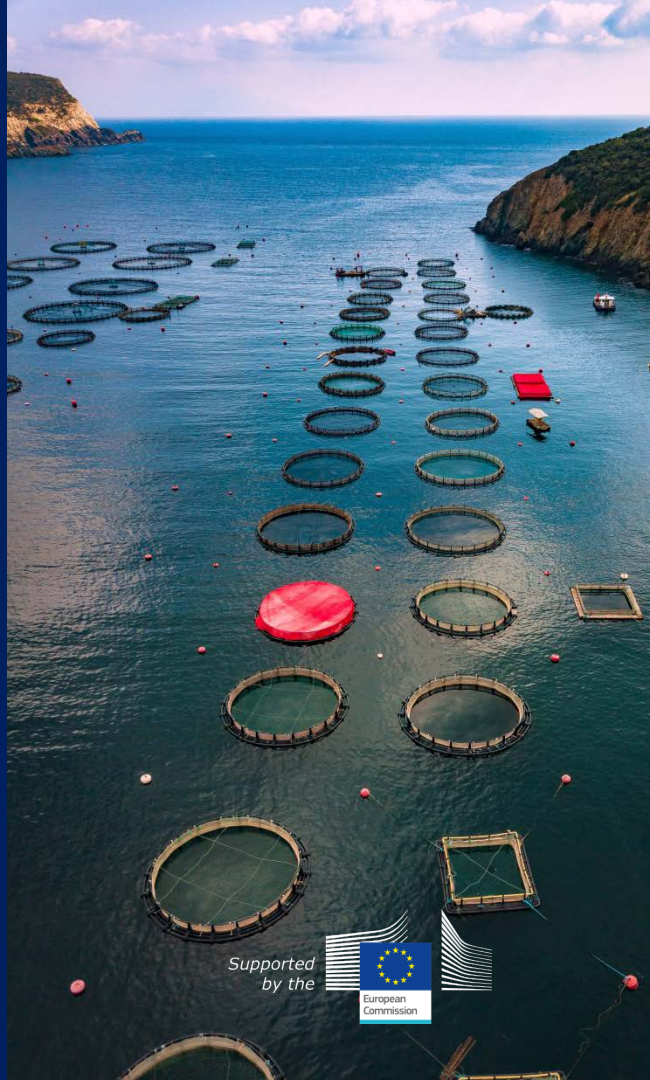

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Aqua Food Living Lab : Transborder (virtual) Living Lab for small-scale sustainable and innovative aquatic food.

Michele Colavito, Project Manager, Assoittica (Italy)

Webinar
11 december 2020

Supported by the European Commission

PROJECT

Transborder (virtual) Living Lab for small – scale sustainable and innovative aquatic food

Overall objective: To improve the employability of young graduates and to strengthen the institutional capacity to implement a sustainable aquatic food system

Specific objectives:

1. To empower technical skills of young graduates through living labs, in order to facilitate their access into the labour market;

2. To improve the capacity building of policy makers at national and local level through the strengthening of the availability of updated information and the support to research and innovation initiatives.

CHALLENGES/ LESSONS LEARNT

The INSTM promoted the establishment of a qualified partnership to define and implement a specific initiative, which is not only a project but also and mainly a process to strengthen cooperation, empower technical skills and improve capacity building at institutional national and local level in the specific field of the aquatic food system to face these challenges.

1. The fragility of food production systems (largely based on global investments towards greater export to an increasingly globalised demand).
2. The high capital intensive model let local communities and economies strongly dependent to global pandemics and other socio-economic shocks – and as such very vulnerable.

If this underpinning challenges for the food-production/supply chains are not addressed, the Mediterranean region as a whole would remain vulnerable and its goal for sustainable and resilient growth would not be achieved.

REPLICABILITY POTENTIAL

At Mediterranean level, the potentials for innovation in local food systems are quite wide-spread – spacing from food security improvement, climate change adaptation, enhancement of food quality, safety and health standards, local production promotion through safeguard, as well as support to family farming and economic diversification of local small businesses and households.

The strength of this project will be the establishment of a transnational network involving stakeholders from different Mediterranean countries including Italy, Tunisia, Morocco, Egypt and Mauritania as a first step, but with the potential to include all the Mediterranean Countries. The medium long term goal, infact, is to promote other projects to be funded in the framework of the opportunities offered mainly, but not only, by Cooperation Programmes.

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BlueFasma : Tools, solutions and methods for circular fishing/aquaculture.

Colin Ruel, Pôle Mer Méditerranée (France)

Webinar
11 december 2020

Supported by the European Commission

Project co-financed by the European Regional Development Fund

The BLUEfasma project

Presented by Colin RUEL

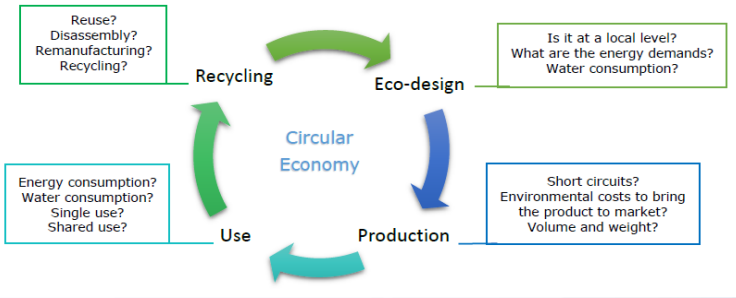
Sustainable Aquaculture in the WestMED: strengthening ties with southern partners, 11 December 2020

Key information

- **Acronym:** BLUEfasma
- **Full Title**: Empowering innovation capacity of SMEs, maritime clusters and networks in MED islands and coastal areas to support blue Circular Economy (CE) growth in fishing/aquaculture
- Led by University of Patras (Greece)
- 14 partners from Greece, France, Portugal, Montenegro, Croatia, Malta, Cyprus and Spain
- **Total budget:** 2,811,585.00 €
- **Duration**: 32 month (started on November 2019)

Overall objective

Promote circular economy principles to Fisheries and Aquaculture domains



Countries and territories participating

Main project activities

BLUEfasma Circular Economy knowledge base; systematizing best practices, tools, solutions and methods in fishing/aquaculture

Example of information you will find

La graine et le muge

Summary:

This project aims to experiment with new fish farming industry: breeding muge, a local omnivorous species. Innovative foods are also tested, through the incorporation of bread from food wazste and then algae produced in integrated circuits.

Relevant project and/or owner of the product: CPIE Bassin de Thau

Year of creation: 2017

Content Language: French

Sector(s): Aquaculture

Key area(s): Primary production (creation, collection or extraction of raw material), Secondary production - processing of goods, Waste Management

Type: Other

Countries: France

Appropriate level for use/implementation: Local, Regional

Relevat to: SMEs, Enterprises

Link: https://view.genial.ly/5e37efb1e3c08b42822a0985

The **BLUEfasma partnership** identifies, already developed, innovative best practices, tools, solutions, and methods related to the Circular Economy (CE) in the key blue growth sector of fishing/aquaculture. The **BLUEfasma Circular Economy** knowledge base systematizes them in order to deliver a well-organised online library to relevant SMEs and maritime clusters/networks assisting them to improve their innovation capacity on CE in fishing/aquaculture.

If you want to add your own CE best practice, tool, solution or method in the BLUEfasma CE knowledge base, feel free to contact project's partnership sending all relevant information via email to BLUEfasma@gmail.com and we will come back to you.

Project Concrete Results

BLUEfasma circularity self-assessment tool being used as a **unified MED measure** of SMEs readiness & willingness to invest in CE

114 stakeholders took part in the activities. (companies and individuals from the fishing and aquaculture sector, from primary production to secondary production and retailers)

Main conclusions and challenges

Lack of knowledge on the Circular Economy process	There is a general lack of awareness about Circular Economy initiatives and the benefits they can bring to companies. This is linked also to the lack of awareness of the real meaning behind "Circular Economy". Indeed, some circular practices are implemented without being labelled as such. Therefore, there is a need for clarification on the definition, goals, and advantages of Circular Economy principles.
Most of the beneficiaries are small and independent	This mainly concerns fishermen and small aquaculture farms. Most of them are small and independent and thus have limited control over waste flows. For instance, the use of crates is often governed by the purchasing company and this gives little control over the use of recycled crates and managing processing waste.
Lack of financial resources	One of the biggest obstacles is economic investment. Investing in alternative practices or technologies, such as eco-friendly vessels implies a level of investments that small companies cannot usually reach. Additionally, there is often a lack of knowledge regarding financial aid which can support them in their shift towards Circular Economy .
Lack of administrative support	Another difficulty is the lack of assistance with the administrative procedures for financial aid or installation support. Stakeholders need to be guided for the implementation of Circular Economy in their activities. However, they have the feeling that there is not enough involvement of the different public administration stakeholders related to the sectors. There is a need for support in the implementation of CE.

Circular Economy stage	Challenges
Eco-design	• Reduce energy consumption and carbon emissions through better insulated cooling rooms or boat engines less dependent on fossil fuels • Find alternatives to plastics by replacing single-use plastic bags by plastic from recycling or reusable bags
Production	• Create added value for waste • Use discarded fish/shellfish in other phases of the production cycle • Link with other sectors (agriculture)
Use	• Sharing or mutualise large equipment and boat • Repair and reuse discarded nets/ropes/cages/ boxes and crates
Recycling	• Recycle materials such as fishing nets, fishing gear and aquaculture equipments at the end of a product's life • Recycle shells in aquaculture

Current activities

- ✓ **BLUEfasma e-network** established to facilitate experience exchange & networking among all actors of fishing/aquaculture sector
- ✓ A memorandum of understanding already signed by 45 organizations

Current activities

Implementation on Blue Livings Labs (BLLs) to integrate R&I and create user-centered open innovation ecosystems **focused on circularity increase in fishing/aquaculture in each participating country**

What is foreseen in our Living Lab

- From now to April 2021
- Focus on the management of production waste: shellfish waste (oyster and mussel) or fish waste (off size, fish mortality, processing product, bycatch).
- Key Activities:
    - Study other maritime facades to better understand how the problem of production waste is treated there;
    - Define strategies for improvement / organization of existing circuits in order to include SMEs which are not there today and collectively think about alternative systems allowing them to recover their waste.
- How: Working groups/ individual coaching for selected SMEs

Thank you for your attention

Colin RUEL
Pôle Mer Méditerranée
ruel@polemermediterranee.com

Project co-financed by the European Regional Development Fund

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Learning from Existing Projects
Role of clusters in fostering sustainable innovation

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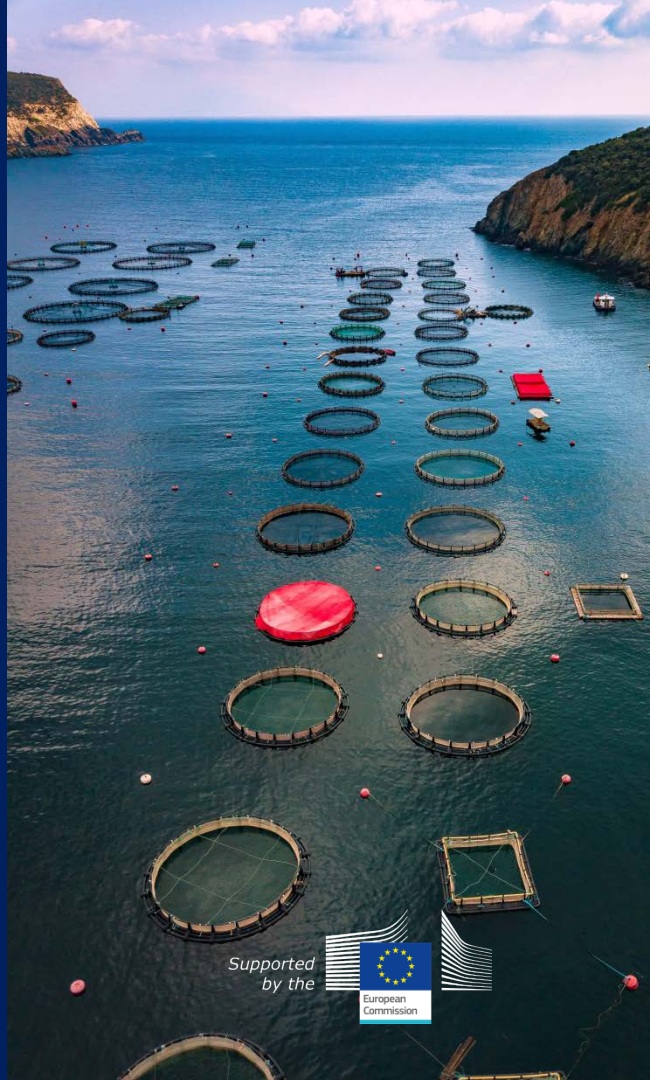

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ACUIPLUS : Competitiveness and sustainability of the aquaculture value chain.

Angela Debenedetti, Cluster Manager (Spain)

Webinar
11 december 2020

Supported by the European Commission

PROJECT

CLUSTER acuiplus

WE ARE THE AQUACULTURE VALUE CHAIN

Spanish aquaculture cluster working on the promotion of competitiveness and sustainability of the Aquaculture value chain.

REDAQUA

Strengthening of networking, professionalization and training in the field of aquaculture, through innovation and knowledge transfer

- Identification of training needs and challenges
- Network of Training and R+D at a national level
- Organization of worshops focusing on relevant topics on Aquaculture Ententrepreneurship
- Promotion of collaboration of stakeholders
- Proposal of Roadmap for strengthening of training and professioanlization of sector
- Implementation of Observatory

UAB Universitat Autònoma de Barcelona

USC Universidade de Santiago de Compostela

UCA Universidad de Cádiz

iepaac

Gobierno de España · Vicepresidencia Cuarta del Gobierno · Ministerio para la Transición Ecológica y el Reto Demográfico

Fundación Biodiversidad

PROGRAMA pleamar

Unión Europea

Fondo Europeo Marítimo y de Pesca (FEMP)

CHALLENGES/ LESSONS LEARNT

Sustainability production

Animal welfare

New technologies

CHALLENGES

Reduction of environmental impact

Security and quality

Stronger value chain

REPLICABILITY POTENTIAL

REDAQUA

Extrapolation at a European level

Strengthening of the competitiveness of European aquaculture through innovation, knowledge transfer and improved professionalization

- ✓ **Identification of needs and challenges in training at an European level**
- ✓ **Proposal of a international collaboration network with the representation of reference entities at European level**
- ✓ **Development of training and capacity building initiatives**
- ✓ **Exchange of researchers, companies and trainers at an European level**
- ✓ **Proposal of projects addressed to face the challenges in Aquaculture under the approach of a better training and professionalization of the sector**

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VALORMAR : IT tools to support aquaculture management and feeding optimization

Ana Nobre *(Portugal)*

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PROJECT

ValorMar

Valorização integral dos recursos marinhos

Full valorisation of marine resources: potential, technological innovation and new applications

IT tools to support aquaculture management and feeding optimization

sparos I&D nutrition in aquaculture

Ana Nobre @sparos.pt

Cofinanciado por: COMPETE 2020 Lisb@20 20 CRESC ALGARVE 2020 PORTUGAL 2020 UNIÃO EUROPEIA Fundo Europeu de Desenvolvimento Regional

CHALLENGES/ LESSONS LEARNT

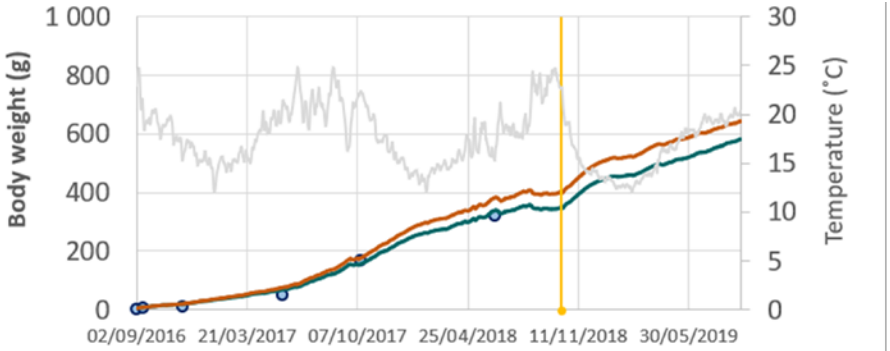
Real farm application

- Dashboard with daily updated estimates
- Long term and real-time predictions of relevant production site variables

FEEDNETICS

DAILY SUMMARY OF PREDICTIONS			
Current day	15-Oct-18	UPPER RANGE	LOWER RANGE
STOCK			
Avg. body weight	g	349	404
Number of fish	-	97 780	82 230
Biomass	ton	34	33
FEED	bags / day	**9**	**9**
PERFORMANCE			
FCR (cumulative)	-	2.0	2.0
WATER			
Temperature	°C	**20.8**	

FEED STOCK PLANNING FOR NEXT WEEKS			
		Feed bags (cumulative)	
1 WEEK	22-Oct-18	58	56
2 WEEKS	29-Oct-18	111	105
3 WEEKS	5-Nov-18	153	144
4 WEEKS	12-Nov-18	192	180



Predicted harvest date			
For commercial weight (g)	450	500	600
Prediction upper range	**04-Jan-19**	**22-Apr-19**	**01-Sep-19**
	-	-	-
Prediction lower range	**10-Nov-18**	**16-Dec-18**	**12-Jun-19**

REPLICABILITY POTENTIAL

geral@valormar.pt

HIDROMOD

Meteo-oceanographic data and predictions

Integrated service

sparos I&D nutrition in aquaculture

Nutritional based prediction tool for fish farmers

FEEDNETICS

NAVIA

AGILE OPERATIONS SOFTWARE

Field data acquisition and operations management

RIASEARCH

Data analysis service

blueminer

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BREAK
See you in 15 minutes !

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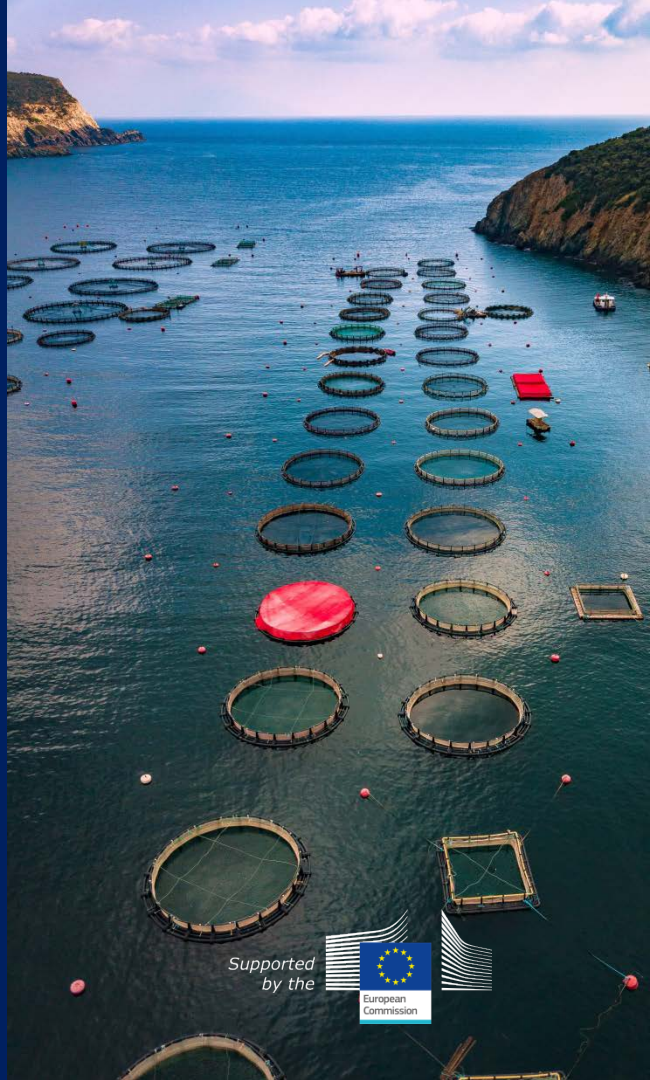

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CAPITALISING EXPERIENCES IN THE SOUTH

Opportunities ahead for southern partners

‘’Tour de table” and discussion on southern opportunities

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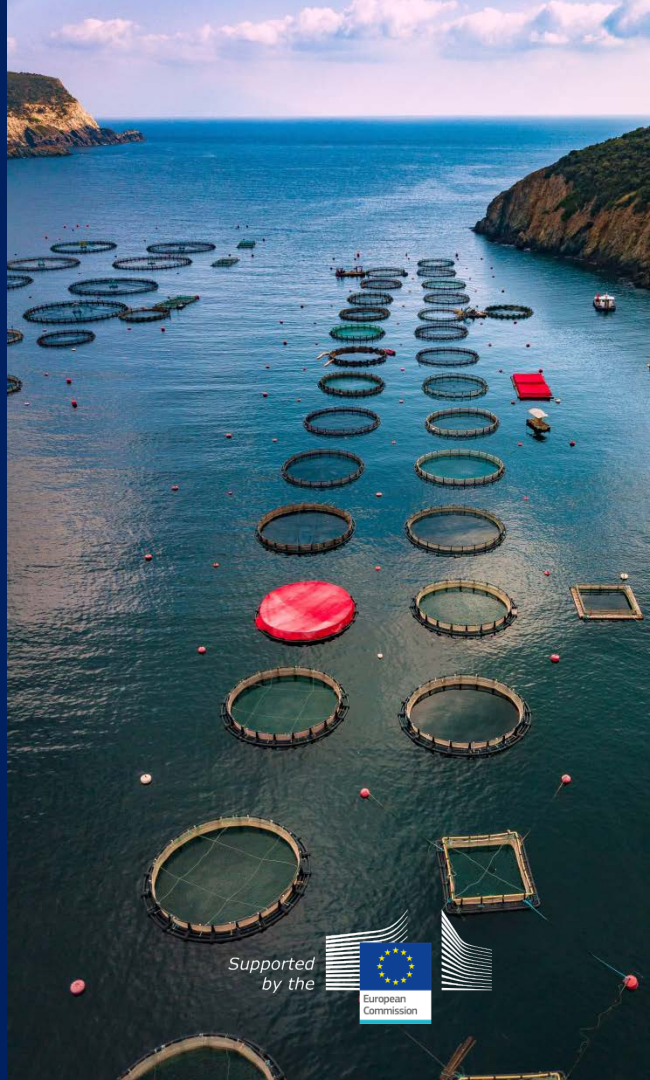

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‘’Tour de table” and discussion on southern opportunities

ALGERIA

Rachid Annane, *Ministry of Fish and Aquaculture Administration*

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ALGERIA

Toufik Milla, National Research Centre for Fisheries and Aquaculture Development (CNRDPA)

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TUNISIA

Romdhane Naoufel, DGPA/Sub-director for Aquaculture

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TUNISIA

Kamel Haj Mbarek, Technical Centre of Aquaculture

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TUNISIA

Mohamed Salah AZAZA, Director of Aquaculture laboratory INSTM

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11 december 2020

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المعهد الوطني لعلوم وتكنولوجيا البحار
Institut National des Sciences et Technologies de la Mer
INSTM

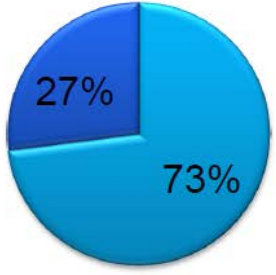
La Recherche Aquacole En Tunisie

Dr Mohamed Salah AZAZA

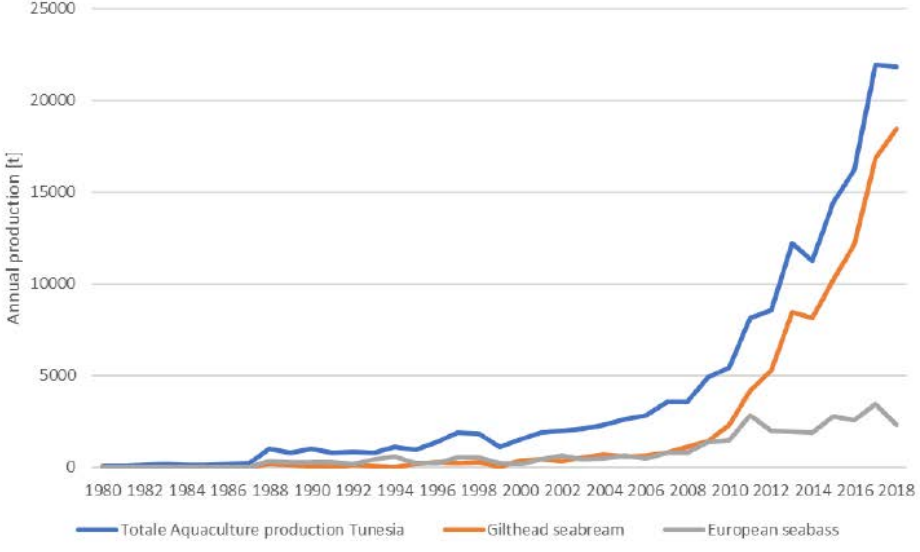
Supported by the European Commission

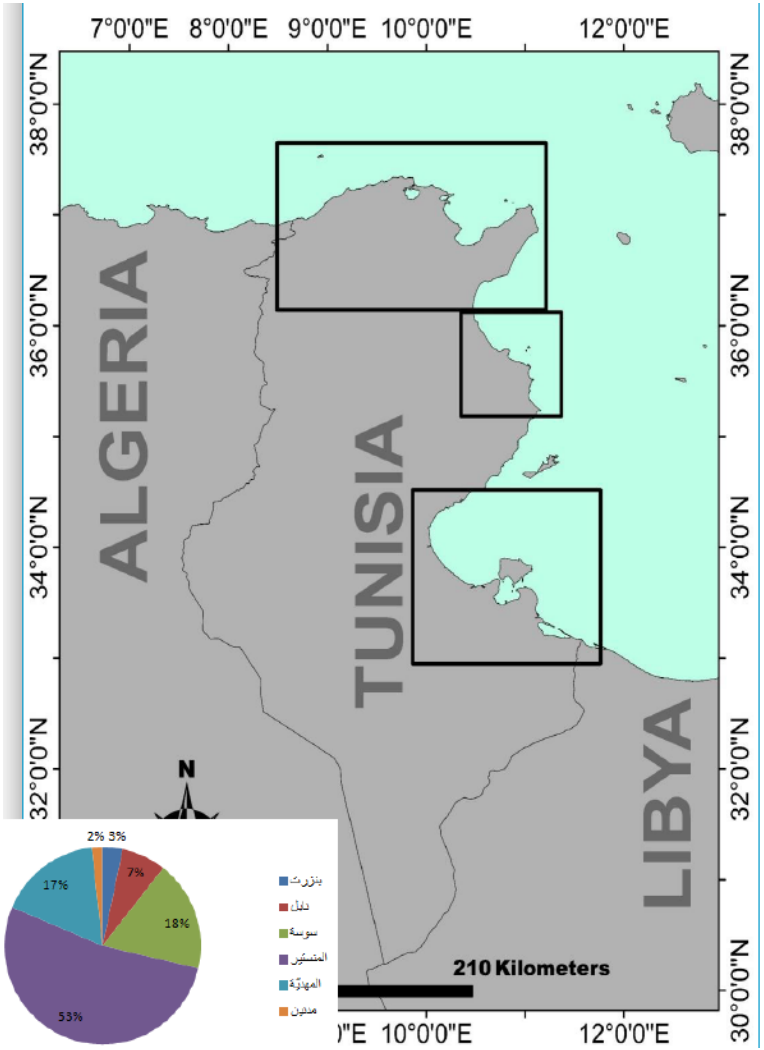
WESTMED blue economy initiative

Aperçu sur Aquaculture Marine en Tunisie



Sea Bream

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10°0'0"E
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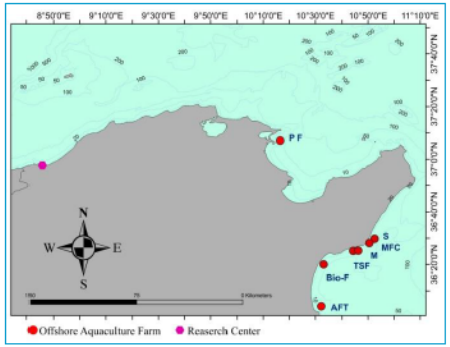
36°0'0"N
34°0'0"N
32°0'0"N
30°0'0"N
ALGERIA
TUNISIA
LIBYA
N
210 Kilometers

2%
3%
7%
18%
53%
17%
بنزرت
تابلة
سوسة
المنستير
المهدية
مدنين

10%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S
MFC
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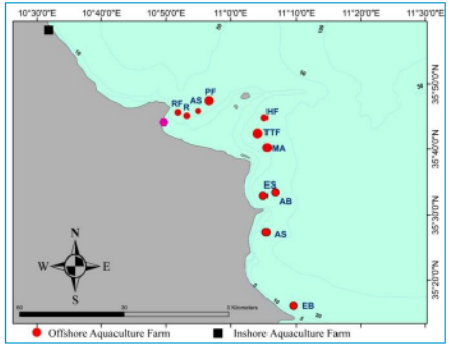
TSF
Bio-F
AFT
Offshore Aquaculture Farm
Reaserch Center

88%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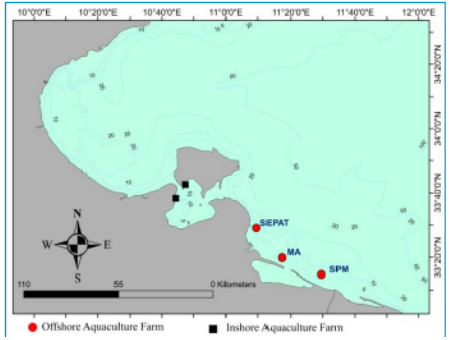
Offshore Aquaculture Farm
Inshore Aquaculture Farm

2 %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33°20'0"N
N
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S
SIEPAT
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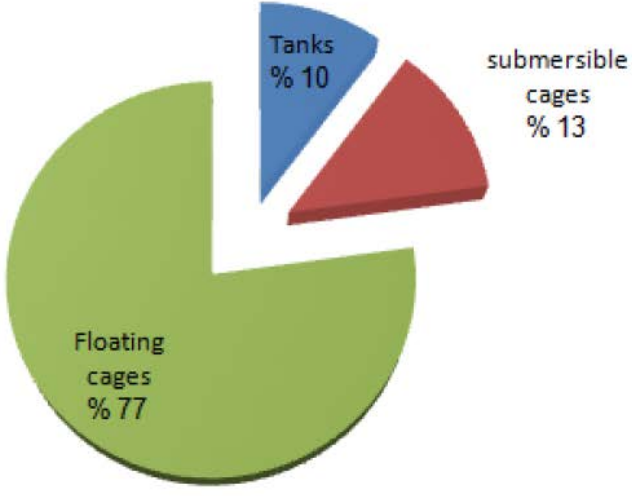
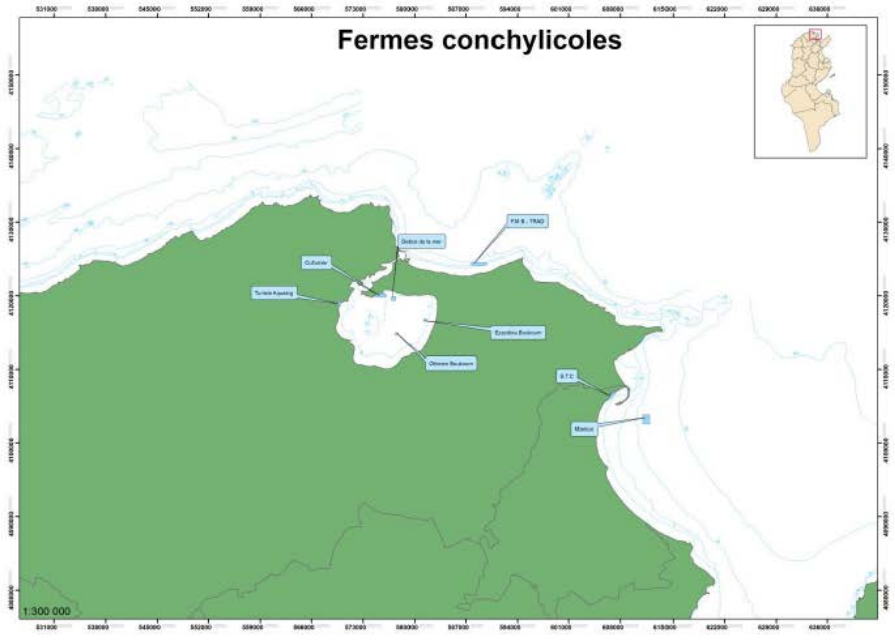
SPM
110
55
0 Kilometers
Offshore Aquaculture Farm
Inshore Aquaculture Farm

Le système de Production



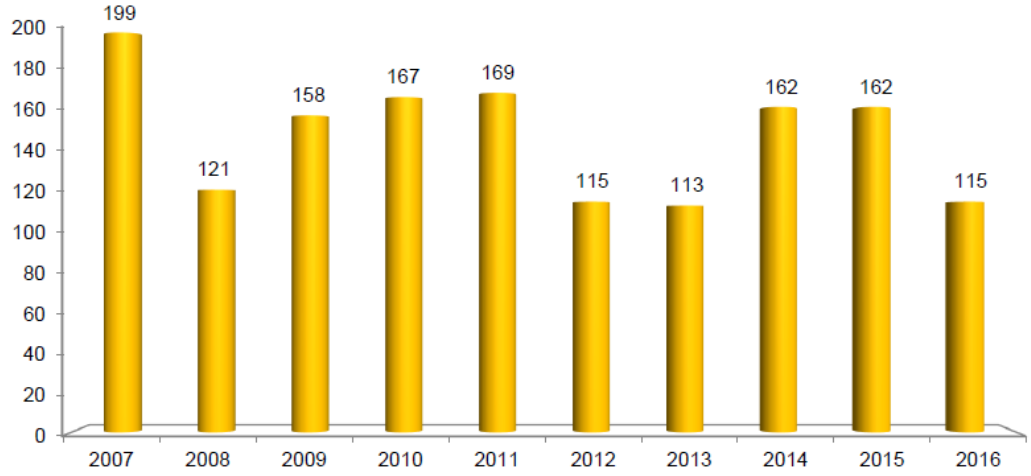
Site de production conchylicoles



Shellfish culture

longline system
Floting lines
In Bags On tables

Evolution of shellfish culture production during 2007-2016



Employments	Production (Tons) 2016	Nb of farms
110	115 Tons = 1% of total production	7 active Farms

Bluefin tuna

- Production 2016: 218 Tons

Micro algae: *Spirulina spp*

-5 Farms spiruline
- Production: 4 tons (DM)

Objectif général du programme de recherche

- La production aquacole actuelle est de l'ordre de 22 000 tonnes
- La stratégie (2030): 56 000 tonnes

Le programme vise à l'élaboration des outils scientifiques et techniques qui contribueraient à une gestion rationnelle de la production aquacole, permettant d'assurer un compromis entre les deux défis que l'aquaculture tunisienne doit relever ;

- Nécessité d'accroissement de la production
- Impérativité de durabilité de ce secteur

Mise en œuvre du programme

- Priorités de la recherche agricole en Tunisie à l'Horizon 2030 (http://www.iresa.agrinet.tn/index.php/fr/actualites/item/2395-priorites-de-la-recherche-agricole-en-tunisie-a-l-horizon-2030)

- Stratégie de développement de l'Aquaculture 2030 élaborée par la DGPA (MARHP)

- Concertation du CTA, de la FTA et de l'UTAP

→ Programme de recherche-Développement

Le programme de recherches

Intitulés des projets de recherche
Projet 1 : Appui au Développement de la Pisciculture et de l'Algoculture Marines. (**AD-PALM**)
Projet 2: Amélioration de la Production Aquacole Continentale (**APAC**)
Projet 3: Repeuplement et Diversification des Techniques et des Espèces de Bivalves (**Re-DiTEB**)
Projet 4 : Caractérisation et Atténuation des Pathogènes Aquatiques et des Interactions Aquaculture –Environnement (**CAPAIA**)

Projet 1 : (AD-PALM)

Appui au Développement de la Pisciculture et de l'Algoculture Marines.

Action 1:

Diversification des espèces

Mugil cephalus et **le maigre (*Argyrosomus regius*)**

Action 2: Amélioration des performances zootechniques Loup et la Daurade (Nutrition et alimentation et bien être)

Compression du cout de l'aliment

- Substitution des ingrédients couteux
- Optimisation de la gestion des aliments:

  Fréquences de nourrissage,
  hétérogénéité de taille,

- Bien être
- qualité du produit

Aspects Environnementaux et Acceptabilité Sociale

- Aménagement des sites de production: Approche AZA, capacité de charge des sites potentiels de production

- Suivi des interactions Aquaculture-Environnement

Promouvoir et développer une aquaculture multi-trophique durable et intégrée

PATINER

Coopération transfrontalière
ITALIETUNISIE

IAS
Istituto per lo studio degli impatti Antropici e Sostenibilità in ambiente marino

UNIVERSITÀ DEGLI STUDI DI PALERMO

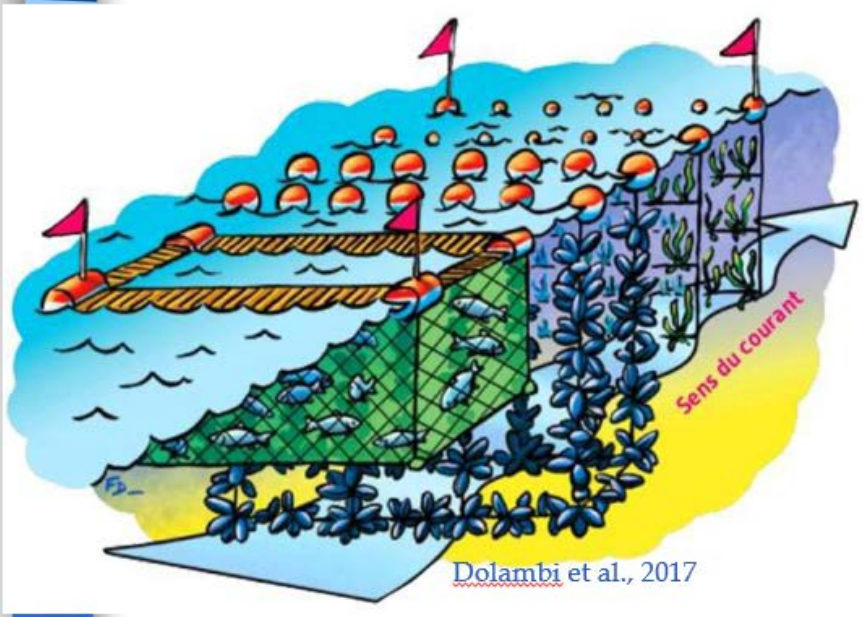
INSTM

CENTRE TECHNIQUE d'Aquaculture

T.T.F

Notre Grand Bleu

Action 2:
la mytiliculture en système intégré



Dolambi et al., 2017

Objectif du PATINER

Le projet propose la mise au point de systèmes d'aquaculture intégrés équilibrés qui combinent, dans des proportions adéquates, l'élevage de poissons à la culture des coquillages, des algues, etc.).

- Des caractéristiques du site
- De leurs rendements (rentabilité économique)
- De leurs capacités d'assimilation

- Améliorer la rentabilité économique de l'exploitation aquacole: (amélioration de la production, réduction des coûts, diversification des produits, création d'emplois …

- Accroître la durabilité environnementale (services écosystémiques et technologies écologiques pour améliorer *la santé* des écosystèmes)

- Améliorer l'acceptabilité pour la société (meilleures pratiques de gestion, appréciation de produits différenciés et sûrs)

→ **Les principes du développement durable**

Projet 3: (ReDiTEB)

Repeuplement et Diversification des Techniques et des Espèces de Bivalves

Action 1:

Repeuplement: Palourde dans le Golfe de Gabès

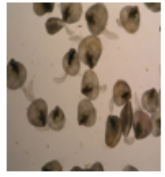
Production artificielle de la palourde *R decussatus*.

élevage larvaire

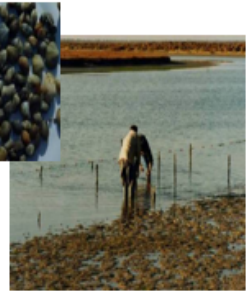
D- Larvae stage

Prégrossissement

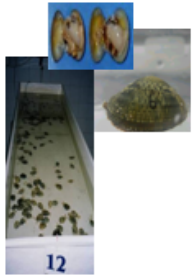
Post-larves



Juveniles



Grossissement



Conditionnement des reproducteurs

Repeuplement du stock dans les sites à problème

Augmentation de la production suite à la diminution des maladies et amélioration de la qualité des produits de la mer

- Carte spatio-temporelle de la distribution des pathogènes.
- Réduction du nombre de fermeture des zones de production de palourde suite aux alertes sanitaires.

Action 3:
Diversification: *Solen marginatus*

Projet 4 :(CAPAIA)

Caractérisation et Atténuation des Pathogènes Aquatiques et des Interactions Aquaculture –Environnement

Action 1 : la maîtrise et le développement d'outils et d'approches visant à mieux prévenir et contrôler les maladies d'animaux aquatiques

- L'Amélioration et le renforcement des capacités de diagnostic des maladies d'animaux aquatiques selon les normes internationales l'OIE/EU

- L'identification et la recherche de nouveaux pathogènes/réservoirs: réduire le risque d'introduction et de propagation de maladies.

- L'étude de l'émergence et de la dissémination des résistances aux antibiotiques aux seins des fermes aquacoles

Action 2 :

Utilisation des probiotiques: (alternatifs à l'antibiothérapie et les traitements chimiques)

Action 3 :

L'étude des interactions des systèmes de production avec l'environnement aquatique

- Pisciculture (Baie de Monastir)
- Conchyliculture (Lagune de Bizerte)


THANKS FOR YOUR
ATTENTION!

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Sustainable Aquaculture in the western Mediterranean
Strengthening ties and opportunities with southern partners

"Tour de table" and discussion on southern opportunities

MOROCCO

Mansouri Mohamed Amine, Head of Studies at National Agency of Aquaculture Development

Webinar
11 december 2020

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MOROCCO

Jahid Asmae, Head of Planning at National Agency of Aquaculture Development

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MOROCCO

Chadli Housn, Director of AQUA M'DIQ SA – President of Aquaculture Association Morocco – President of Aquaculture Commission at Mediterranean Maritime Fisheries chamber

Webinar
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MAURITANIA

Brahim MAHFOUDH, Director of inland fishing and aquaculture, Mauritania

Webinar
11 december 2020

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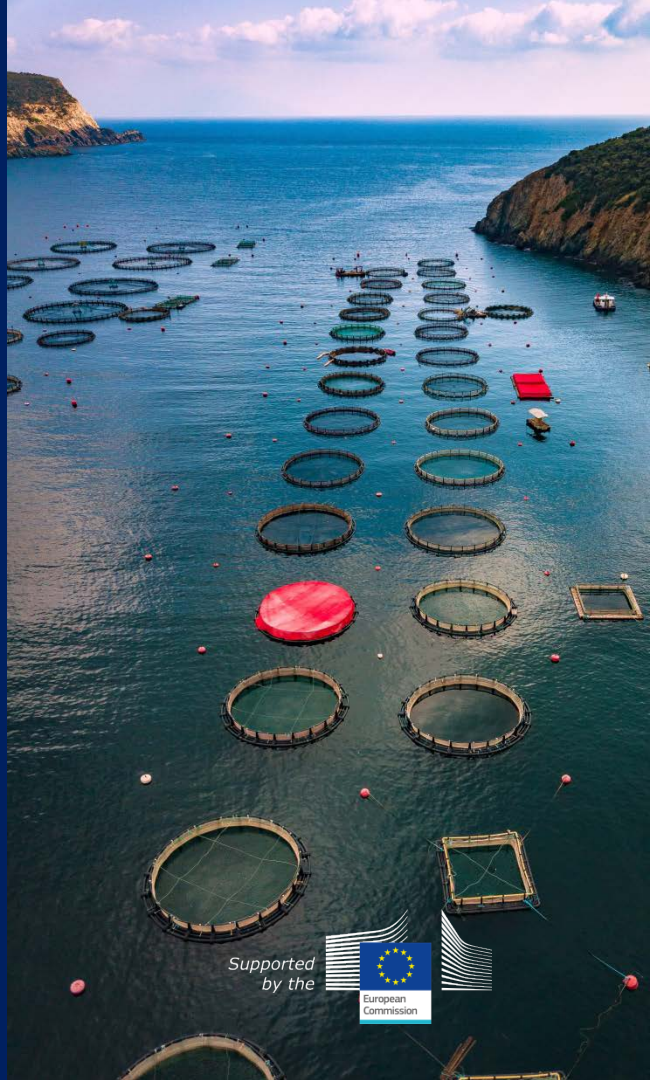
Wrap-up and Conclusion

WestMED National Hubs

(Algeria, Morocco and Tunisia)

Webinar
11 december 2020



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THANK YOU

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