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SMART ADRIA

The Blue Growth Mapping Study with a special focus on Puglia Region

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Aims

Knowledge phase

knowledge base and state of art of blue economy in the territories of the Programme area under the lens of the Quadruple Helix model.

Exploration phase

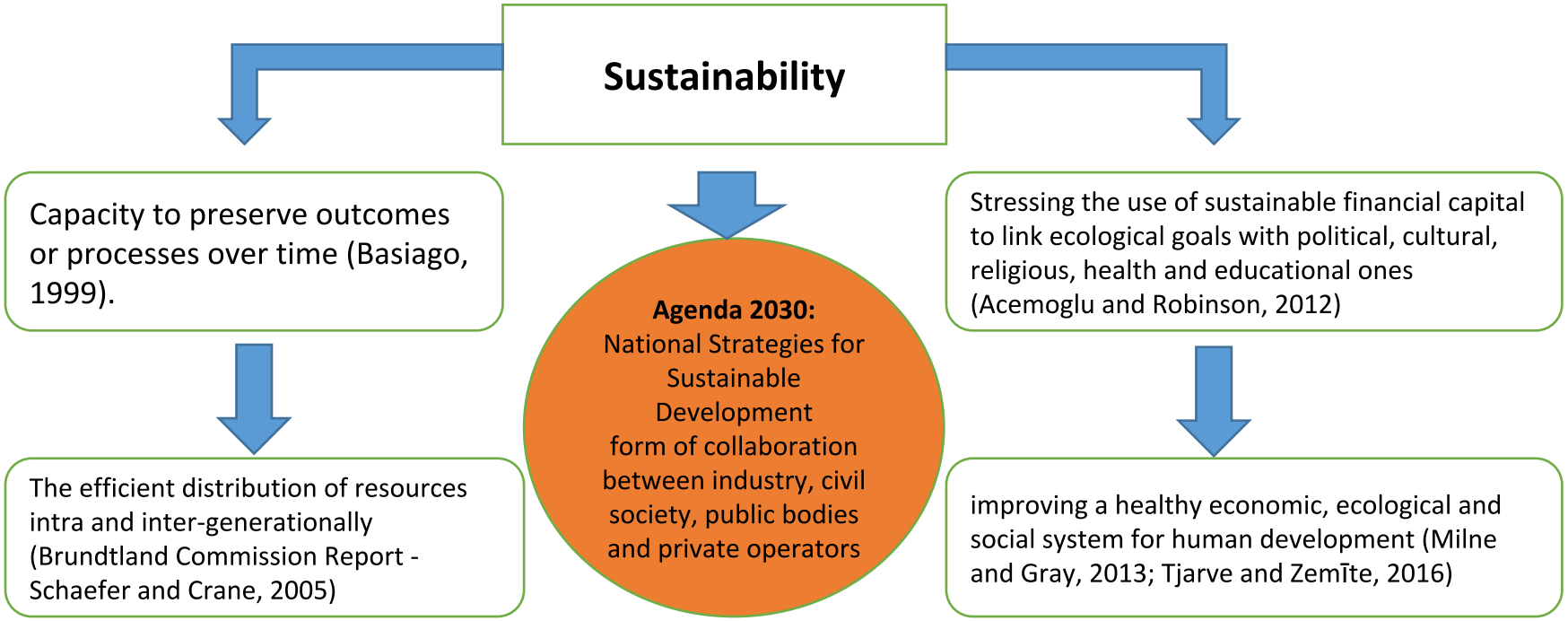
Mapping stakeholders analysis and potential links with innovation processes on blue economy/blue growth. Case study: Puglia Region. This part constitutes the core of the report.

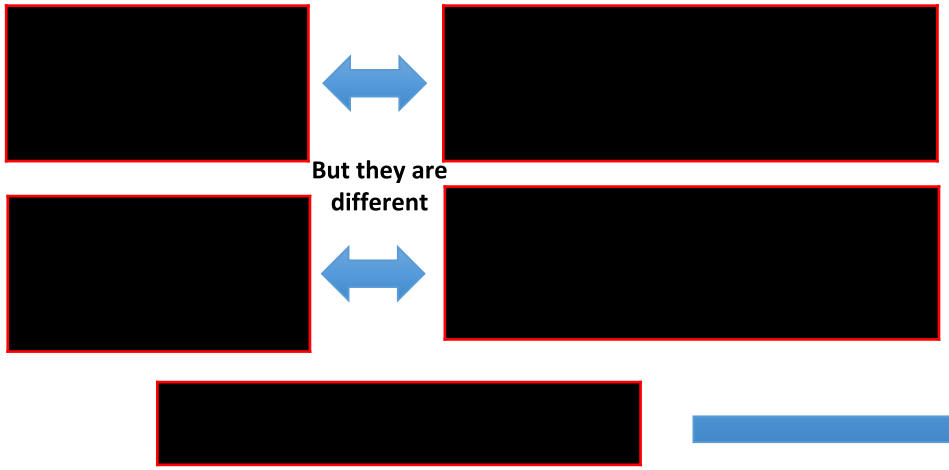
Exploitation phase

Potential collaboration processes in the perspective to improve the cooperation among the **Quadruple Helix stakeholders**, i.e. institutions, private operators, university/research institutions and civil society on blue economy in a long-run perspective (Blue Growth)

Sustainable development, Blue economy and Blue growth

- Connections between blue economy, blue growth and sustainable development
- Blue economy & Blue Growth. The risk that it remains yet a fashionable concept is still real!
- Then….Governments throughout the world are trying to move from sustainability-theoretical approaches to pragmatic and operational actions.
- The Programme area





- Several meanings to blue economy (WB, Middlebury Institute of International Studies) and blue growth (Limassol Declaration)
- RIO (2012)
- FAO
- EU

PUGLIA

- Blue Regional Growth is a strategic sector
- Blue Economy and Strategy for Intelligent Specialization (2018)
- Common strategies to develop synergies between sea with the most traditional and historical sectors (Strategic document for SmartPuglia 2020)

MOLISE

- Regional Council Resolution no. 438 of 10 September 2018 "POR FESR FSE MOLISE 2014-2020 - Axis 8 Education and Training - Action 8.1.1" training courses strictly connected to the needs of job reintegration and initiatives aimed at fostering a blue economy have been launched.
- Projects on blue growth and BIG cluster foster the positioning for Interreg IPA 2021-2027.

ALBANIA

- The need for complementary measures also emerges in Albania which suffers the impact of climate change on the coastal areas with the consequence of increasing coastal erosion, flooding, water salinity, waste and plastic litter mostly from the coastal tourism.
- **Opportunities:** the adoption of the National Fisheries Strategy, the participation in projects and new initiatives to reduce pollution.

MONTENEGRO

- Constraints: geography and scarce accessibility
- Opportunities: Measures defined within the framework of the NSSD 2030 strategic goal Participation in important projects of the Interreg IPA Programme

The «Quadruple Helix» approach

FOCUS

The quadruple-helix model is a model of cooperation which includes various actors from the public and private sectors and academia, with an emphasis on civil society such as citizens and their needs within a knowledge-based economy.

RATIONALE

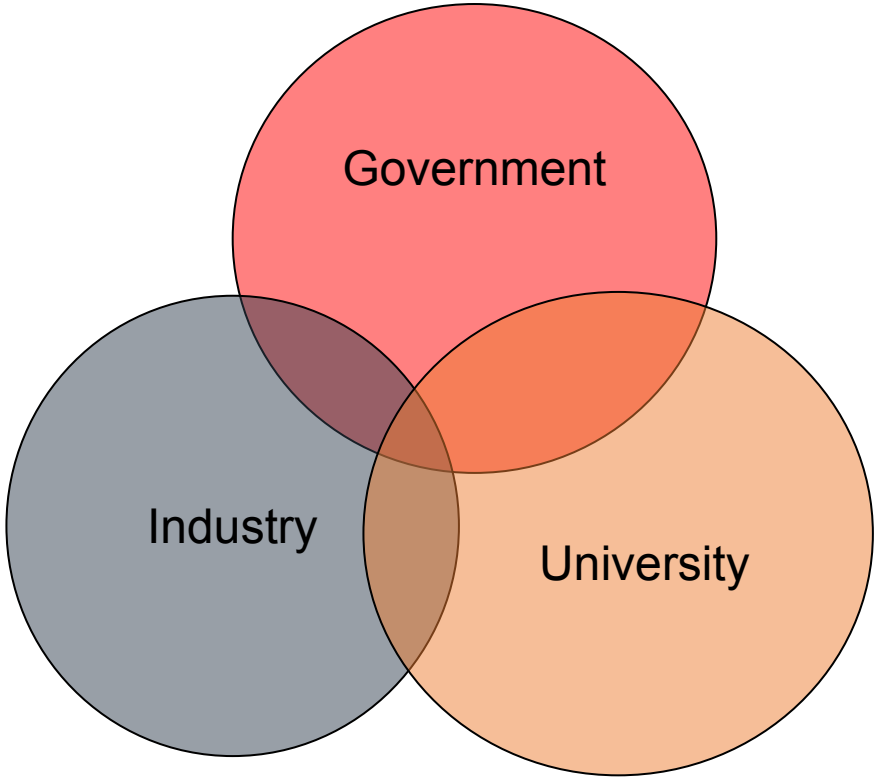
The complex mechanism of complementarity between Programmes, measures and interventions claims for increasing interrelations among various actors, as each of them may provide expertise from its own sphere and create critical mass

NOVELTY

Mapping existing and potential actors and stakeholder directly and indirectly involved on Blue economy

The main goal was to link innovation with civil society on the base of cross-functional cooperation among diverse fields

Innovation at the Intersection among Institutional Spheres



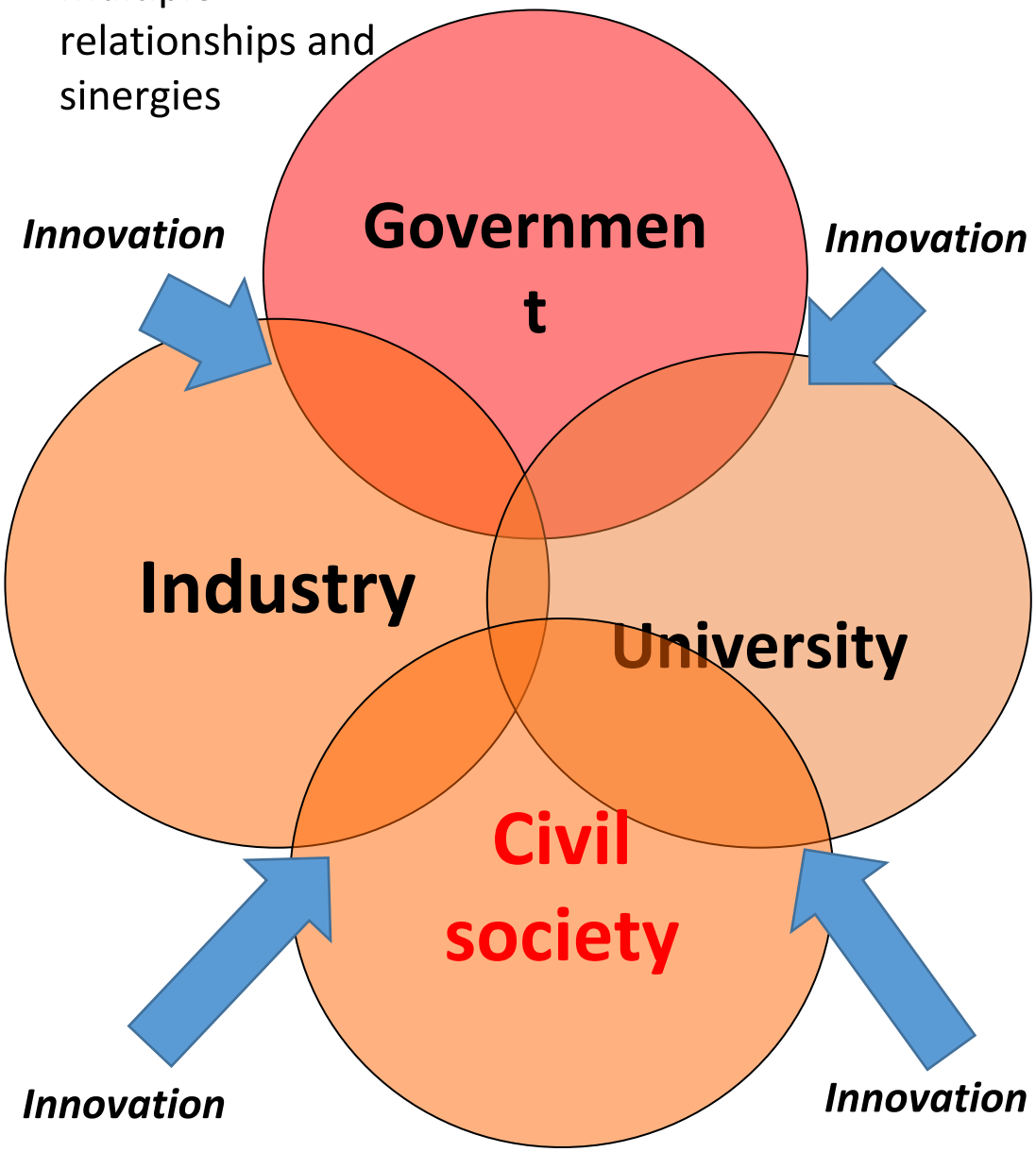
1. Institutions
2. Business world
3. University/research

- The interplay of firms, university and governent(s) provide higher efficiency and easier access to basic and advanced information
- This in turn helps to expand research activities in a long term vision

For instance, the teaching staff offer consultancy to companies whereas the companies co-finance projects together with universities

- The THM has emerged as a reference framework for the analysis of the knowledge-based innovation systems
- (Etzkowitz and Laydesdorff, 1997)

Triple Helix



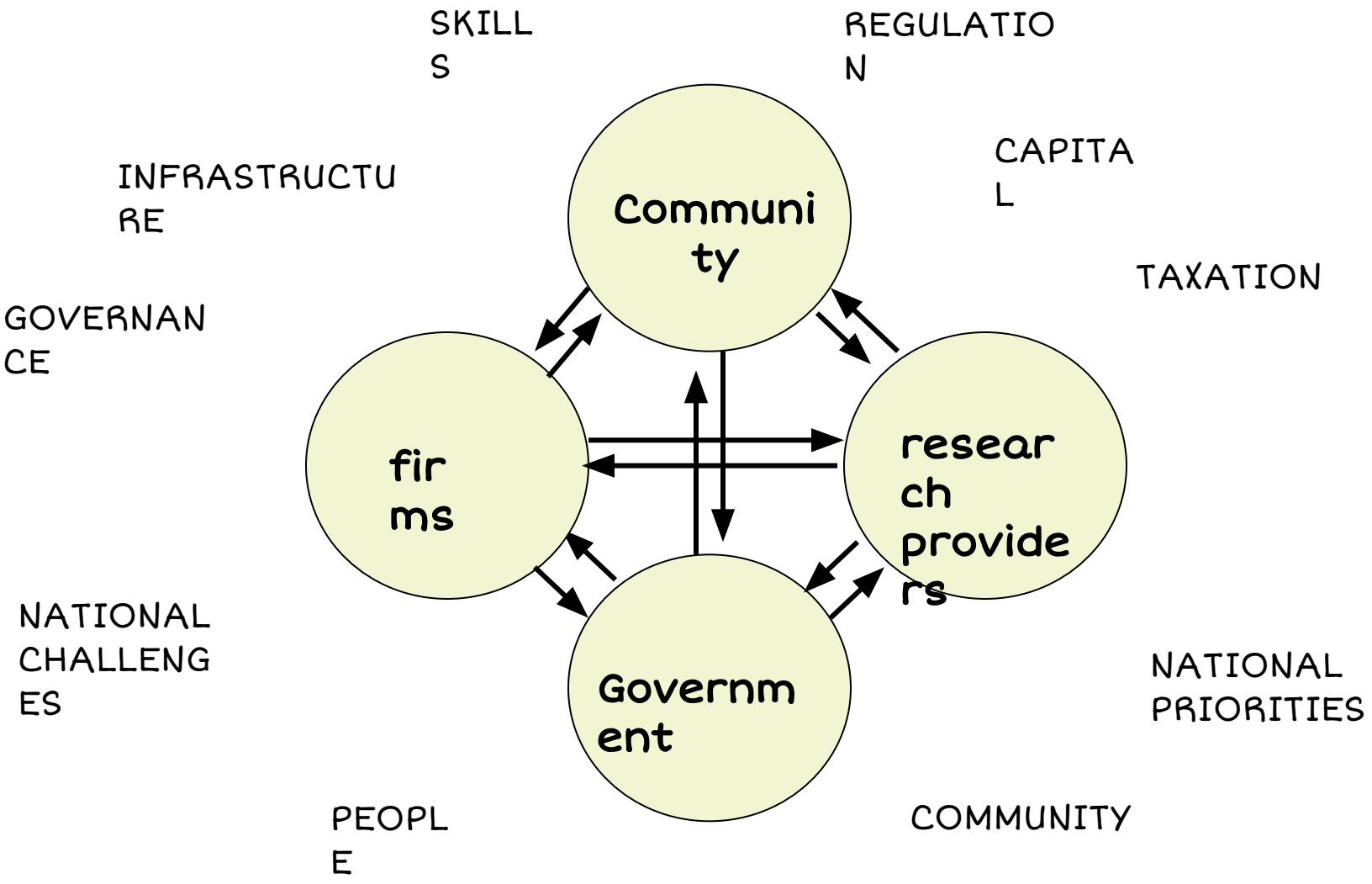
- The Quadruple Helix model: THM is modified with the add of another factor to the analysis: Civil Society (Etzkowitz and Zhou, 2006; Carayannis and Campbell, 2009)
- Civic involvement with cultural and social capital shapes the relationships between the traditional helices

Advantages ?

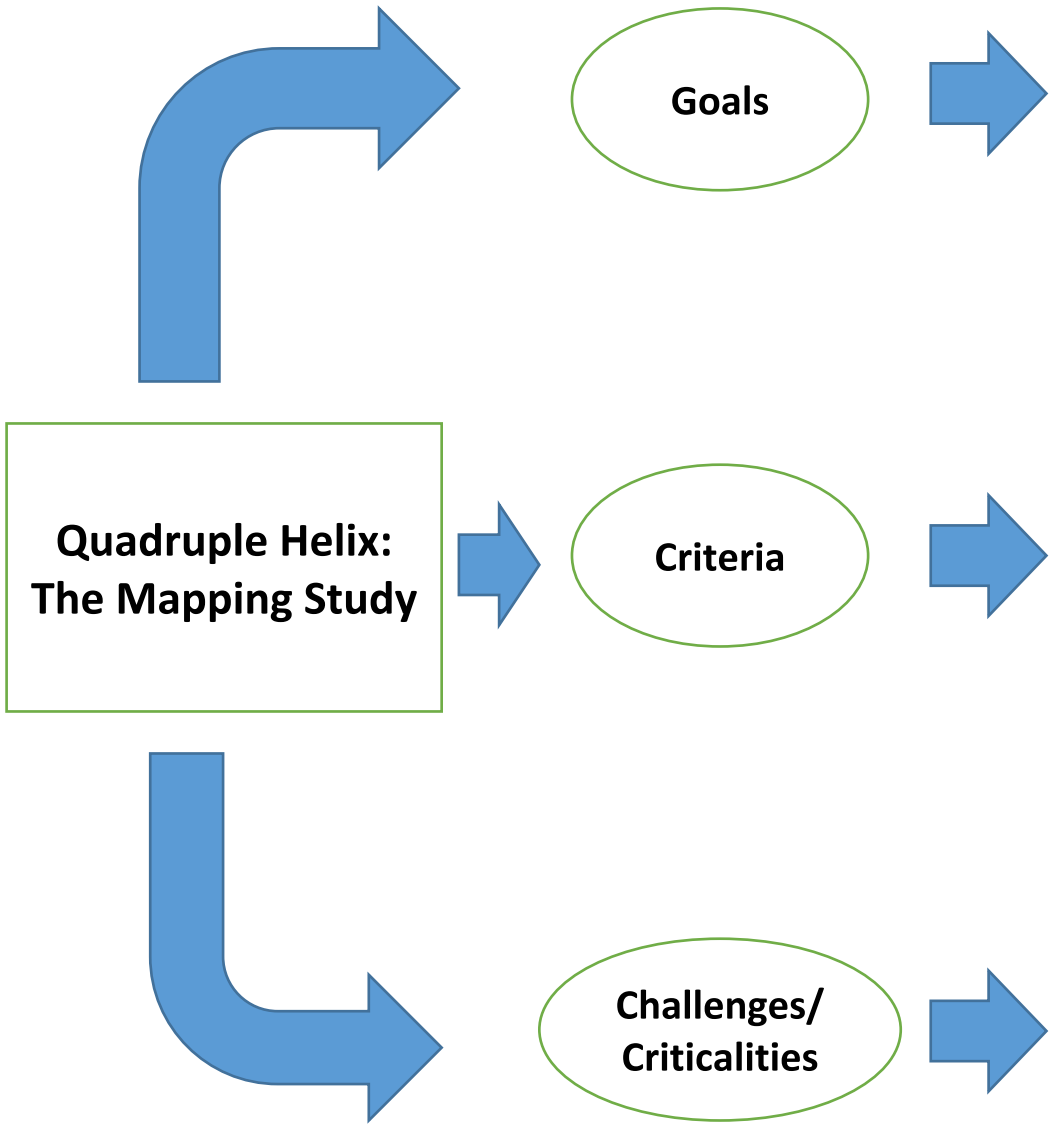
1. **Businesses** located nearby important institutions are more successful.
2. **Scientists** working in the proximity of innovative companies become more performing as they receive information from the economic environment quickly **Government and Public (local) institutions** know better own cluster of knowledge
3. **Consumers and final users.** Due to its less formalized character, civil society may be capable of handling different linkages in a pragmatic manner, giving voice to particular categories of entrepreneurs and firms in non-traditional industries
4. **Multitude of innovation forms** (Carayannis and Campbell, 2009; 2010; Pettersson, 2007; Lindberg et al., 2014).

Quadruple Helix

Innovation in blue economy occurs within a complex ecosystem of actors, and relationships …. No one innovates in isolation!



The Mapping Study

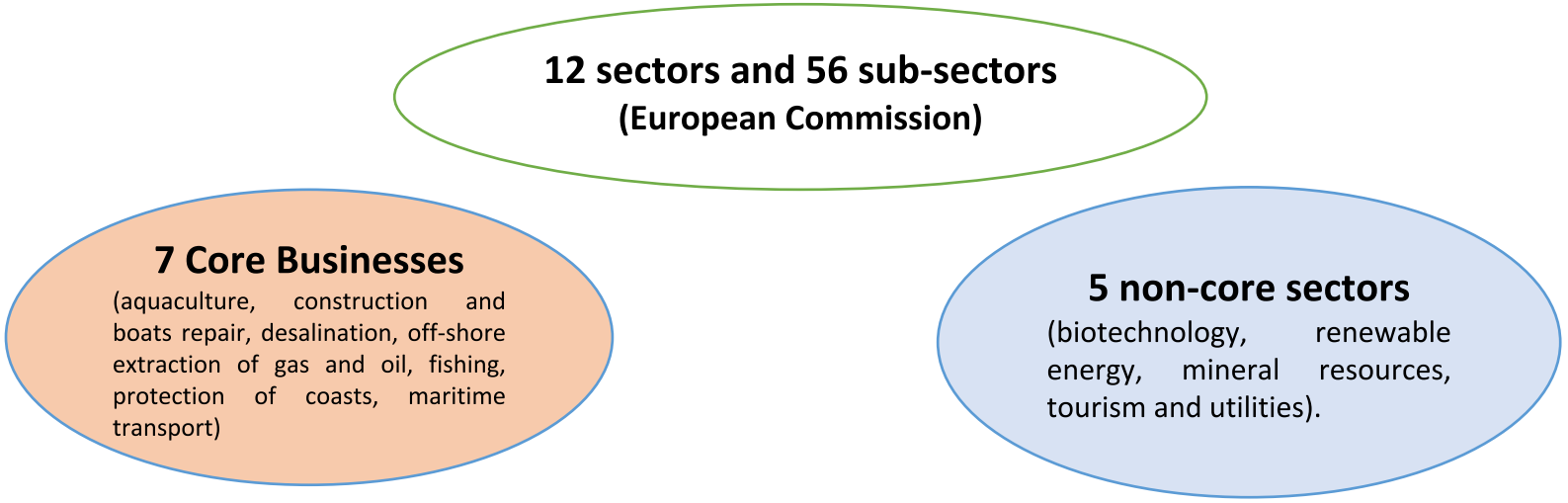


- ✔ Involving representatives from all members of society
- ✔ Fostering knowledge exchange and collaborations rather than focusing on the few, in line with the expectations of a cross-border cooperation model
- ✔ Creation of a common knowledge-based heritage on the blue economy ecosystem
- ✔ Foster interactions among actors

- ✔ The inclusion of heterogeneous actors happened in different ways, depending on the territory involved in the project
- ✔ Information have been collected from diverse sources such as web, scientific articles, and public debate with institutional actors (for each helices)
- ✔ Public consultations and the existing linkages, in a sort of “network of network” process
- ✔ Indirect sources such as the web of ties of the stakeholders

- ✔ Identifying the blue economy domains is challenging: Statistics do not explicitly contain yet a blue sector companies: difficulties on well-distinguishing land-based from sea-based activities
- ✔ The input-output interactions among them may lead in turn to over-represent the value chain
- ✔ Not a universal and barrier-free process because of diverse economic, cultural and institutional factors may hinder or foster it
- ✔ Need for an extensive, periodic but also efficient mapping process of specific actors

The regional economic dimension of the blue economy



- **4%** of the total companies operating in the blue economy sector
- The southern part of the region is one the most specialized area with an added value of **916 million euros** and **18,000** employees
- Due to its structural characteristics the region shares common issues and criticalities related to the intensive use of sea resources with other territories of the cross-border cooperation area.

BLUE ECONOMY SECTORS	NACE	Local units	Employees
Aquaculture	03.2 Aquaculture	156	535
Shipbuilding and Ship Repair	30.1 Building of ships and boats	28	189
	30.11 Building of ships and floating structures	25	133
	30.12 Building of pleasure and sporting boats	89	363
	33.15 Repair and maintenance of ship and boats	88	390
Desalination	08.93 Extraction of salt	4	142
	10.84 Manufacture of condiments and seasonings	0	0
Offshore oil and gas	06 Extraction of crude petroleum and natural gas	1	1
	09.1 Support activities for petroleum and natural gas extraction	2	13
	19.20 Manufacture of refined petroleum products	16	128
Fisheries	03.1 Freshwater fishing	602	3434
	10.2 Processing and preserving of fish, crustaceans and molluscs	51	460
	10.9 Manufacture of other food products n.e.c.	2	24
	13.94 Manufacture of cordage, rope, twine and netting	22	112
	46.38 Wholesale of other food, including fish, crustaceans and molluscs	108	435
	47.23 Retail sale of fish, crustaceans and molluscs in specialised stores	947	2190
Coastal Protection	91.04 Botanical and zoological gardens and nature reserves activities	9	21
Maritime Transport	50 Water transport	24	176
	50.10 Sea and coastal passenger water transport	50	126
	50.2 Sea and coastal freight water transport	133	1328
	77.34 Renting and leasing of water transport equipment	1	4
Biotechnology	72.11 Research and experimental development on biotechnology	61	228
	72.19 Other research and experimental development on natural sciences and engineering	47	65
Renewable Energy	35.11 Production of electricity	639	405
Mineral resources	24.4 Manufacture of basic precious and other non-ferrous metals	4	12
	24.5 Casting of metals	6	36
	35.21 Manufacture of gas;	5	29
	07.29 Mining of other non-ferrous metal ores	0	0
	08.1 Quarrying of stone, sand and clay	16	58
	08.9 Mining and quarrying n.e.c.	11	202
Tourism	32.3 Manufacture of sports goods	19	38
	47.64 Retail sale of sporting equipment in specialised stores	46	58
	47.8 Retail sale via stalls and markets	835	887
	55 Accommodation	4	22
	55.10 Hotels and similar accommodation	1002	10105
	55.20 Holiday and other short stay accommodation	20	65
	55.30 Camping grounds, recreational vehicle parks and trailer parks	123	645
	55.90 Other accommodation	1	0
	56 Food and beverage service activities	78	216
	68 Real estate activities	117	123
	74.2 Photographic activities	23	49
	77.11 Renting and leasing of cars and light motor vehicles	252	511
	77.21 Renting and leasing of recreational and sports goods	7	16
	7734: noleggio e leasing di attrezzature per il trasporto marittimo	25	43
	79 Travel agency, tour operator reservation service and related activities	15	63
	81.30 Landscape service activities	863	3200
	91.02 Museums activities	16	37
	91.03 Operation of historical sites and buildings and similar visitor attractions	14	129
	93.29 Sports activities and amusement and recreation activities	13	30
Utilities	36 Water collection, treatment and supply	51	58
	37 Sewerage	117	2369
	42.2 Construction of utility projects	192	3207
	42.9 Construction of other civil engineering projects	2	1
	52.10 Warehousing and storage	130	1248
	82.92 Packaging activities	11	95
Total (only core sectors)		2358	10204
Total (core + non core sectors)		7123	34454

Tourism and fisheries represent more than 70% of the total ***share of active companies*** in the region operating in blue economy.

Firms included in the regional Blue economy

Macro-sector	Active companies	% (on total)
Coastal tourism	3473	48,8%
Fisheries	1732	24,3%
Renewable Energy	639	9,0%
Utilities	503	7,1%
Biotechnology	108	1,5%
Shipbuilding and Ship Repair	230	3,2%
Maritime Transport	208	2,9%
Aquaculture	156	2,2%
Mineral resources	42	0,6%
Oil and gas off-shore extraction	19	0,3%
Desalination	4	0,1%
Coastal Protection	9	0,1%
Total	7,123	100%

Source: ARTI based on Unioncamere Puglia, 2018

Data collected are drawn from own research, ARTI and Unioncamere Puglia

Employees included in regional Blue economy

Macro-sectors	Employees	% (on total)
Coastal Tourism*	16.267	47,2%
Fisheries	6.655	19,3%
Utilities*	6.978	20,2%
Martime Transport	1.634	4,7%
Shipbuilding and ship repair	1.075	3,1%
Aquaculture	535	1,6%
Renewable energy*	405	1,2%
Mineral resources*	337	1,0%
Biotechnology*	293	0,8%
Oil and Gas off-shore extraction	141	0,4%
Desalination	142	0,4%
Coastal protection	21	0,1%
Total	34.483	100,0%

Source: ARTI based on Unioncamere Puglia, 2018

10,200 (excluding no-core)

- Fisheries: 19.3% (strategic sector)
- Coastal Tourism: 47.2% of employees (no-core sector)
- Bathing tourism is very relevant, with **480 establishments**
- Second best fish producer after Sicily (25,276 tons, 12% of the national share) (Unioncamere Puglia)
- Puglia has an ancient tradition of **shipbuilding and boat/ships rental**. In 2018 approximately **230 companies** were involved (1,000 employees)
- The **ship repair** is also a very important sector;
- More than **200 active** companies are registered in **maritime transport**
- **950 specialized companies** and around **2,200 employees** in the **retail trade of fish, crustaceans and molluscs**
- **156 companies** in the **aquaculture sector**, sometimes innovative and characterized by higher international competitiveness. Apulian aquaculture is one of the most relevant at national level and, together with Veneto, Emilia-Romagna, Friuli Venezia-Giulia and Sardinia, contributes to over 74% of national production.

Macro-sectors	Export	Import
Fisheries and aquaculture	€ 36.077.739	€ 219.831.911
Oil and Gas off-shore extraction	€ -	€ 229.121.101
Maritime and coastal tourism, Shipbuilding and ship repair	€ 2.733.641	€ 4.629.390

Source: Arti elaboration on Unioncamere Puglia

2018 higher imports than export (especially as regard hydrocarbons and fish products

Seafood main destinations: Malta, Tunisia, the Netherlands and Albania. In the past: Denmark, USA, Finland and Kuwait

- ✔ Over the last years, the Blue Sector has released more than € 1 billion of investments
- ✔ Analyzing the last three financial statements (2016, 2017, 2018) filled by 526 Apulian companies of the sea cluster, the sector achieves numerous positive results in terms investments growth (+14 million in the last two years).
- ✔ Low international projection: 20 million and 219 thousand euros of exports in 2019, compared to 16 million in 2018, but lower than the post-crisis period (49 M€ in 2014).

The Quadruple helix for blue sector: Mapping stakeholders
Who are the «mapped» actors?

	University/Research	Industrial System	Institutions	Civil society
Stakeholder (typology)	• Universities • Research centres • Research organizations • Research labs • Research councils • Technology transfer offices • Industrial Liason Offices • Incubators • Innovation poles • Accelerators	• Companies • Innovative firms/start ups directly or indirectly involved on blue economy and blue economy supply chain	• Port Authority • Coast Guard • Consortia • Agencies • International institutions • Local consortia • Business support organizations	• Non-Governmental Organizations • Third sector entities • Cooperatives • Social enterprise • Trade unions • Voluntary organizations • Specialized media • Certification bodies
Stakeholders identified (N°)	**7** University Departments **3** Laboratories **1** Research Centre (University) **5** Research Centres **2** International Organisations	**20** (Traditional) **7** (Innovative) **6** (Young innovative firms financed by Puglia Region)	**14** (Local/National Institutional bodies **5** (Agencies)	**10** (Fishing Associations) **2** (Environment Associations) **2** (Business Associations)

The Apulia Region Quadruple Helix system in the Blue economy

University/research

- **UNIVERSITIES**
  - Polytechnic of Bari
  - University of Bari
  - University of Salento
  - University of Foggia
- **RESEARCH CENTRES**
  - CNR
  - COISPA
  - CETMA
- **INTERNATIONAL ORGANISATIONS**
  - CIHEAM
  - CMCC

Civil Society

- **Fishing Associations**
  - Assopesca
  - ANAPI
  - Federpesca
  - Federcoopesca
  - Legapesca Puglia
  - Unci Pesca
  - Cooperativa pescatori dello Jonio
  - Sailors
  - Federazione della pesca sportiva
- **Environment Associations**
  - Legambiente Puglia
  - WWF
- **Business Associations**
  - Chambre of Commerce
  - Unioncamere
  - Coldiretti

Industry

- **TRADITIONAL OPERATORS**
- **SPIN-OFF**
- **START-UPS**
- **CONSULTING COMPANIES**
- **DISTRICTS (i.e. DARe Puglia)**

This framework will be used to provide a first understanding of the complex system of skills and competencies in the region with regard to university/research, civil society, industry and institutional systems

Institutions

- **REGIONAL AND NATIONAL AGENCIES**
  - ARPA
  - ARTI
  - ASSET
  - Puglia Promozione
  - ENEA
- **SECTORAL AUTHORITIES**
  - Port authorities
  - Coastal guard
  - Port Offices
  - AdB
  - Zooprophylactic Institute of Puglia and Basilicata
- **LOCAL INSTITUTIONS**
  - GAC
  - Puglia Region
  - Coastal municipalities

N	Name	**Type** (Please, indicate if the stakeholder is a research lab, university department, spin-offs, accelerator, incubator, interuniversity consortia, competence centres, Technology transfer office/Industrial Liason office, Innovation Pole, venture capital funds, etc.)	Location	Activity	**N°Graduates in S&T -the most recent year-** (where the actors is an University/Department)	**Faculty** (after column F)	**N°Students matriculated in S&T -the most recent year-**	**Faculty** (after column H)	**Indicate how the actor is - or may be- involved in a Blue growth chain**	Contact email	Web site	Criticalities	Potentiality	Comments

	B	C	D	E	F	G	H	I	J	K	
1							Where the actor is an University/Department				
2	Name	Type (Click on the cell below, then choose the option from the drop-down menu)	Location	Activity (min 10 words, max 50 words)	Description (min 10 words, max 50 words)	Indicate why and how it is involved in Blue growth chain (min 10 words, max 50 words)	N°Graduates in S&T - the most recent year- (where the actors is an University/Department)	Faculty (after column F)	N°Students matriculated in S&T -the most recent year-	Faculty (after column H)	
3	IRSA CNR	Research Institute	Via F. De Blasio, 5 - Bari; Via Roma, 3 - Taranto	Research in the area of management and protection of water resources, development of methodologies and technologies for water purification and waste water treatment (urban and industrial).	IRSA is specialized in research on earth systems sciences and technologies for the environment. In addition, the Institute is involved in European projects co-financed by the EC and other projects financed by various Ministries (Environment, Health, Research, Economic Development) or other public institutions (Civil Protection, Basin Authority, Regions, Provinces) and private (Industries, Companies, SMEs). Since September 2018, two prestigious, additional offices have been added to the Institute: Verbania (VB) and Taranto.	IRSA is involved in activities related to the blue economy (such as functionality of aquatic ecosystems, behaviour of contaminants and related effects); it is also engaged on research activities on fish and other aquatic organisms to evaluate the molecular exposure or damage markers that have diagnostic value in ecotoxicological risk assessments in environments exposed to anthropogenic contamination; analysis methods for seawater.					Resea
4	CIHEAM	Research Institute	Via Ceglie 9, Valenzano (Bari)	Training and research under the lens of the international cooperation in agriculture for supporting Mediterranean countries.	scientific research and design of in loco partnership actions within the framework of international research and cooperation programmes. CIHEAM is an extra-territoriality entity, that is «status granted to international organizations through an Agreement signed on 1962. Cooperation and research are focused mainly on food security, poverty reduction, capacity building, more efficient use of natural resources, improvement of agricultural production and productivity, promotion of organic farming, development of sustainable food systems, resilience to climate change.	By promoting sustainable agriculture, research and cooperation in the Mediterranean area the Institute's aim is to support the main issues such as food safety, food security and agricultural quality, integrated management of coastal areas, fisheries and aquaculture. It is involved in Blue Hope initiative, carried on with FAO.					Direct
5	Department of Biology - University of Bari Aldo Moro	University Department	Via E. Orabona, 4 - Bari (IT)	Training and Research	Research on fish and biology sector, cooperation on biology, fisheries and water resources	Teaching and research activities on disciplines related to zoo biology. The Department of Biology of the University of Bari has an important expertise on marine sponges and mainly on the identification of particular sponges suitable for aquaculture and bio-remediation; experiments have been activated on this last topic in the Taranto territory.					Direct Carrie
6	Department of Science, Biology and Environmental Technology DISTEBA - Dipartimento di scienze e tecnologie biologiche e ambientali Uniparthenope	University Department	S.P. 6, Lecce - Monteroni (IT)	Training and Research	Research on cellular and molecular biology, human and health biology, environmental biology, chemistry, geology, agribusiness.	Teaching and Research in related areas/sectors. Over the last decades, the Zoological laboratory of DiSTeBA (Department of Biological and Environmental Sciences and Technologies) of Uniparthenope, experienced research activities on benthic organisms, biodiversity and conservation of marine environments. For several years the Zoology Laboratory has been working on the development of biofilters, particularly the use of polychaete annelids in the reduction of the organic matter of the particulates, as well as the bacterial load from the water column.					Direct
7	Department of Agriculture, Food and Environmental Sciences - Dipartimento di Scienze Agrarie, degli Alimenti e dell'Ambiente - UniFoggia	University Department	Via Napoli, 25 - Foggia (IT)	Training and Research	The Department of Agricultural, Food and Environmental Sciences promotes research and supports innovation as main tool for growth of the territory on food and environmental sectors. The Department organizes MA Course on Quality Management and Control in the Fish Supply Chain - GeCoQuaFi.	Research in related areas/sectors					Direct

Industry | University_Research | Government_Institutions | Civil society | Other stakeholders | ...

Results of the Mapping Study

University of Bari

- **Department of Biology** has an important expertise on the field of marine sponges
- **Department of Veterinary** deals with training and research on fishing and aquaculture with a specific focus on aquatic organisms

Polytechnic of Bari

- the “Polimare” project, realized with "Neo Yachts & Composites" (a regional company specialized on construction) and CUS-Centro Universitario Sportivo Bari, realized Neo 400+, that is a boat completely formed by carbon fiber.
- The **Coastal Engineering Laboratory of the Department of Civil, Environmental, Land, Construction and Chemistry** is characterized by experimental and advanced instruments for the protection of beaches and port areas.
- **Department of Agro-Environmental and Territorial Sciences** promotes research and innovation as leverage for territorial growth, mostly based on food and environment and shows competences and abilities on innovation to be applied in blue sectors.

University of Salento

- **Department of Innovation Engineering**, located in the Ecotekne (Lecce), manages **EUMER** - EUropean Maritime & Environmental Research, i.e. a highly advanced laboratory capable to model the effects of coastal erosion.
- The **CREA** (The Energy and Environment Research Center), also from the Department of Innovation Engineering, has competencies on innovation to be applied in the blue sector.
- the **Zoological laboratory of DiSTeBA (Department of Biological and Environmental Sciences and Technologies)**, experienced research activities on benthos organisms, biodiversity and conservation of marine environments.
- **Department of Cultural Heritage** and the **Chemical analysis laboratory** are highly specialized on the application of chemical procedures for the protection of art and materials of historical and artistic interest in the field of diagnostics applied.

University of Foggia

The **Department of Agriculture, Food and Environmental Sciences** deals with food technologies, promotes research and supports innovation as main tool for territorial growth. The Department organizes MA Course on Quality Management and Control in the Fish Supply Chain.

PUBLIC AND PRIVATE RESEARCH CENTERS AND INSTITUTES

Projects

- the **IRSA-CNR** (Institute for Research on Water), located in Bari and Taranto, is involved on functionality of aquatic ecosystems
- The Institute of **Food Production (ISPA-CNR)** operates on research, innovation and technology transfer for the improvement of the quality and safety of agro-food products. It is located both in Bari and Lecce
- **ISMAR**, Institute for Marine Sciences, located in Lesina (Foggia), focuses on biophysical and ecological processes related to the oceanic circulation, interactions between environment and fishing, and improving sea and aquaculture practices.

→ follows a research focusing on algae novel food

COISPA is an experimental station for the study of sea resources. It is located in Torre a Mare (Bari) and, through the experimental aquaculture laboratory, carries out research for sustainable aquaculture, organic aquaculture and conservation of aquatic organisms

→ involved in FAIRSEA - Fisheries in the Adriatic Region, a Shared Ecosystem Approach Project.

CETMA (the European Research Center of Technologies, Design and Materials), together with Unisalento and Federbalneari Salento,

→ has developed the "Eco-Smart Breakwater" with the aim of integrating beached posidonia oceanic and recycled aggregates.

INTERNATIONAL ORGANIZATIONS

- **CMCC** (the Euro-Mediterranean Center for Climate Change) that is a scientific research center located in Lecce dealing with the mitigation of the effects of coastal erosion.
- **CIHEAM** (the Mediterranean Agronomic Institute), located in Valenzano (Bari), is an international research organization with important expertise in the coastal areas planning and specialized training on blue economy (also thanks the Blue Hope initiative, carried on with FAO).

Firms Belonging to Traditional Blue Economy Sector

Shipbuilding

Industria Armatoriale Tonniera –Bari

C.N.T. (Consorzio Navalmeccanico Taranto) – Taranto

SICMI – Massafra (TA)

Teconorib – Lecce

Breeding and sale of fish

Panittica Italia – Fasano (BR)

Tug and offshore

Fratelli Barretta – Brindisi

Freight transport

Istop Spamat – Molfetta (BA)

Passengers trasnport

Morfini – Bari

Wholesale fish products

Roglieri Ittica – Bari

Mare Gioioso – Monopoli (BA)

Marevivo – Castro (LE)

Medinfish Fresco – Cavallino (LE)

Carone – Polignano a Mare (BA)

F.lli Bellipario – Polignano a Mare (BA)

L'Isola del Fresco – San Pietro Vernotico (BR)

Seafish – Taranto

Starfish – Taranto

Activities related to passengers and freight transport by water

Impresa Portuale Metropolitana (IPM) – Bari

Visemar – Bari

The Industrial Sphere. Innovative firms and Spin offs

Tecnosea s.r.l., located in Lecce, is an innovative start-up/spin off dealing with aquaculture, fishing and agro-industry	Aquaculture
Find s.r.l. is another spin off of the University of Bari, which provide technical and scientific support on aquaculture, plant design, etc.	Aquaculture
Apphia srl designs and implements innovative solutions for monitoring aquaponics and aquaculture plants. Apphia created Maricoltura Mattinatese, a system for monitoring temperature, pH and oxygen dissolved in the water	Aquaponic/Aquaculture
Hydra cooperative, located in Lecce, is carrying out pilot actions for the breeding of sea urchins for low environmental impact	Sea urchins breeding
ANTHEUS s.r.l. is a spin-off of the University of Salento specialized in the conservation and management of the marine environment and technologies applied to the coastal environment	Coastal care
Gargano Shell Fish Farm involved in "ASMar Project" (Assessment of Sponge Mariculture potential in polyculture system in Manfredonia gulf)	Sponge culture
F.lli Lapietra Agricultural Company has a plant of Acquaponica located in Monopoli (BA)	Aquaponic

Young Innovative Firms

Start ups financed by Puglia Region (in the frame of PIN, Principi Attivi and Laboratori Urbani Mettici le Mani)

Apulia Kundi

produces natural and 100% pure spirulina and functional foods based on Spirulina; also it provides innovation support services and accompaniment to the innovative companies for the development of new economies such as algae culture and new algae-based products

Vitalogy

Prototype of a beach chair for disabled persons for a more comfortable beach access and stay

DueMari Association

Cooking, recovery, workshops on the sea and its stories.

Officina Maremosso

Recovery and restoration of wooden sailing boats;

La scuola e l'antico veliero: on board you learn

Tourist activities, study and restoration on board of Madre Giulia Sailing Ship

ColMare

Supports children and teenagers in difficult conditions through photography, sport and the sea

INSTITUTIONS AND INSTITUTIONAL BODIES (LOCAL AND SECTORAL)

Puglia Region and Coastal Municipalities have relevant skills in programming, planning and implementation of projects on the maritime and coastal theme

- **Port System Authority of the Southern Adriatic Sea**, which includes ports of Bari, Brindisi, Manfredonia, Barletta and Monopoli
- **Port System Authority of the Ionian Sea**, located in the Port of Taranto address plans, coordinate, promote and control port operations
- **General Direction of the Coast Guard of Bari**
- **Port Offices** of Molfetta, Taranto, Gallipoli, Brindisi, Barletta and Manfredonia
- **Maritime District Offices** of Brindisi, Otranto and Monopoli have institutional and administrative functions related to the use of the sea, its protection and the safeguarding of human life

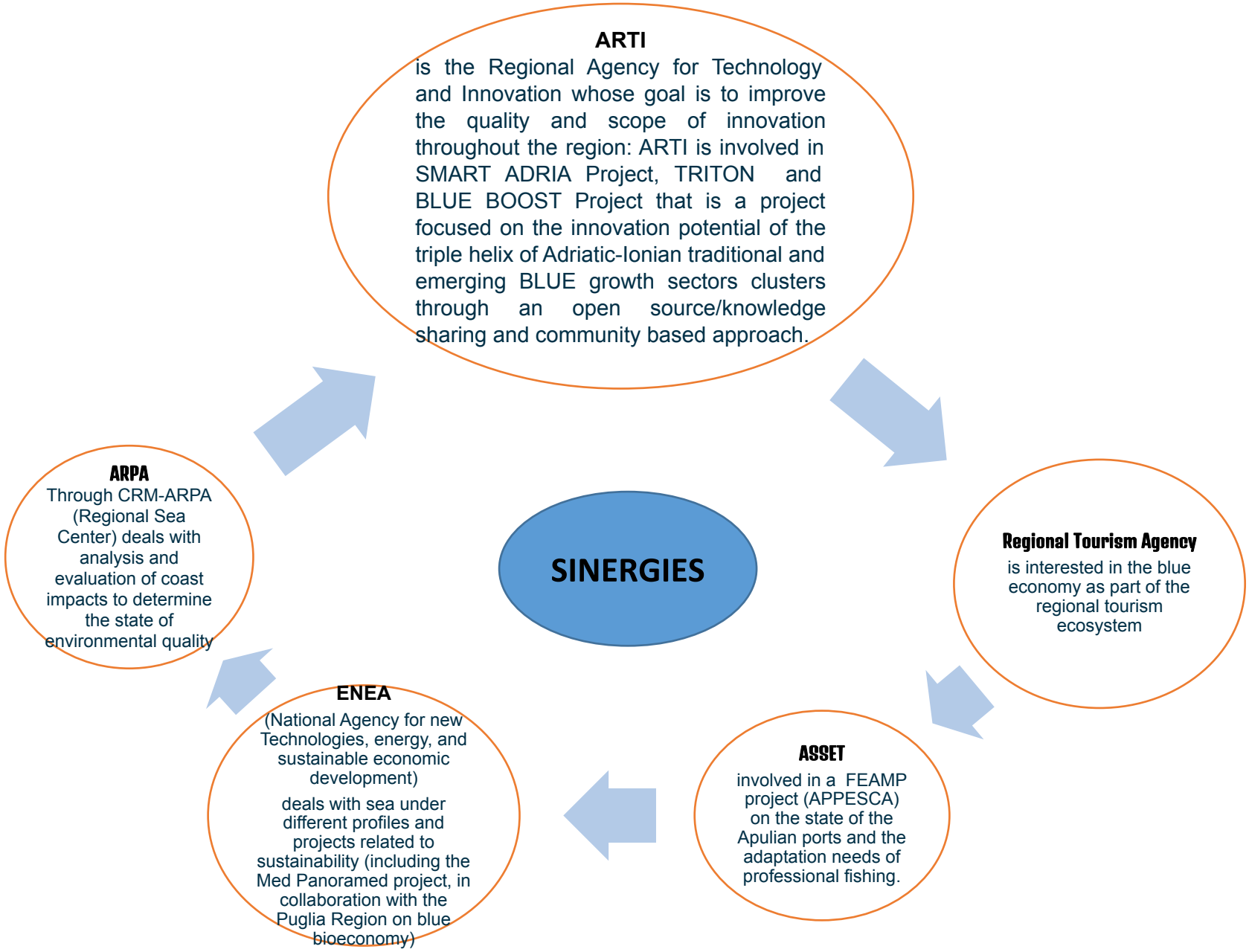
The **Southern Apennine District Basin Authority** (AdB) -Autorità di Bacino Distrettuale dell'Appennino Meridionale

The **Zooprophylactic Institute of Puglia and Basilicata** (located in Foggia, Brindisi, Bari e Taranto) has a key role on applied research on animals and aquatic species

the Apulian Aquaculture 4.0 project. It provides specific skills to assess the risk and interaction between birds predators of aquatic animals and fish and shellfish plants. The main goal is to develop the sector by activating structures dedicated to aquaculture with particular regard to the Gulf of Taranto and the Gulf of Manfredonia.

BIO.ROS.MA" and "**CTCA-LAMPUGA**- Capture, transport and conditioning to captivity and artificial feeding of Lampuga in in-shore and off-shore plants located in the Gulf of Manfredonia". These projects have been both financed by the PO FEAMP 2014-2020, together with Coldiretti

AGENCIES


ARTI
is the Regional Agency for Technology and Innovation whose goal is to improve the quality and scope of innovation throughout the region: ARTI is involved in SMART ADRIA Project, TRITON and BLUE BOOST Project that is a project focused on the innovation potential of the triple helix of Adriatic-Ionian traditional and emerging BLUE growth sectors clusters through an open source/knowledge sharing and community based approach.
Regional Tourism Agency
is interested in the blue economy as part of the regional tourism ecosystem
ASSET
involved in a FEAMP project (APPESCA) on the state of the Apulian ports and the adaptation needs of professional fishing.
ENEA
(National Agency for new Technologies, energy, and sustainable economic development)
deals with sea under different profiles and projects related to sustainability (including the Med Panoramed project, in collaboration with the Puglia Region on blue bioeconomy)
ARPA
Through CRM-ARPA (Regional Sea Center) deals with analysis and evaluation of coast impacts to determine the state of environmental quality
SINERGIES

The Civil Society

Fishing Associations

Assopesca (Associazione Armatori da Pesca) provide and technical consultancy, assistance for accessing EU regional and national funds

A.N.A.P.I. PESCA Circolo Puglia - Associazione Nazionale Autonoma Piccoli Imprenditori della Pesca protects autonomous fishermen, SMEs, sea and acquaculture operators, port and underwater services manged a project of € 288,000.00 concerning the recovery of fishing equipment abandoned on the seabed and the recovery of wrecks.

Federpesca represents the Italian companies in the fishery sector and the Maritime Sector Social Security Institute (IPSEMA) and Partner of INNOVAPESCA Project whose main goal was to bring fresh fish to zero kilometer.

Federcoopesca aims at ensuring sustainable fishing activities and join aquaculture care with fishing tourism.

Legapesca aims at protecting and coordinating all the members to encourage their entrepreneurial growth.

UNCI PESCA (Castro-Lecce) supports activities on fishing tourism, marine parks, creates training courses, projects and initiatives

Cooperativa Pescatori dello Jonio through the S.A.M.P.E.I project, all the fishing units of the Cooperative have improved the selectivity of fishing gear within the Porto Cesareo Marine Protected Area.

Sailors, located in Molfetta fosters the activity of fishing vessels, developing maritime tourism, the commercial vocation of the port

FEDERAZIONE PESCA SPORTIVA (FIPSAS)

AGCI Puglia promotes technical and professional training of cooperators as well as fishery sector care.

Environment Associations

Legambiente Puglia is constantly engaged in the protection of the sea and fishing from pollution and no correct practices, also through the summer campaign Goletta Verde.

WWF Puglia is an NGO and manages the Cesine Oasis which is one of the most preserved and important wetlands in southern Italy, located on the migratory routes hosting numerous aquatic birds. WWF also manages a first aid network for sea turtles located in Lesina (FG), Calimera (Le), Manfredonia (FG), Molfetta (BA) and Bari.

Business Associations

The **Chambers of Commerce and Unioncamere Puglia** represent the industrial business system in Puglia Region. They have carried out various blue economy projects (including **Interreg Themis** and **Smart Adria**)

Coldiretti-Puglia promotes the whole fish supply-chain, with particular attention to food safety and the protection of the quality of Made in Italy.

New actors and stakeholders

Balab
CLab@Salento
Cubolab
Digilab
Innovapuglia
GAL e GAC
Puglia Start Up
Tecnopolis
The Cube
Impact HUB

The **Blue Growth National Technological District (BIG),** operational since 2019, includes 34 companies, 1 port authority, 30 universities and research centers, 15 districts and industrial associations. Arti is included in its committee.

The **Apulian Fishing and Aquacolture Production District** which includes 107 companies, associations, trade unions, local authorities, universities and research centers with the goal of improving the consistency of biological resources and the sustainability of exploitation in favor of future generations

The **Apulian Nautical District** brings together 108 companies, associations, trade unions, universities, research centers and institutions. The District operates along three lines: the strengthening of businesses, the consolidation of the territorial context, integration into the global context.

Concluding Remarks

- Mapping study emphasizes the importance of motivation of helices in spreading blue growth attitude
- The QH model depend on the context, institutions, innovation activity and how actors will be involved
- The QH-actors identified should be involved from the beginning of an innovation process
- ITC specialists/engineers won't replace Blue workers but will be complementary
- Narrow links between traditional sectors and offshore renewable energy, maritime transport, etc.
- Europe, Asia and Eastern Europe will be strategic for the international maritime traffic in the Adriatic
- The risk of weakly exploiting the transnational dimension of cooperation is clearly a risk for the blue economy where the sectoral boundary has to be still defined
- The connectedness in the Programme area is useful to intercept action zones and emerging actors
- Clear CONNECTIONS WITH SSS AND EUSAIR

Thanks for your attention

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In collaboration with

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