



Empower Academia for Knowledge Transfer for Value Creation in the Atlantic Area

Joint Action Plan- Consolidated report from the results obtained in the 5 National Bootcamps

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Objective of the national Bootcamps

In the frame of EMPORIA4KT project, national Bootcamps have been held with the aim to enhance the Blue Economy in Atlantic Areas, resulting in evaluation of investment in R&D&I and industry needs in the Blue Economy, and national R&D&I capacity to support development.

Particularly, the national Bootcamps have provided useful information related to:

- a) profile relevant Blue economy sectors at regional, national and transnational level, enabling benchmarking and future comparisons;
- b) identify needs, market opportunities and trends in Blue Economy in the different regions of the Atlantic Area covered by EMPORIA4KT Project, including a SWOT analysis and research capability assessment;
- c) Profile the main barriers of communication and relationship between the Triple Helix players in order to determine the most suitable subjects and materials that should be provided to Academia researchers, so that they will be capacitated to mitigate such barriers and foster cooperation
- d) Share best practices on R&D, tech transfer and innovation promotion initiatives (financial and policy) in order to get information on concrete activities of tech transfer and innovation so that we can obtain at this stage some indications on what initiatives we should look when preparing our learning materials and the acceleration methodology.
- e) Identify innovation policies, and national R&D&I capacity to support development as well as to identify the current constraints for innovation, including key areas requiring funding intervention, so that the consortium can provide information and suggestions to improve such policies at regional, national and transnational level.

Title

The title of the national Bootcamps has been: “Blue Economy in Country X – the role of Academia, Industry and policies for fostering innovation in the Atlantic Area”

Stakeholders – invited experts profile

A minimum of 12 Stakeholders – invited experts have participated in each of the 5 national Bootcamps - from:

- Academia (3),
- Industry (3),
- Government (3) and
- Innovation managers (3)

Organizers and calendar of national Bootcamps

Partners organizing national Bootcamps have promoted the cooperation between Triple Helix Stakeholders across 5 AA regions and in the dates identified in the table below:

| Country | Partners involved | Atlantic Areas | Location | Date |
|-----------|--|---|-----------------------|-----------------------------|
| PT | SPI (organizer), DGRM, NOVA | North, Center, LVT, Algarve | Porto | September, 25 th |
| SP | CENTA (organizer), CEIMAR, CTA, ACC | Andalusia, Galicia and Canarias | Cadiz | October, 1 st |
| FR | TQC (organizer), AOB, STRANE | Bretanhe | Concarneau | October, 17 th |
| IR | UnaG (organizer) | Border, Midland Western and Southern & Eastern | Galway | October, 22 nd |
| UK | LJMU (organizer), FIP | Devon Highlands Islands | and Liverpool & | November, 4 th |

Methodology of group dynamics

Given the objectives of the national Bootcamps, the followed methodology has allowed to collectively evaluate the result obtained from prior individual interviews, as well as generating new ideas, encouraging debate and favouring the elaboration of a synthesis and conclusions document as a first approximation to national analysis.

The following questions (included in Annex II of the EMPORIA4KT Bootcamp Methodology) have been addressed during the national Bootcamps debate and are intended to support the discussion and analysis of regions/countries, while providing information to answer to the 5 specific objectives previously mentioned. All of these discussion topics constitute strengths, weaknesses, opportunities and threats, depending on the reality and/or needs of each country/region.

Summary of inputs gathered during the national Bootcamps:

a) profile relevant Blue economy sectors at national level, enabling benchmarking and future comparisons;

In the Atlantic area the Blue economy covers a wide range of interlinked established sectors. It includes all economic activities related to oceans, seas and coasts. During the national Bootcamps, the stakeholders have identified the following sectors which can be considered current strategic and strong Blue economy sectors for the countries involved in the EMPORIA4KT project:

NOTE: No data in the French report

| SECTOR | COUNTRY |
|--|------------------------------|
| Maritime and Coastal Tourism | Portugal, Spain, Ireland, UK |
| Marine living resources (Extraction and commercialisation of marine living resources) | Portugal, Spain, Ireland; UK |
| Port activities (Ports, warehousing and construction of water projects) | Spain, UK, Ireland |
| Shipping building and repair | Portugal, Spain, UK, Ireland |
| Maritime transport | Portugal, Spain, UK, Ireland |

In the specific case of UK, several of the Bootcamp participants mentioned Brexit uncertainty as a factor that might affect the UK Blue Economy. Some highlighted the negative consequences due to reduced trade (e.g. imports), the demand for services (e.g. insurance) and reduced EU funding opportunities, whereas others mentioned that it might have a positive impact in the Atlantic Area regions as cargo might have to shift from other modes or areas to the UK west coast (e.g. Merseyside) due to the proximity to Ireland and Northern Ireland.

b) Identify needs, market opportunities and trends

Besides the Blue Economy sectors where involved countries in EMPORIA4KT perform well and should keep investing, maintaining their strong position, the national Bootcamps participants also discussed the following several sectors (identified as emerging sectors) which can represent opportunities, either by being considered a need or a current trend:

| SECTOR | COUNTRY |
|--|----------------------------------|
| Renewable Marine Energy and Offshore Wind Technology | Portugal, Spain, Ireland, UK |
| Marine Biotechnology, Bioprospecting and innovation | Portugal, Spain, Ireland, France |
| Marine Bioinspiration | France |
| Desalination | Portugal, Spain |
| Maritime knowledge, Spatial Planning and Integrated Surveillance | Spain, Ireland |
| Environmental and coastal protection | Portugal, Spain |

Participants concurred regarding that the innovation and market potential exist in several fields of the Blue economy; however, a lot of the existing knowledge is still at a very early stage level. The link between policy-research-practice is not visible and several projects are fragmented. Therefore, joined up policy and interconnected infrastructure development are crucial in order to coordinate modal interchanges rather than pitting one mode against another.

The clear definition of objectives in a research partnership and broader awareness of available innovation incentives are the common needs to the Triple Helix sectors on the Blue economy sector.

In this sense, some participants identified the need to framework, to represent and coordinate the achievements (existing knowledge), as well as addressing methods of open communication between all 3 Triple Helix players and carry out the mapping of relevant Blue economy sectors and industry needs; what will assist academics and will lead the research direction.

Some participants also emphasized in a new big challenge for the Blue Economy: decarbonisation and the need to promote the large-scale conversion of the Blue Economy sector and of all modes of transport to zero emission / zero carbon transport to meet climate emergency and air quality challenges.

Regarding other opportunities some participants mention the tourism opportunities in relation to Blue Way Mapping.

It was expressed that the technology innovation is both a challenge and an opportunity for the Blue Economy industry. Recently, new technology (or disruptive technology) has largely changed the business operations in the transport industry (e.g. blockchain, big data, Internet of thing (IoT), automation and autonomous vehicles). These changes, seen across transport and the wider economy, have the potential to generate a significant impact on how the Blue Economy sector operates and the business model of companies. The industry would benefit from adopting emerging technologies by decreasing operational costs and increasing efficiency simultaneously. Digitalisation and autonomy is another opportunity that the shipyard and wider maritime sector should explore. The emerging ShipTech sector

is a new development that needs fostering. Tech industries have expertise that is applicable across many sectors, including the maritime sector, but they often find the sector difficult to break into.

- c) Profile main barriers of communication and relationship between the Triple Helix players in order to determine the most suitable subjects and materials that should be provided to Academia researchers, so that they will be capacitated to mitigate such barriers and foster cooperation

In order to fulfil this objective, during the national Bootcamps, the participants discussed about the key factors and the main barriers for a successful collaboration project between the academy and the industry, needs of the private sector as well as the personal and professional skills and capacities needed for an effective collaboration between the academy, industry and the government.

The main conclusions are described below for each one of the subtopics:

- Key aspects for success in technological Knowledge Transfer (KT)
 - Need full alignment of actors of the Triple Helix. A good interface and communication tools are needed for a successful collaboration.
 - During the national Bootcamps, many participants mentioned the lack of integration between Triple Helix players, more specific, fragmentation of regional strategies and a lack of coherent authority. Lack of available industry-academic networks with a regional focus was highlighted as a barrier to proper communication.
 - Identification of synergies between Academia and Industry. Properly define the relationship and roles of each type of entity (Academia brings innovation and Industry applies innovative solutions to the market). The cultural gap between the interests of academia (publications/attracting research funding) and industry (profit) is a common issue when seeking for cooperation.
 - Academic reporting and research projects are of a different language to what the industry may require or understand. Also, timeline of work required by industry does not always fall into the timelines of the research project of an academic. All of this creates a barrier to industry implementing potential Early Stage Technologies (EST's).
 - Promote technology transfer departments at universities and link these Technology Transfer (TT) offices with trade associations. Specific trainings for researchers, student-oriented educational programs to collaborate with industry and creation of entrepreneurial mindset and also experimental areas to develop and test prototypes.

- Need of platforms that identify and aggregate representatives from each sector who may wish to collaborate. Likewise, they should be integrated platforms for discussion and knowledge exchange, different procedures for cooperation, etc.
- Good public policy for Blue Economy. Mention to the Smart Specialization Strategy as an instrument that should help to mobilise R&R&I funds.

➤ Barriers in technological KT

- Gaps in legislation, especially in emerging Blue economy sectors.
- Lack of territorial planning to promote R&D&I Projects.
- Very few private and public financing instruments available specifically oriented towards Triple Helix collaboration in Blue economy areas-especially difficult for SMEs. In general, a low investment mainly in infrastructures for R&D&I.
- The level of risk assumed by the academy and the industry is different when collaborating in R&D&I projects. This is an issue that promotes the rejection of industry to collaborate in these projects, especially SMEs.
- Too much bureaucracy to access to R&D&I projects promoting KT
- An organisation specialised on Blue Economy projects needs to be created. Also, Triple Helix players should have one unique window for information and financing for blue economy related projects.
 - There is no clear idea of which administration to contact (local, regional or national)
- Lack of a culture of collaboration. Different languages, visions and motivations between academic and industrial sectors, as well as economic incompatibilities between private and public sectors. Silo thinking, inflexibility and a lack of collaboration among partners is a barrier for cooperation between the Triple Helix players.
- Academia lack of market knowledge from industry. Industry has gaps of information about academic knowledge available.
- Low visibility of results and difficult access to information generated.
 - Academia has conducted many research studies to solve some of the problems occurring in the industry, but there has been little visibility of research outcomes for the industry. Attendees from industry also mentioned (1) the need for a clear presentation of data, in an industry-relevant and easy to understand format; (2) academics lack the ability to “sell” their work; and (3) the lack of real experience by academics leading to communication difficulties and to unrealistic proposals to industry. In contrast, academia mentioned the difficulty of accessing information from industry.
- Lack of sustainable mechanisms and without risk to encourage private investment in R&D&I projects -especially difficult for SMEs
- Different timescales.

- For instance, short-term engagement and quick results are needed when industry is involved. Unrealistic timescales and lack of time are issues that influence the cooperation between the Triple Helix players. The demand on a quick solution often drives industry to choose consultant companies. Poor project management could be a reason that leads to time pressures, thus the time-cost relationship should be measured and implemented well to overcome this barrier.
 - The balance between competitive advantage and the sharing of safety-related information is identified as a barrier to transferring knowledge and innovation.
- Skills and capacities needed
- Communication skills between the Triple Helix – common language- and ability to build consensus and have an engaging/cooperative approach.
 - Need to strengthen the motivation to initiate collaboration between triple helix players.
 - Need more information about the financing system for R&D&I projects
 - Triple helix players should have the ability to anticipate problems and needs.
 - Need more practical application-oriented academy; and more research-oriented industry.
 - Administration should implement a structure for KT, as well as economic incentives to improve and strengthen the collaboration between academia and business sectors and reduce administrative bureaucracy.
 - Need interface entities to connect academia with private companies. Clusters or Transfer Offices, able to dynamize different agents and better communicate on benefits for triple helix collaboration.
 - Triple helix players need more specialisation towards R&D&I and KT aspects. In this sense some proposals could be:
 - Professional education should meet the needs of industrial companies
 - Need to create more industrial PhD programmes to apply the knowledge acquired at the university.
 - Need to adapt education curricula to market needs
 - Researchers able to develop policy briefs – provide training
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- Needs of academia sector
- Academia lacks an entrepreneurial culture. Academia is somewhat prepared to collaborate with the Industry, however there is still a long way to go and many opportunities to improve.
 - Specific departments in academia should be implemented, in order to bridge the existing gap with industry sector.
 - Involve more the academia in the market process and encourage spin-offs.
 - Academia should have a valorisation department

- The training of students and researchers should be strengthened; must be focused on applied research in open innovation, translating Industry language into what they learn in academia.
- Even though technological transfer professionals help facilitate the relationship between academia and industry, it is not easy to approach the industry showcasing technology as the industry does not know which collaboration to establish.
- National and institutional university procedures are too time consuming, the culture of organisations and people themselves are excessively formal.
- Profile of researchers- more international profile- is usually more open to working and collaborating successfully with industries.

➤ Needs of the private sector

- Lack of investment for R&D&I.
- SMEs cannot finance easily R&D&I subcontracted to academia. Tax incentives should be proposed because currently taxation is too important.
- Industry has a lack of knowledge in regards to research resources available and understanding in how to select the correct and suitable academic for the work the industry requires, in regards to Start-ups & SME's within industries who do not have resources or capacity to complete research to further develop their business.
- Contractual problem for subcontracting quality monitoring.
- Specific departments in Industry should be implemented, in order to bridge the existing gap with academia sector.
- Involve more the industry in the market process and encourage spin-offs.
- Need to diminish the level of risk that industry has to assume in collaborative R&D&I projects with academia.
- Reticence of companies to change their operating model and cultural change. Sometimes, inflexibility of the sector to invest in and/or adopt change owed to competing business pressures.

d) Best practices on R&D, tech transfer and innovation promotion initiatives (financial and policy) in order to get information on concrete tech transfer activities we should look at when preparing our learning materials and the acceleration methodology.

NOTE: Only attendees to Irish and English Bootcamps shared several experiences and best practices on R&D&I and TT. France focused on the marine bionspiration sector. Participants to the Portuguese and Spanish Bootcamps did not share best practices on R&D&I and TT as the same level than IR and UK. In this sense, only general aspects have been included, in order to look at when preparing the learning materials and the acceleration methodology.

Taking advantage from the vast experience from the stakeholders in the national Bootcamps, various questions related with best practices in R&D, technological transfer and innovation incentives were asked. Below are the inputs gathered during the sessions:

➤ Main barriers for Knowledge Transfer

- In general, the collaborative culture is low.
- Lack of proactivity and ecosystem knowledge to know where to look.
- Need for a service specially dedicated to the development of R&D&I and KT that offers transversal support and has the role of an accelerator. This service should look for common objectives between academia and industry, facilitate access to financing instruments and help on the decision and definition of what type of collaboration to establish – contract research, licensing, spin-off.
- Improve the knowledge of intellectual property (IP) and its management, as well as legal procedures, both by Industry and administration when setting up financing mechanisms.
- Lack of funding and human resources mechanisms to enable academia to develop the data package it needs to make technology attractive to Industry and private investment, as well as lack of mechanisms to maintain IP records made by the academy and which are necessary to maintain until industry interest.
- Lack of career incentives for researchers to collaborate with industry - based on numerical indicators rather than marketable products and solutions.
- Facilitate the access to specific topics from European programmes, addressed to Blue Economy.
- Lack of a catalogue of technological and knowledge offers for KT and a catalogue of productive systems.

➤ Main enablers for Knowledge Transfer

- Increase/motivate the entrepreneurship mindset taking place in academia.
- Creation of evaluation departments of Technology.
- Existence of facilitators, events and mobilizing projects, as well as of technology transfer infrastructures needed to test technological pilots and promote R&D&I projects.
- Willingness to create synergies between Academia and Industry – specific and tailor-made mapping is needed.
- Innovation and investment policies that ultimately lead to Industry collaborating with academia.
- Funding from the government/Europe for concrete objectives in technology transfer.
- Professionalisation of TT professionals to foster collaborations.

➤ Main services provided by Technology Transfer Institutes

- Tailor-made trainings: one part of the grant to make a business model, dedicated to the exploitation plan – a role of the TT professionals do help in this exploitation.
- Acceleration and training programs for an idea.
- Liaison role in order to foster the relationship between researchers and Industry.
- Matchmaking between researcher and Academia.
- Supporting researchers to know how to protect and disseminate IP.
- Support in the protection and management of IP and liaison with different stakeholders.
- Knowledge of financing policies and financing methodologies.
- Market Feedback.
- Trading Strategies.
- Business development.
- Interpretation of what happens in KT, through practical cases - Information technology conveyed by spin-offs.

e) Identify innovation policies and R&D&I capacity to support development, as well as current constraints for innovation, including key areas requiring funding intervention, so that the consortium can provide information and suggestions to improve such policies at national level.

One of the aims of the EMPORIA4KT project is to positively influence policy making, through the understanding of the current innovation policies, their pain points and how they be improved. Below is the feedback received from the national Bootcamps participants on this matter:

- In general, there is a great diversity of sectors within the Blue economy, which means that the policies are diverse and sometimes dispersed. There are sometimes notable differences between regional, national and European policies around the Blue economy.
- Need to improve and strengthen the national strategies for financing R&D&I.
- More and adequate funding for networks.

Funding intervention is relatively weak, in relation to both industry and academia. If an academic were to go towards a standalone research project, there is no guarantee of funding and at times, salary has to come from self-funding.

In regards to industry, Innovation Vouchers and Feasibility Grants are readily available, however the level of maximum funding does not meet the requirement of work that may need to be completed and the Industry must match-fund or above.

- Simplification of financing processes and funding for riskier projects.
- Incentive fiscal benefits for enterprises.
- The strategy for new financing instruments (such as Innovative Public Procurement) remains complex and of little national implementation.
- Too slow and bureaucratic administration. Need to reduce times for project resolution.
- Public actors' knowledge and illiteracy of the Blue Economy is too low to support innovation at the business level efficiently. Thus, funding intervention allowing the organisation of continuous training sessions for decision makers on the Blue Economy would be needed.