



BLUE<sub>and</sub>  
GREEN

# Blue Bioeconomy Roadmap for Portugal

Vitor Vasconcelos

BLUEBIO  
ALLIANCE



## BLUEBIO ALLIANCE – WHAT WE ARE

- ✓ **National Network** for **collective organization** and networking within the BLUE BIORESOURCES sector
- ✓ **Accelerate** the development of the **value chain**



# BLUEBIO ALLIANCE – WHAT WE WISH TO BE



## VISION

To organize all the agents involved in the operation of marine bioresources on a wide network that spans the entire value chain, including producers of raw materials, biotech companies, research units, service providers, the public sector and users of the end products, oriented to the sharing of knowledge and ideas, as well as the boosting of the value chain, to accelerate business growth and strengthen the assertion of Portugal as a leading European country in the advancement and development of marine biotechnology.

# BLUEBIO ALLIANCE – HOW WILL WE DO IT?

## MISSION

To support the organization and promotion of the marine bioresources sector value chain



## 4 ACTION AXES

1. ORGANIZE & PROMOTE  
Organize and streamline the value chain
2. COLLABORATE & SCALE UP  
Promote collaboration between players  
Focus on companies & market
3. GO GLOBAL  
Internationalize the sector
4. GROW UP  
Promote funding

# BLUEBIO ALLIANCE *WHO ARE WE?*

# OUR FOUNDING MEMBERS

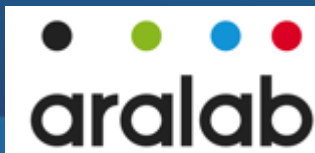
## MAIN FOUNDERS AND SPONSORS



94 members across the whole value chain and growing

BLUEBIO  
ALLIANCE







Campos Ferreira  
Sá Carneiro  
& Associados

Manuel Cavaleiro Ferreira  
Advogado

MIRANDA  
Miranda Correia Amendoeira & Associados  
Sociedade de Advogados R.L. / Attorneys at Law

SOFIA GALVÃO  
Advogados

JORNAL DA  
**Economia**  
DO Mar

BLUEBIO  
ALLIANCE



**BUSYANGELS**  
VENTURE CAPITAL INVESTORS

**eupportunity**  
european affairs consulting

**Shift**  
**thinkers®** growing brands



**P-BIO**  
Portugal's Biotechnology Industry Organization  
Associação Portuguesa de BioIndústria

**sp**  
Sociedade Portuguesa de Inovação



**ANICP**  
ASSOCIAÇÃO NACIONAL DOS INDUSTRIAIS  
DE CONSERVAS DE PEIXE

**mads**  
CONSULTORES DE SEGUROS E RISCO

**DOCAPESCA**  
PORTOS E LOTAS, S.A.



**SYSTEMICSPHERE**  
Research and Intelligence on the New Systemic Economy

**EV**  
CENTRO PARA  
A VALORIZAÇÃO  
DE RESÍDUOS



**We Value**





BLUE<sub>and</sub>  
GREEN

# Blue Bioeconomy Roadmap for Portugal



# BLUE<sub>and</sub> GREEN



funded by the EU Horizon 2020  
Research and Innovation  
programme



"Enhancing the  
competitiveness and  
sustainability of European  
biotechnological  
industries"



# BLUE and GREEN

## TEAM



Vitor Vasconcelos  
CIIMAR-UP



Francisca Vicente  
Fundacion MEDINA



Kaarina Sivonen  
University of Helsinki



Deniz Tasdemir  
GEDMAR-Biotech



Lars Herfindal  
University of Bergen

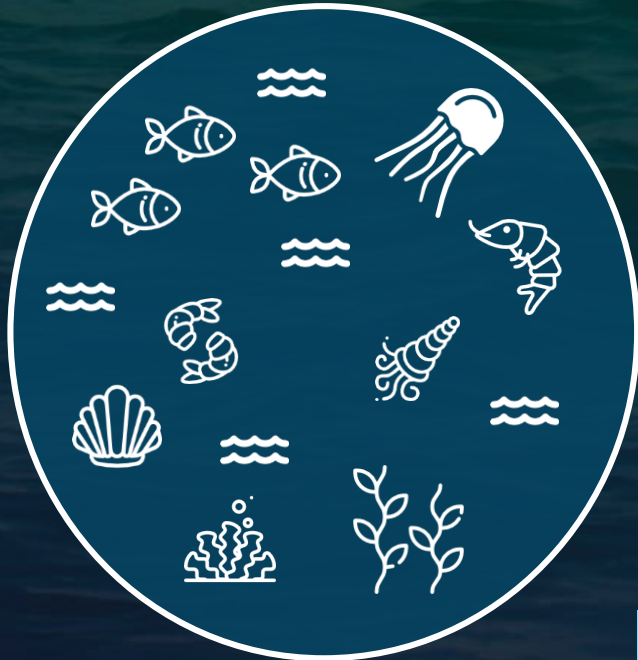
# Relationship between Portugal and its surrounding blue environment

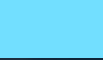

HISTORICAL  
SOCIAL  
and  
ECONOMIC  
development



# Relationship between Portugal and its surrounding blue environment

## MARINE BIO RESOURCES

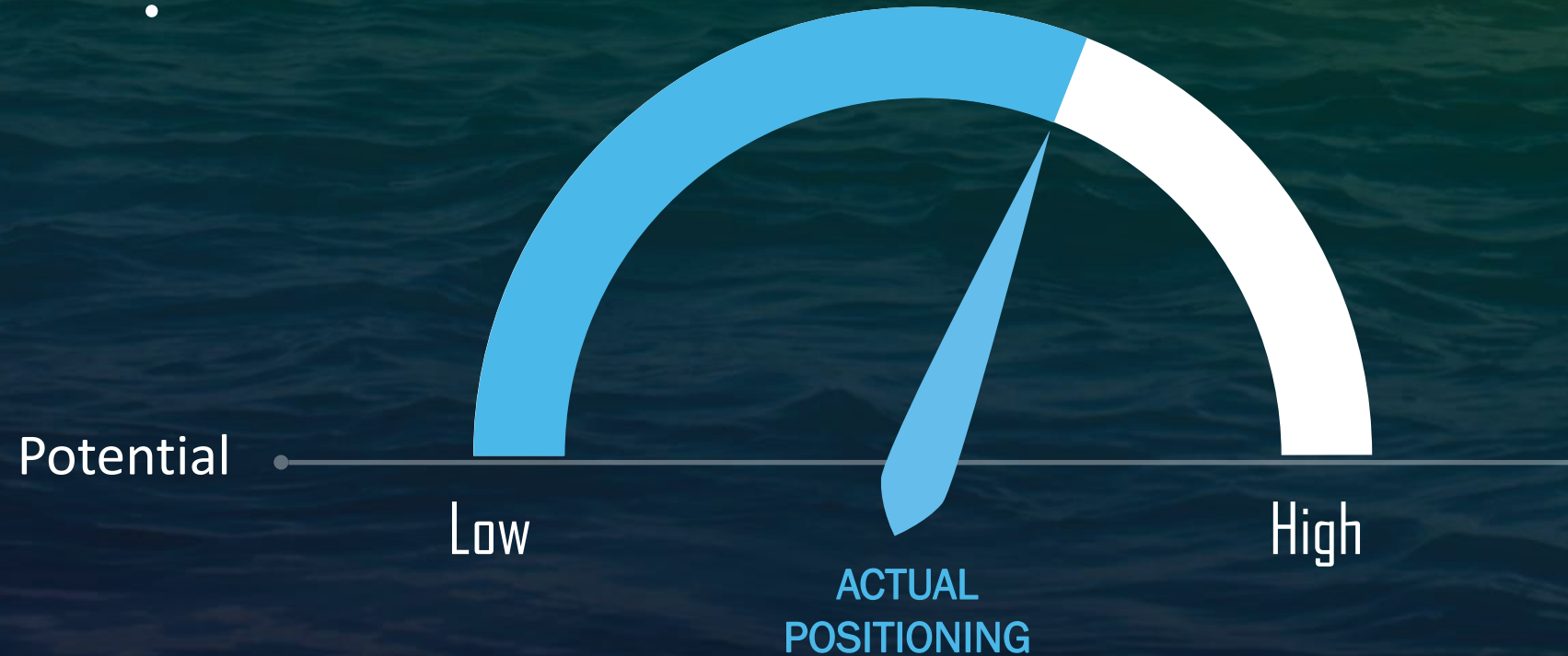


-  Exclusive Economic Zone (EEZ)
-  Proposal of the Continental Shelf Limit

# Relationship between Portugal and its surrounding blue environment

## GREAT POTENTIAL

- There are still numerous
- challenges



A man wearing a white cap and a light-colored shirt is seated in a white boat on a body of water. The boat has a red stripe along its side and several white buoys attached. The background is a vast, calm sea under a clear sky.

This roadmap results from multiple and joint tasks taken by :



**ciimar**

**BLUEBIO**  
ALLIANCE



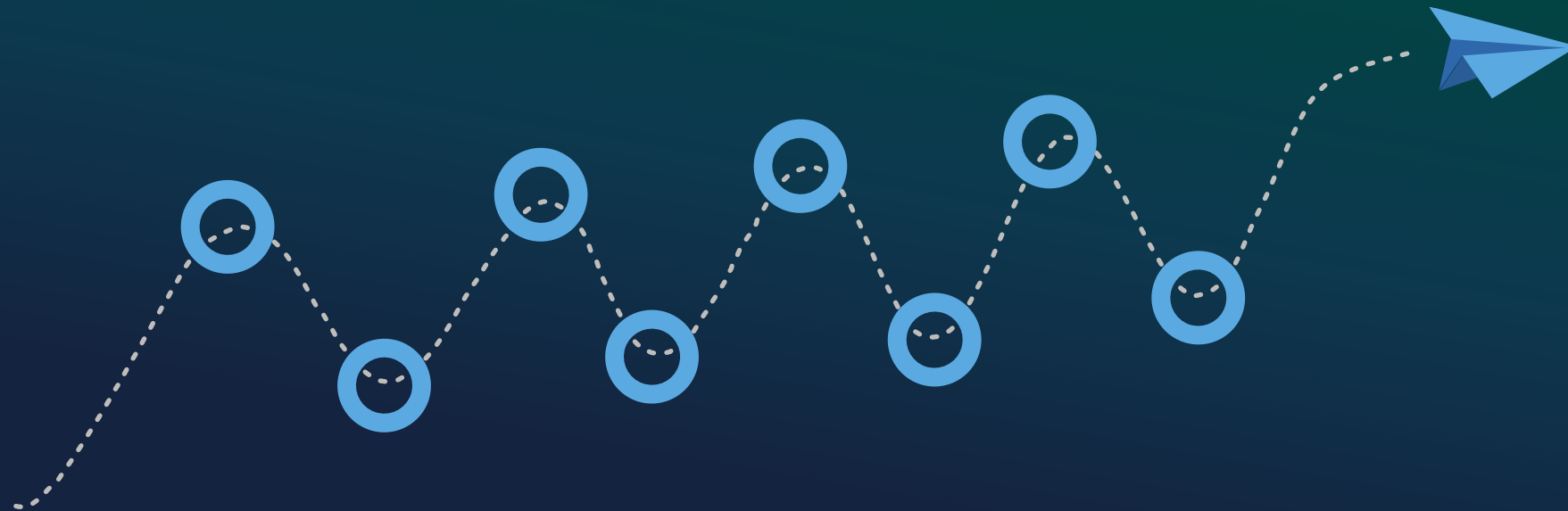
detailed picture of the  
Portuguese Blue Bioeconomy sector

This roadmap results from multiple and joint tasks taken by :



**ciimar**

**BLUEBIO**  
ALLIANCE



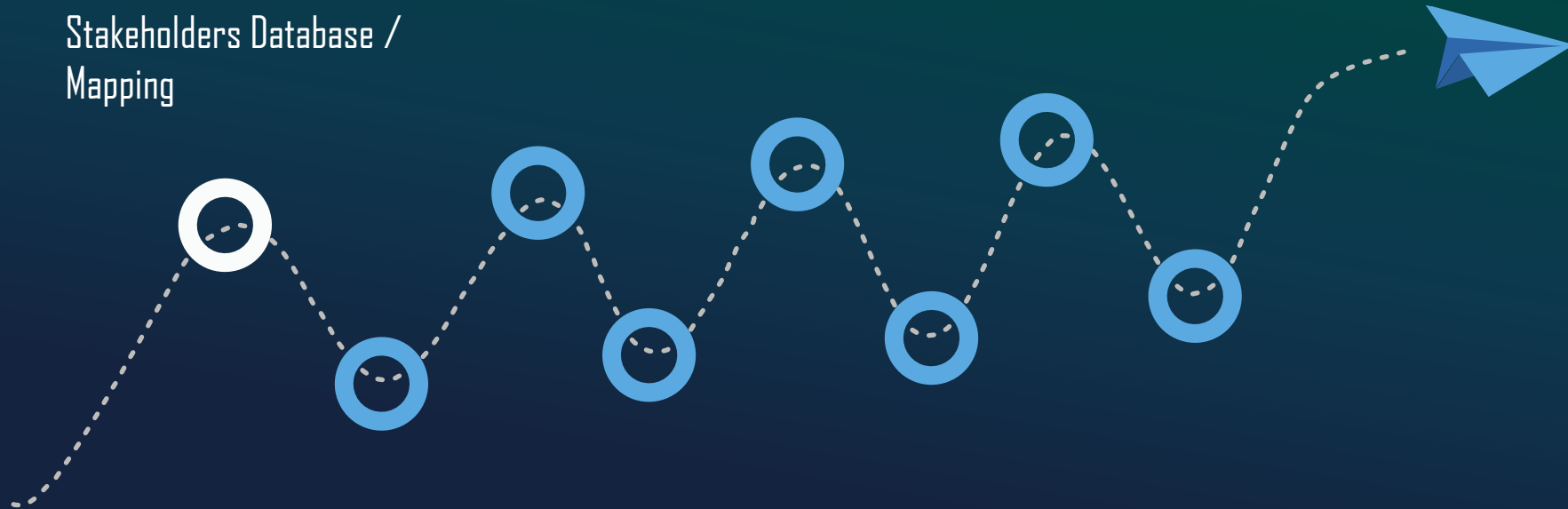
Public Launch  
of the Roadmap

April 12<sup>th</sup> 2019

This task was divided into two phases.

- 1 Previous collaboration contacts of the investigators from the BLUEandGREEN team.
- 2 Integration of additional contacts from BBA, and assemblage of additional contacts from brokerage events with national and international stakeholders, and from participation in business conventions and other international events.

Stakeholders Database /  
Mapping



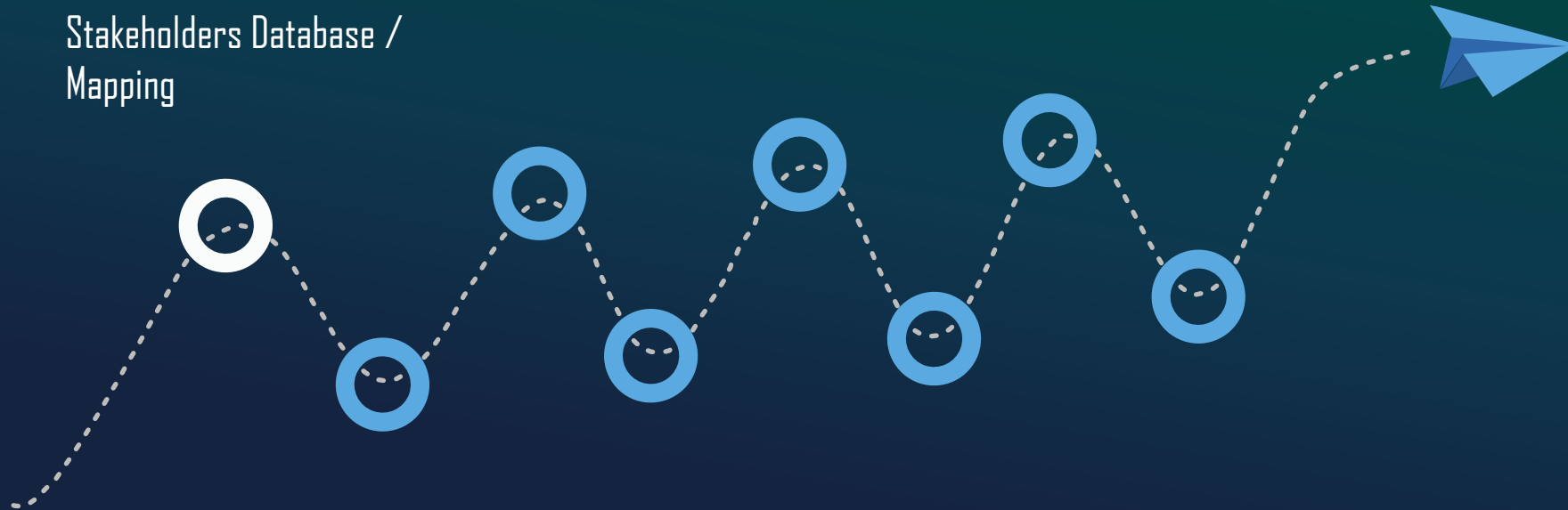
Each contact was classified according to its

- geographical location
- type of organization
- position in the value chain
- type of bioresource they use
- field(s) of application(s).

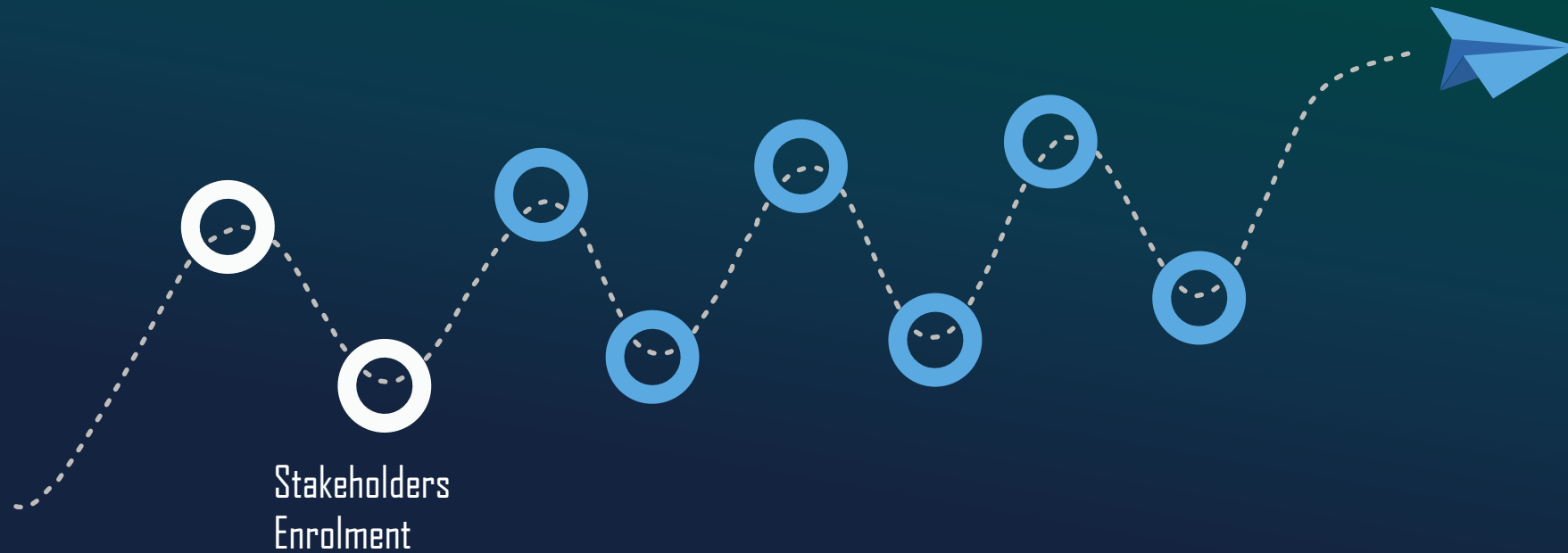
248  
entities

representative overview of the  
Portuguese sector

Stakeholders Database /  
Mapping



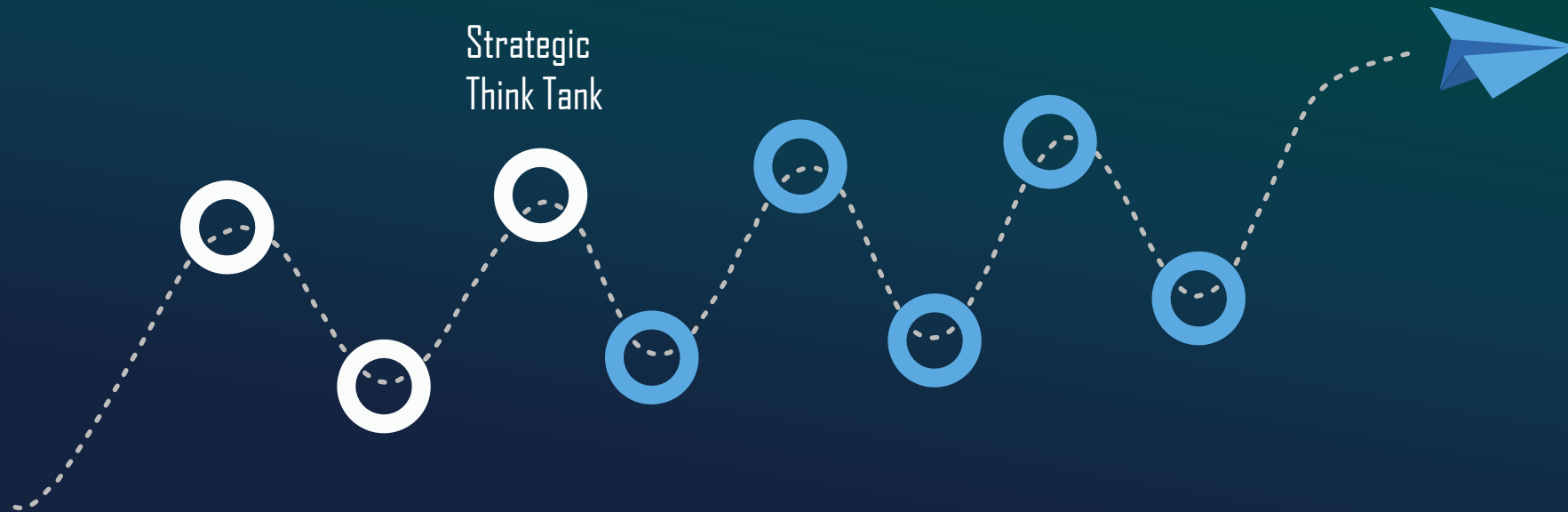
Key Portuguese stakeholders that participated in the preparation of this roadmap:



## Strategic Think Tank

"The Portuguese Blue Bioeconomy's Role – National solutions for global challenges"

- Identification of current bottlenecks of Blue Bioeconomy in Portugal throughout the value chain, as well to
- identify relevant actions for some of the identified hurdles.

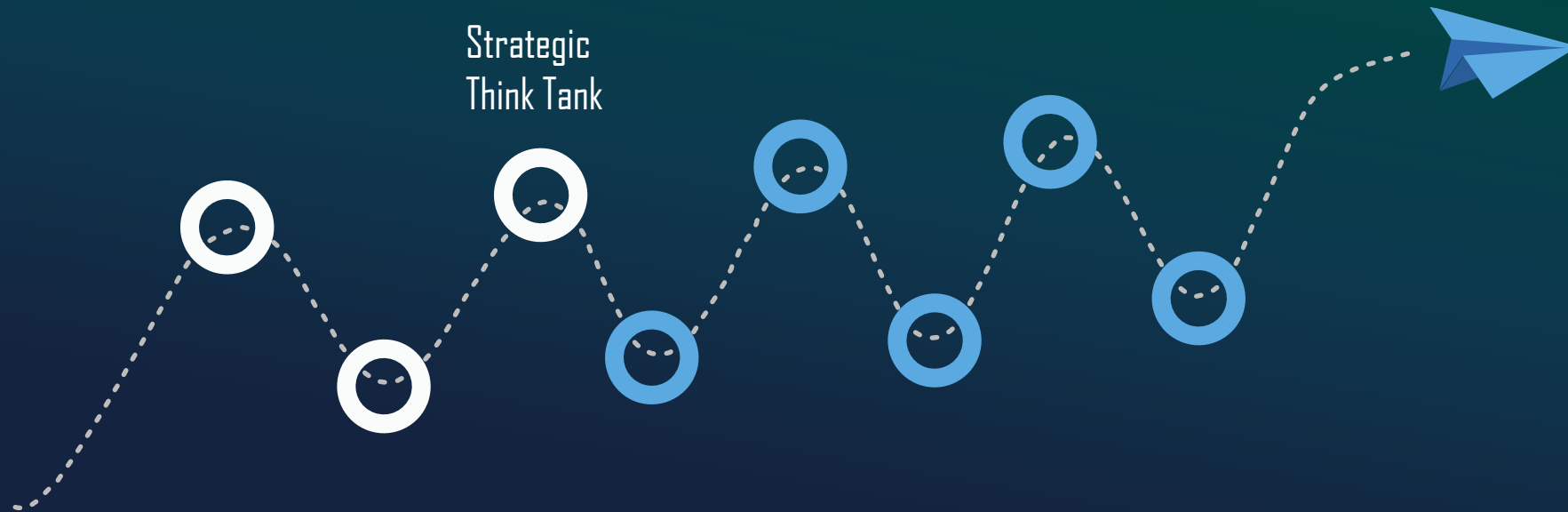


## Strategic Think Tank

"The Portuguese Blue Bioeconomy's Role – National solutions for global challenges"

4 parallel sessions

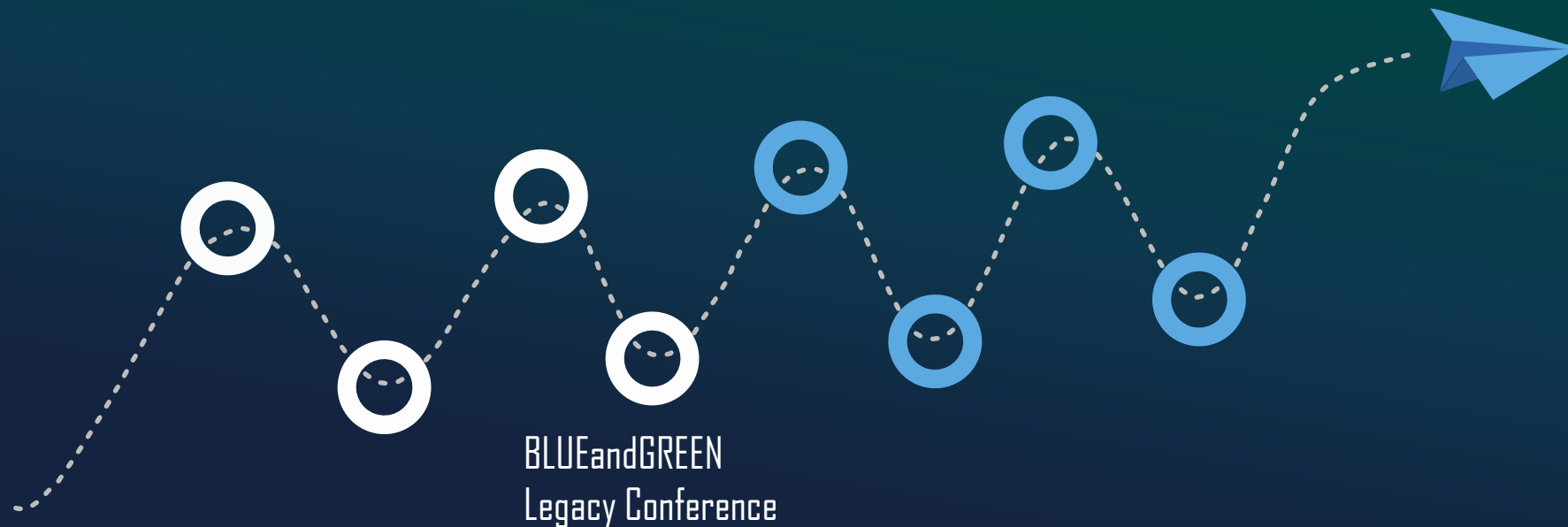
- 1) Sustainably feeding the growing population
- 2) Climate change and CO2 control
- 3) Aging population and well-being
- 4) Management of bioresources and plastic reduction



## BLUEandGreen Legacy Conference

- Better understand the Portuguese landscape of Blue Bioeconomy and collect expert opinions that were relevant for the preparation of the current roadmap.

- A round table was organised during the session "National BLUEandGREEN Biotechnology Landscape".



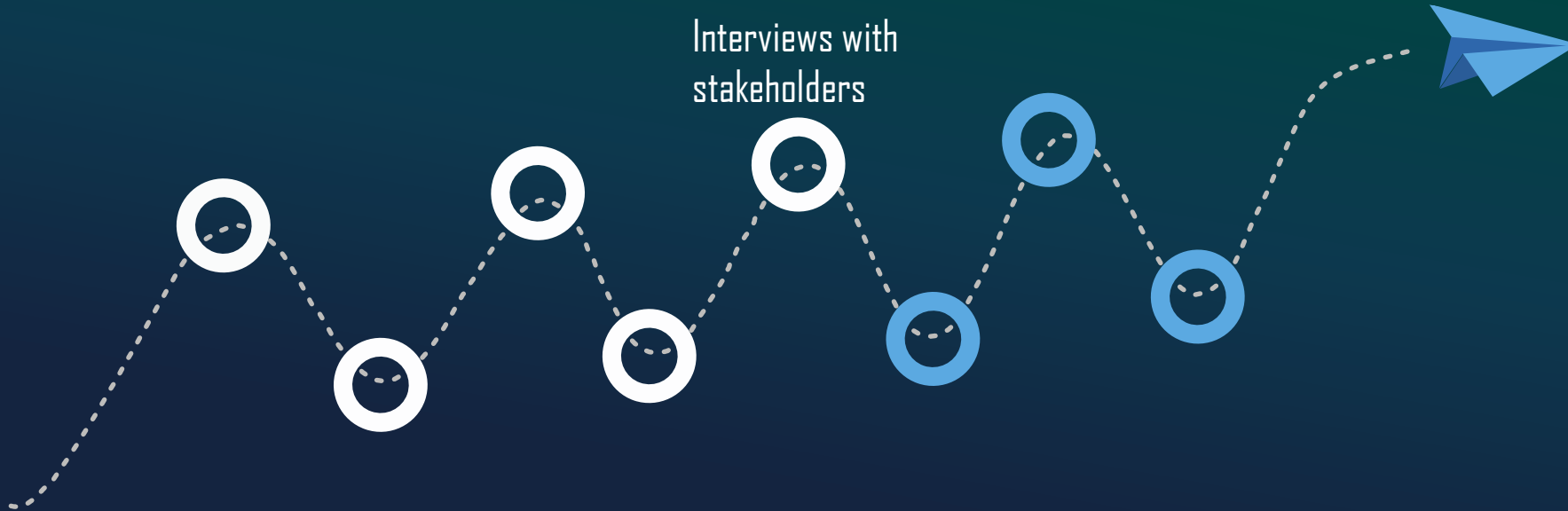
## Interviews with stakeholders

- Information about the entity and its role in the Blue Bioeconomy value chain
- Identifying their main field of application and how it is foreseen to develop/change within the next five years



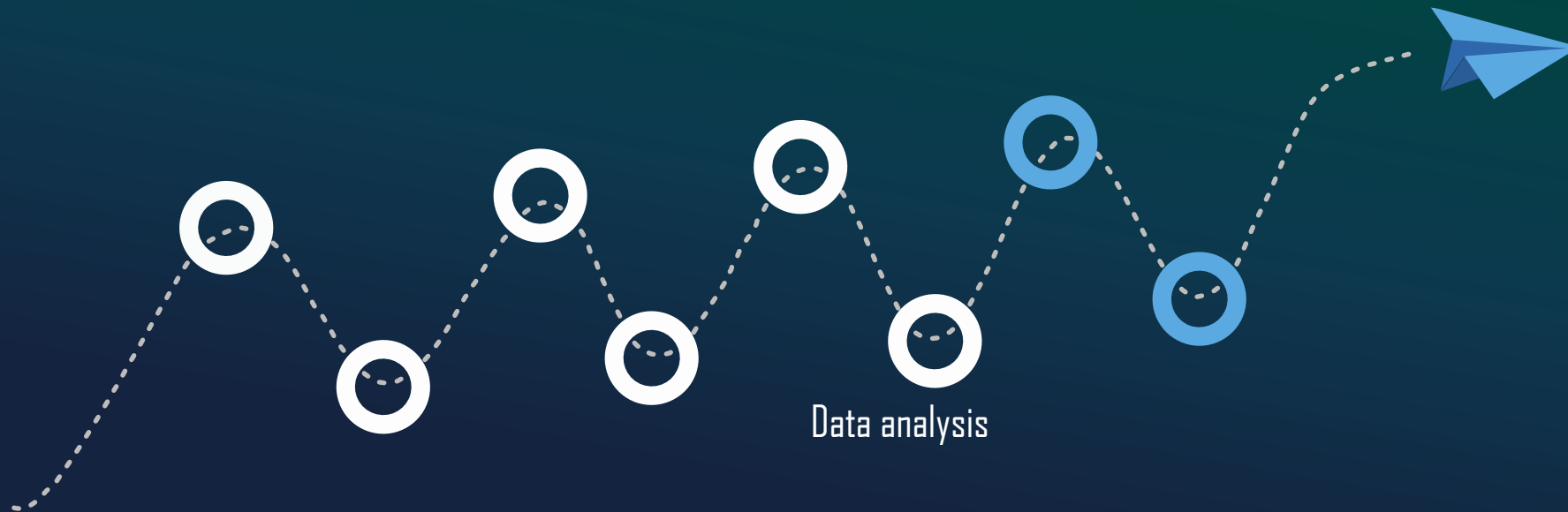
The image shows a screenshot of a web-based survey interface. At the top, there is a header with a logo consisting of a network of nodes and lines, followed by the text 'BLUE and GREEN'. Below this, the title 'Questionário Roadmap Nacional para a Biotecnologia Azul: DRIVING THE BLUEandGREEN ECONOMY IN PORTUGAL' is displayed. The main content area is titled 'QUESTIONÁRIO - Roadmap Nacional para a Biotecnologia Azul: DRIVING THE BLUEandGREEN ECONOMY IN PORTUGAL'. It includes a section labeled 'SECÇÃO 1 - DADOS BIOMÉTRICOS' and a form field for 'Nome da instituição: \*' with a 'Your answer' label below it. The interface is clean and professional, with a blue and green color scheme.

Interviews with  
stakeholders



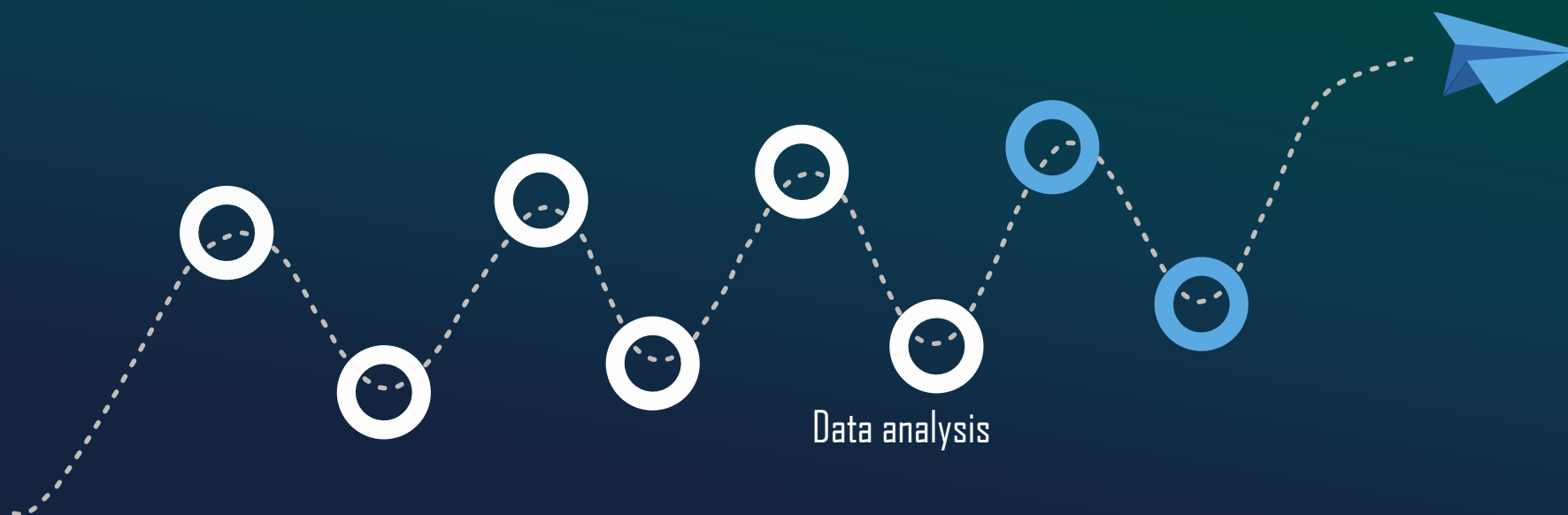
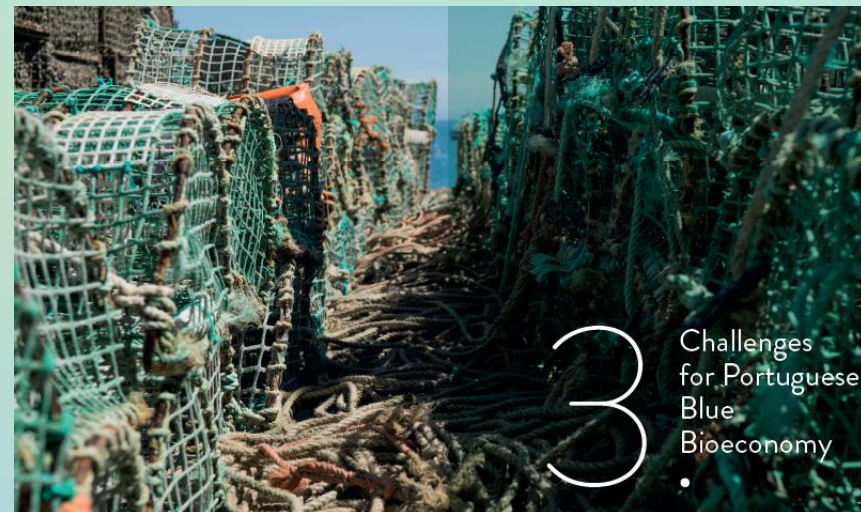
Data analysis was performed for three different groups of information:

## Stakeholders' map



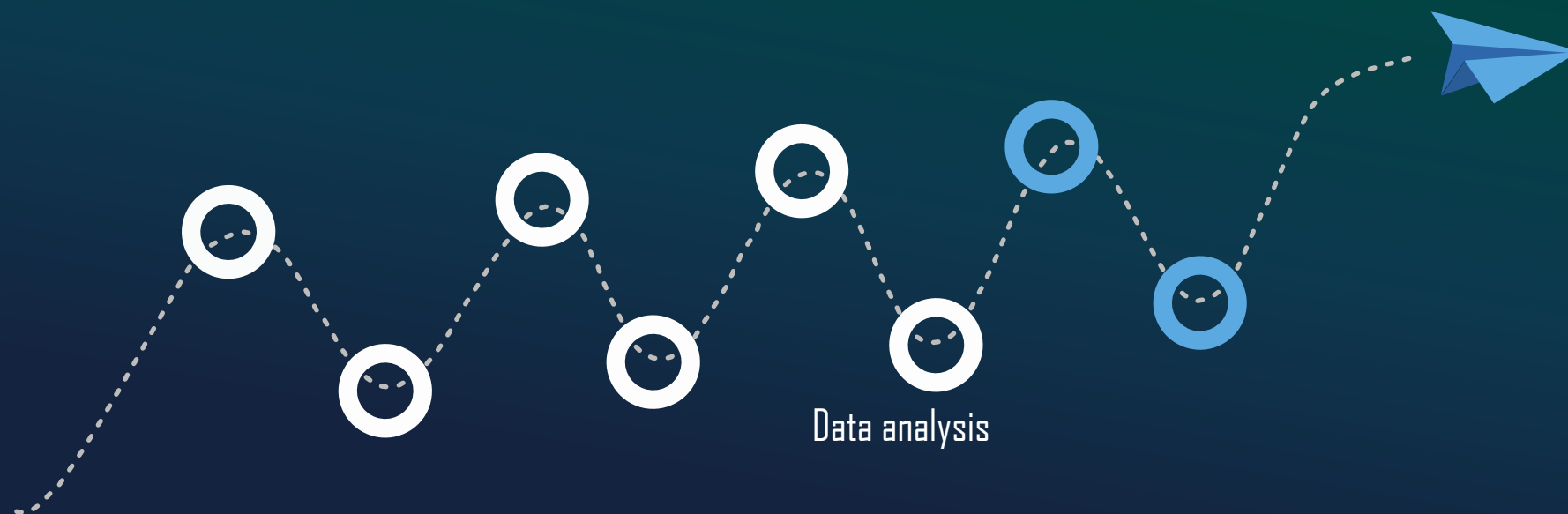
Data analysis was performed for three different groups of information:

- Stakeholders' map
- Identification and quantification of challenges



Data analysis was performed for three different groups of information:

- Stakeholders' map
- Identification and quantification of challenges
- Identification and prioritisation of actions



Results were summarised  
and combined with  
retrieved  
from the previous steps

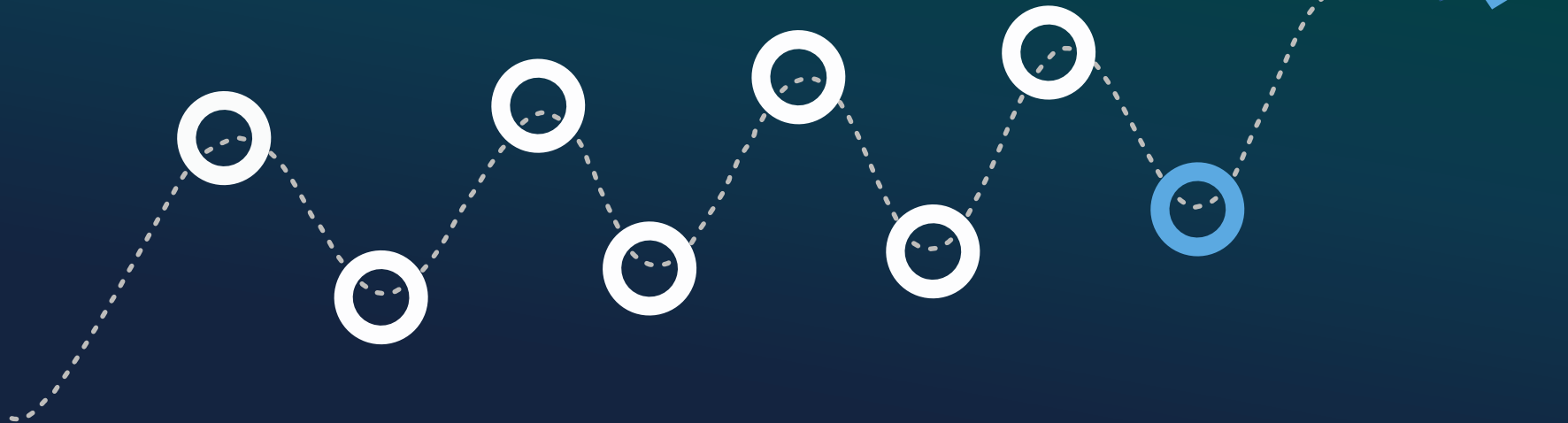
+

Multi-disciplinary view of  
the CIIMAR and BBA  
groups

=

Pinpoint the most relevant  
**challenges** and the  
corresponding **actions**  
needed to  
address those challenges

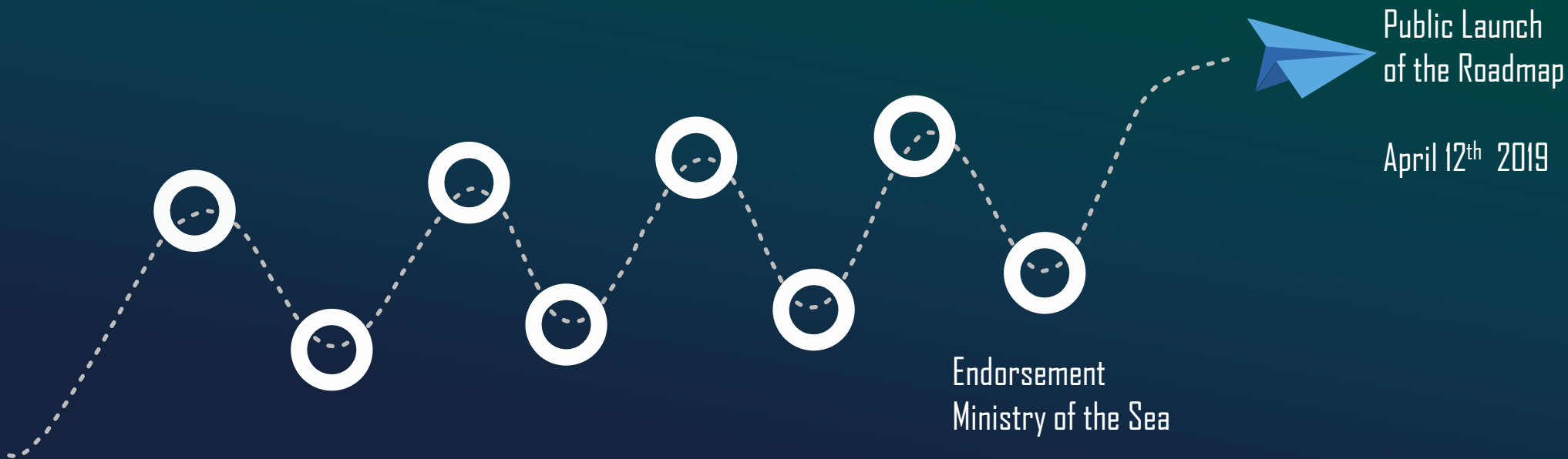
Definition of  
Challenges and Actions



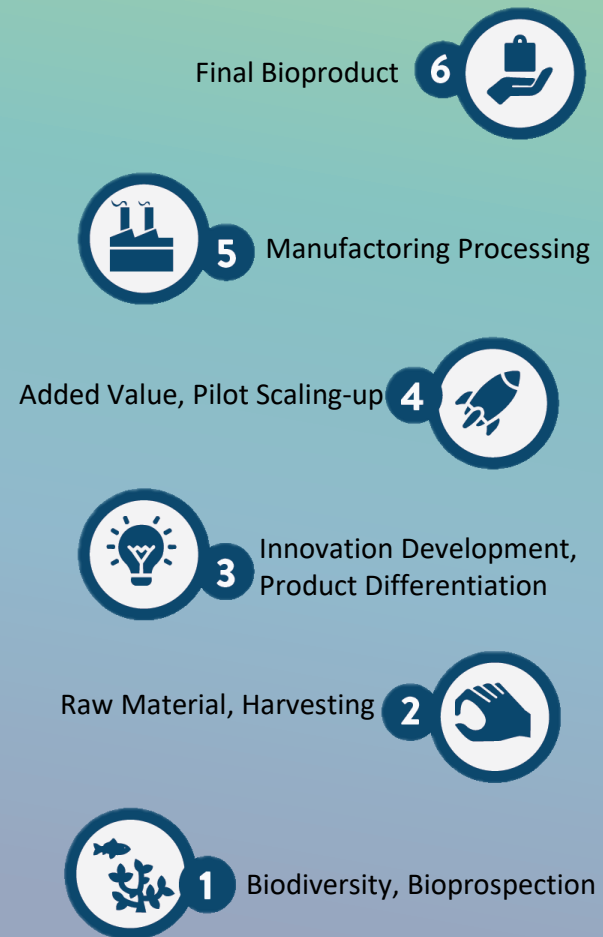


Ana Paula Vitorino  
Ministry of the Sea

"Growth per se is not enough, it is not the sole ultimate goal. However, achieving it with innovation and sustainability is the main driver of our policy."



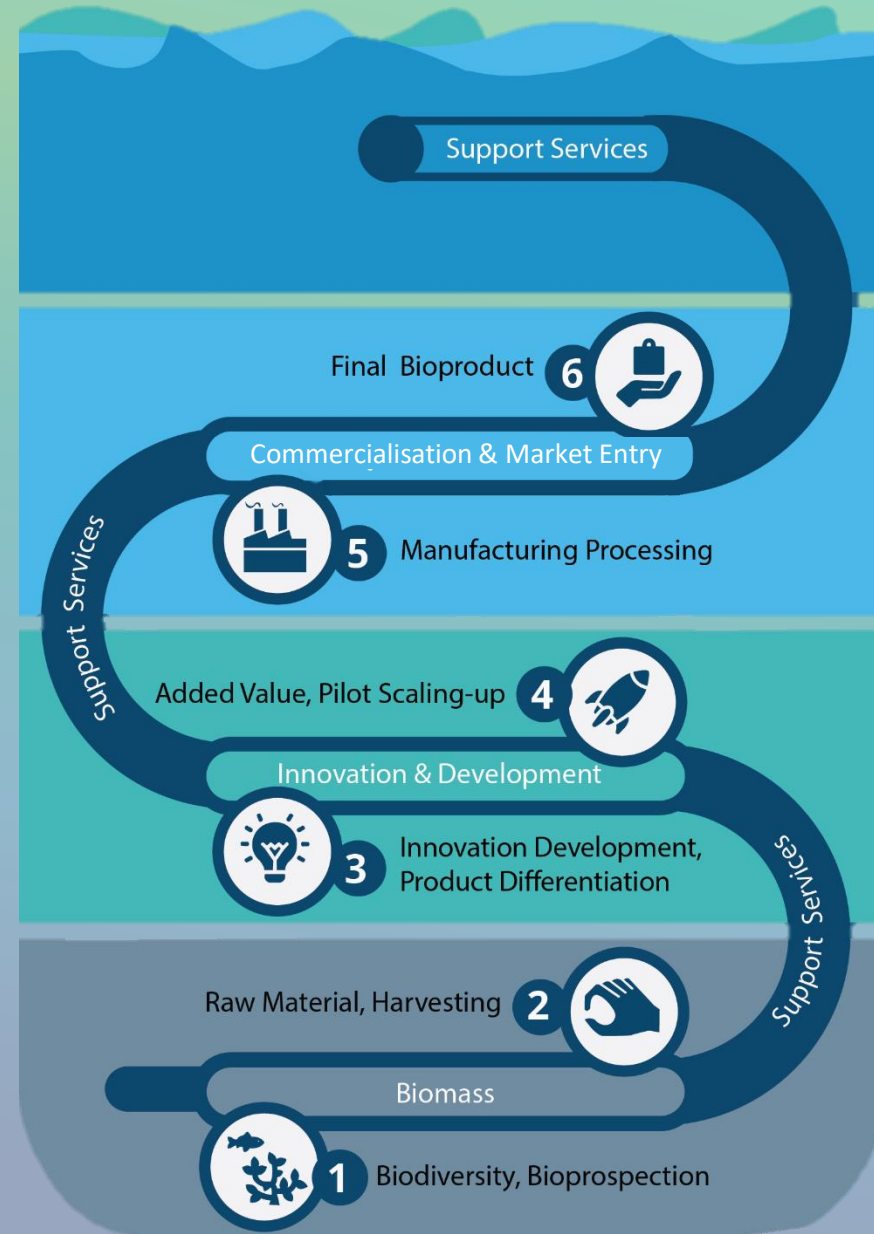
# VALUE CHAIN



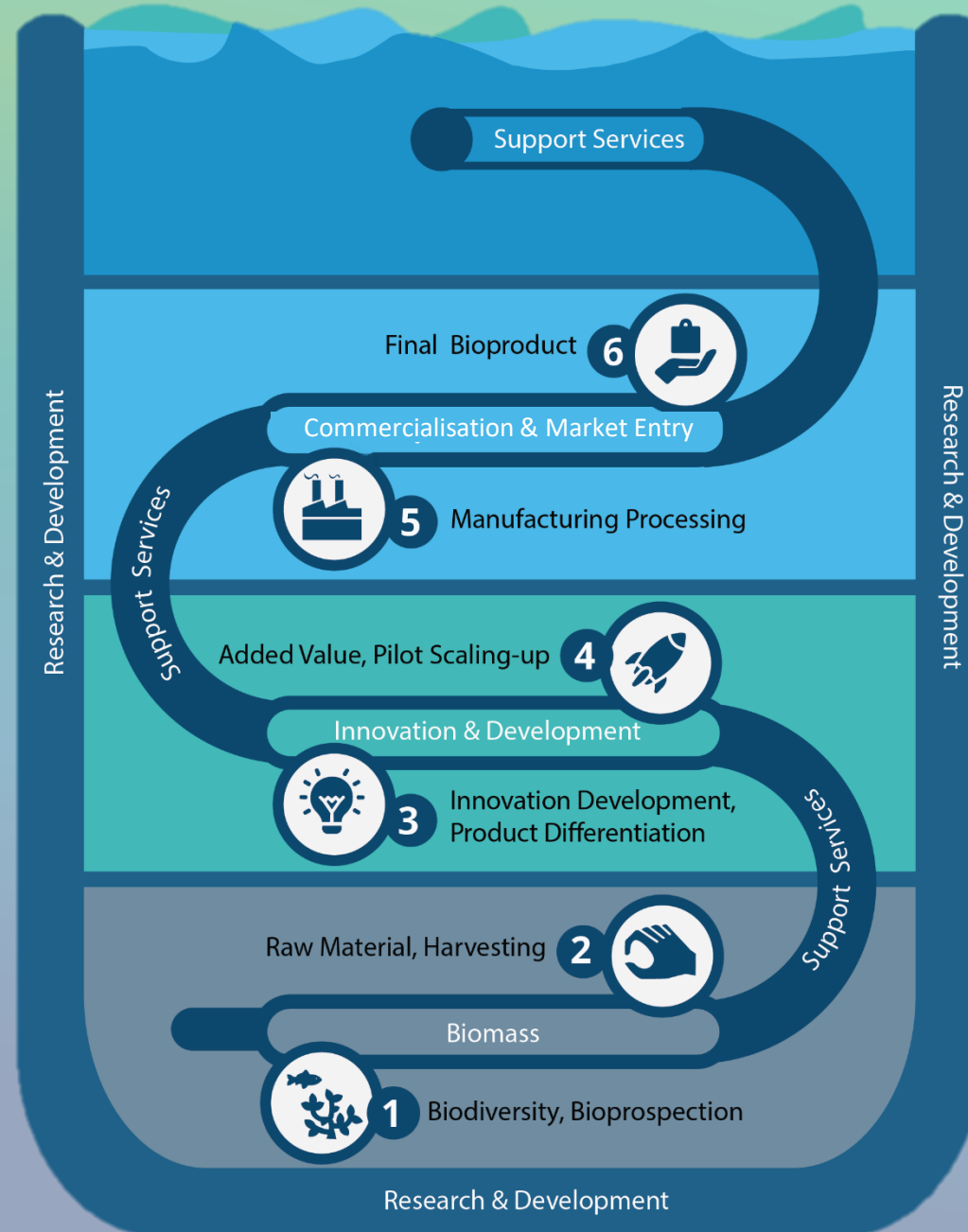
# VALUE CHAIN



# VALUE CHAIN



# VALUE CHAIN



The Roadmap is divided in

# 3 MAIN SECTIONS

Mapping  
Blue Bioeconomy  
in Portugal



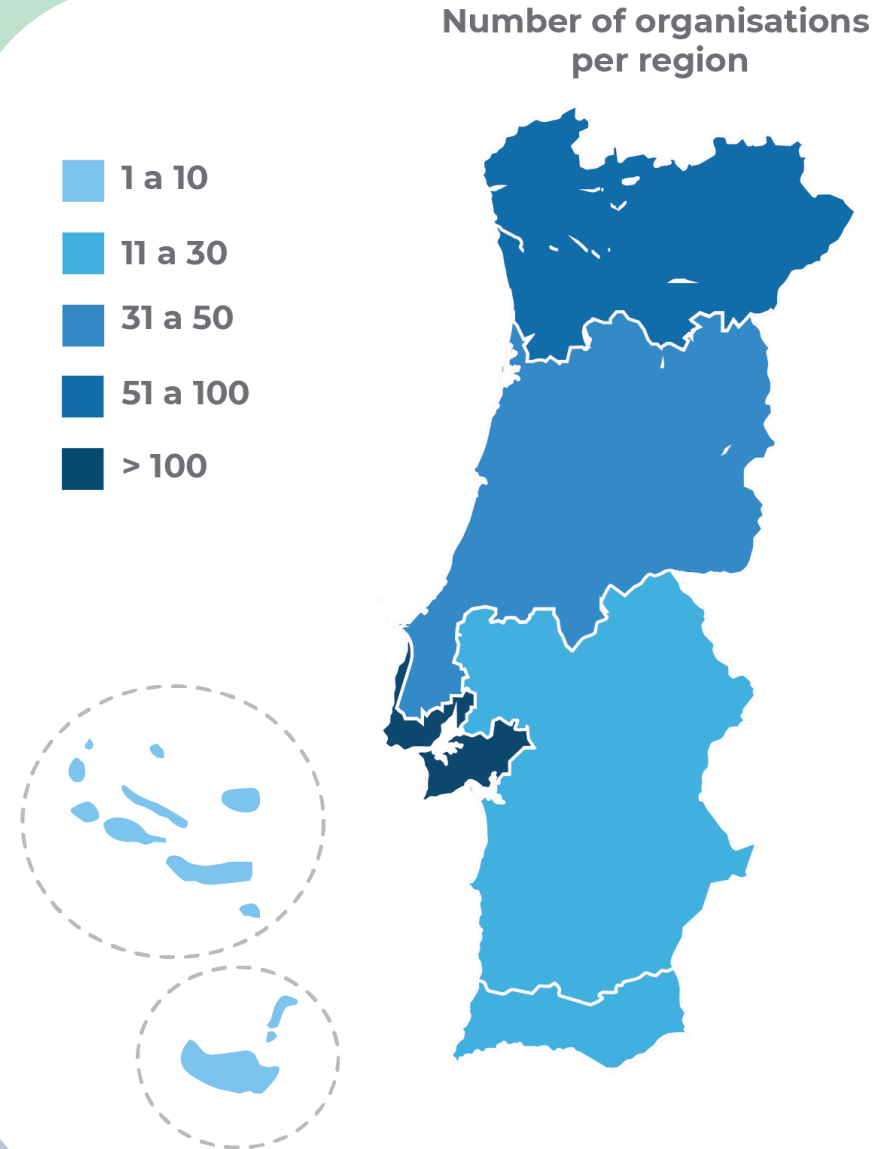
Challenges  
for the Portuguese Blue  
Bioeconomy



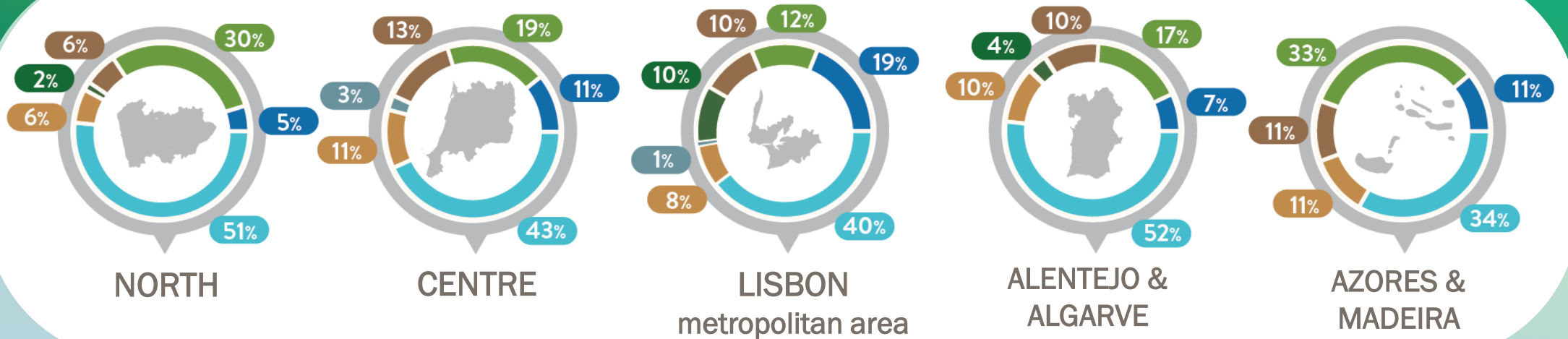
Actions  
Roadmap for 2030 of the Portuguese  
Blue Bioeconomy



Most of Portuguese  
Blue Bioeconomy stakeholders  
are located in the  
metropolitan area of **LISBON**  
**41%**  
and in the  
**NORTH 28%**



## Mapping

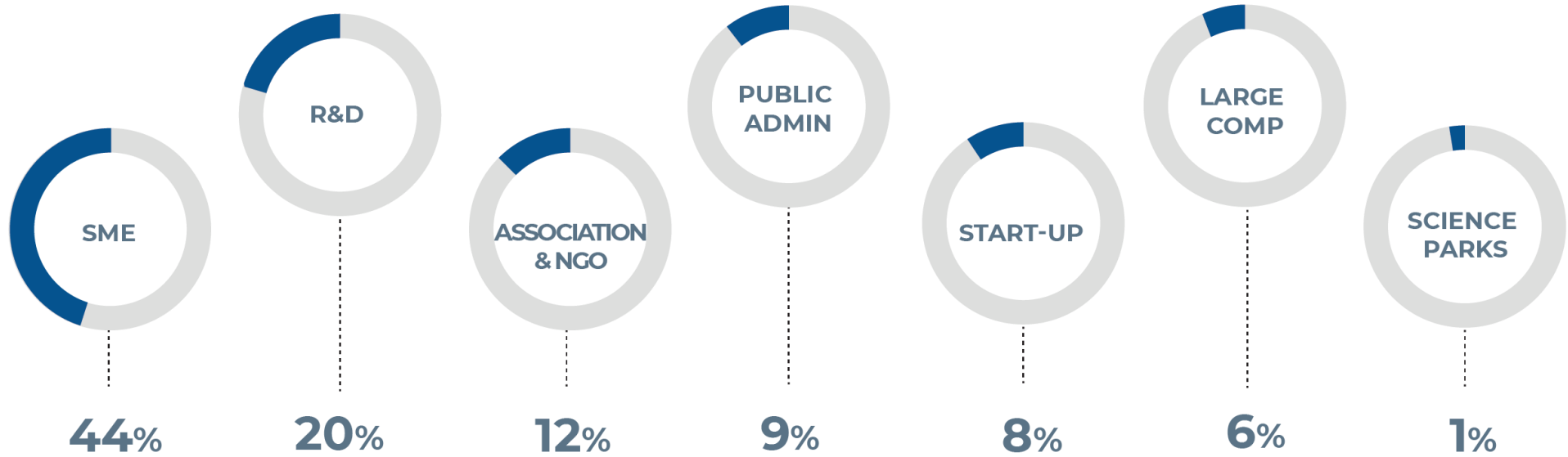


The relative proportion of each type of organisation is relatively **stable among geographical regions**

The only exception are **public administration entities,**

As 86% of them are located in the Lisbon area.

- Large Companies
- Public Administration
- R&D
- Science and Technology Parks/Technological Centres
- Support Services
- SMEs
- Startups

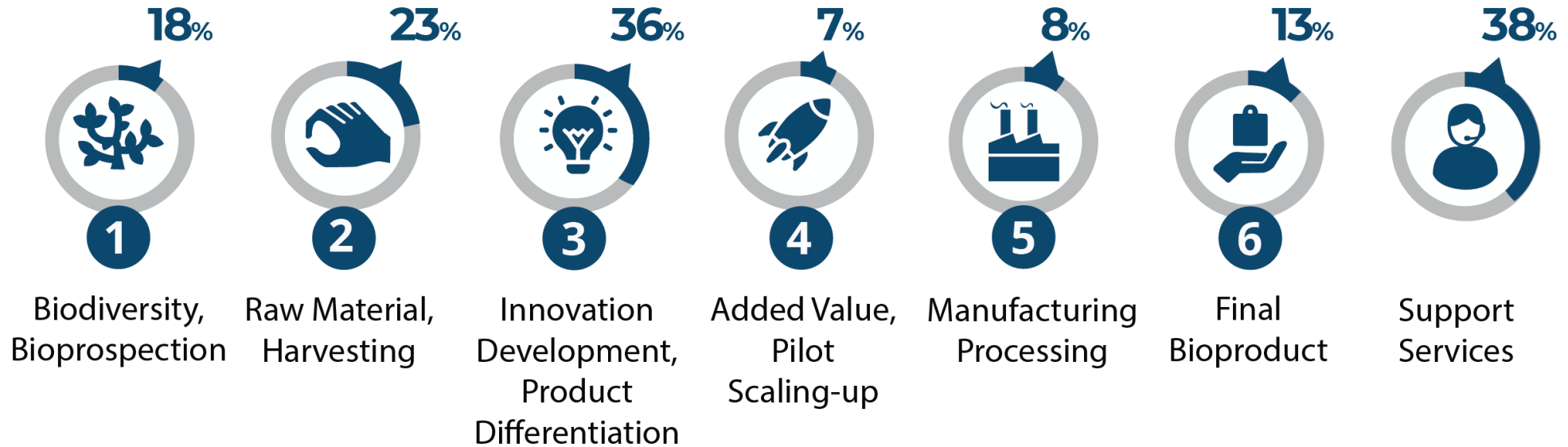


Large proportion of SMEs

Important driver of the  
Portuguese Blue Bioeconomy

Following SMEs, **academic research entities** and **associations/incubators/NGOs** are the most represented entities in the Portuguese Blue Bioeconomy sector.

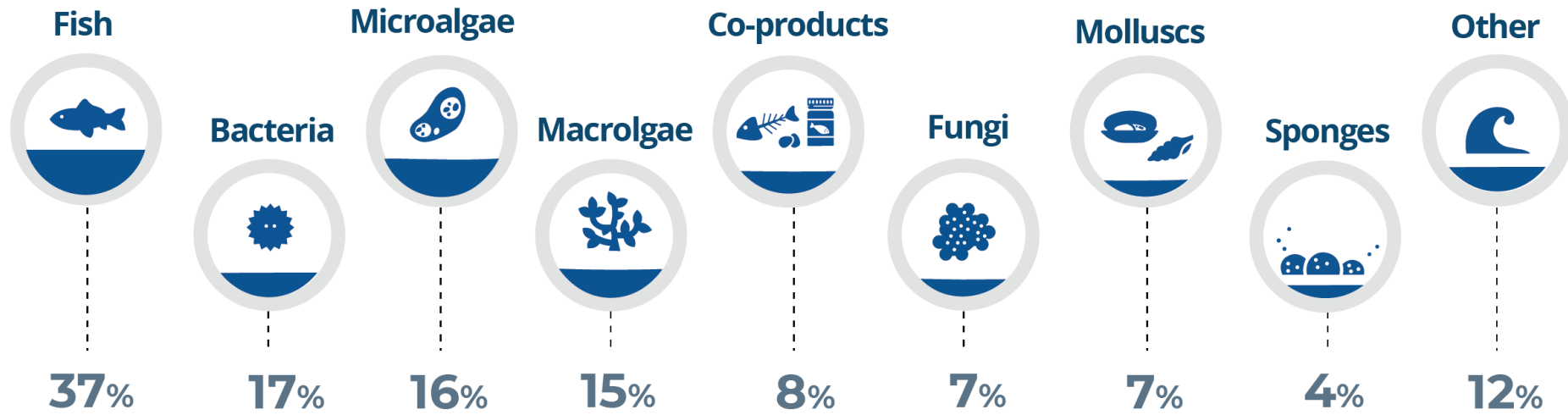
## Mapping



Portuguese stakeholders are focused either  
in the **first steps of the value chain**,  
or in providing **Support Services**

**low number** of stakeholders are associated with  
**Commercialisation and Market Entry**

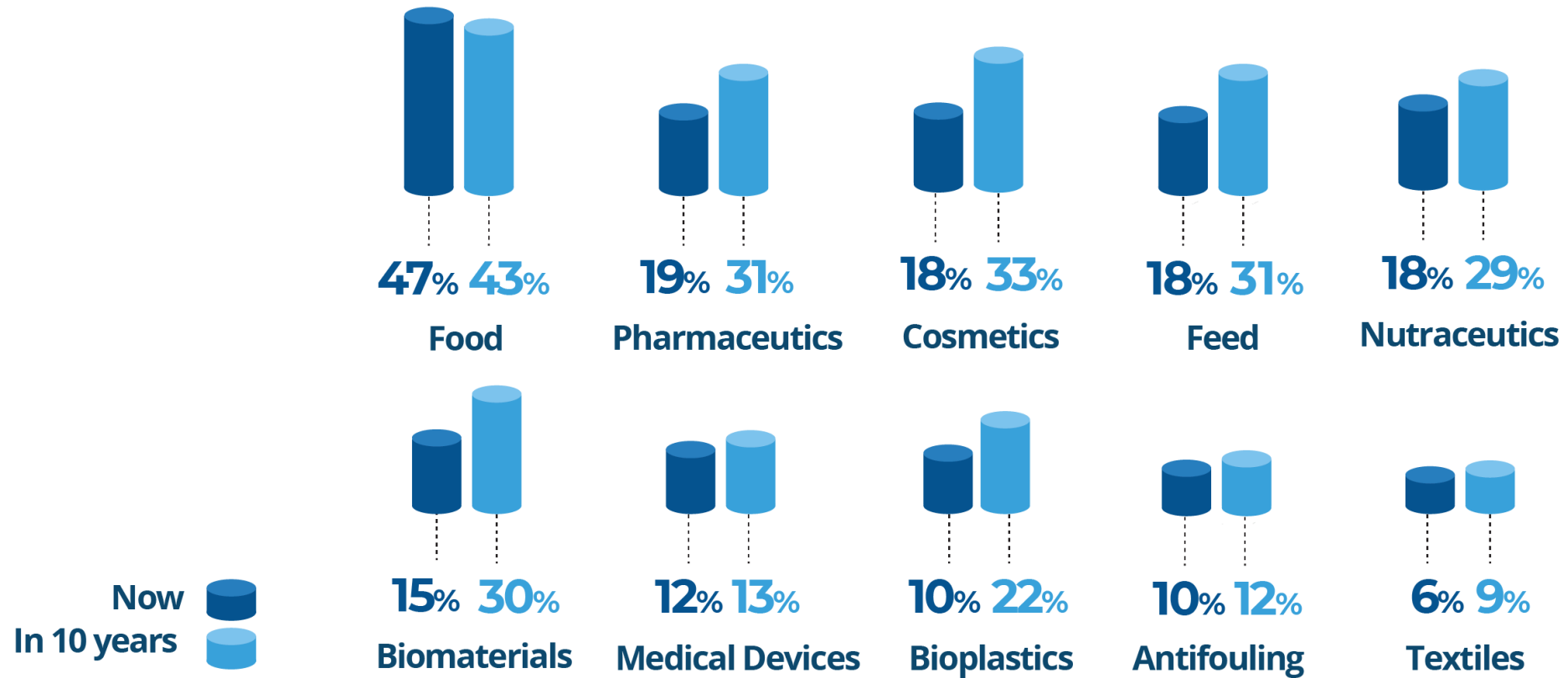
Distribution of stakeholders throughout the Blue Bioeconomy value chain is **not even**



## Main resource

- Microorganisms altogether are
- used by
- 36% of the stakeholders

- Algae (micro and macro)
- are used by
- 31% of the stakeholders.



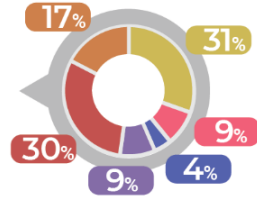
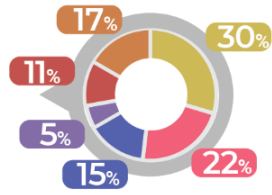
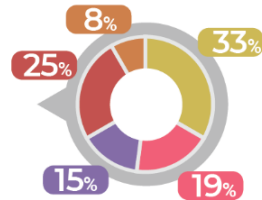
Food applications are still the main focus of most stakeholders  
Increasing interest to expand towards other fields

Bioplastics & Biomaterials  
hot-topics at the forefront of blue biotechnology R&D

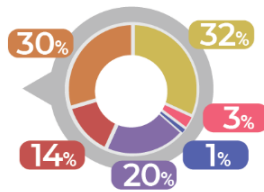
Mapping

Challenges

## CHALLENGES

Support  
ServicesCommercialisation  
& Market EntryInnovation &  
Development

Biomass



Research &amp; Development

Support Services

Raw Material, Harvesting



Biomass



Biodiversity, Bioprospection

Research &amp; Development

Innovation Development,  
Product Differentiation

Added Value, Pilot Scaling-up



Manufacturing Processing



Commercialisation &amp; Market Entry

Final Bioproduct



Support Services

Research &amp; Development

Challenges were identified by stakeholders for each step of the value chain and grouped into the following categories:

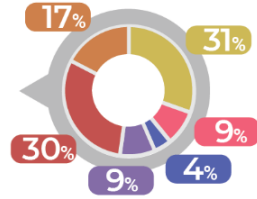
- Science & Technology and Logistics
- Cooperation
- Communication & Marketing
- Market & Consumer
- Funding & Cost of Operations
- Legal & Regulatory

Mapping

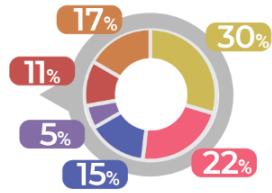
Challenges

## CHALLENGES

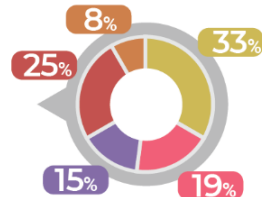
Support  
Services



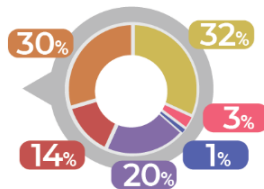
Commercialisation  
& Market Entry



Innovation &  
Development

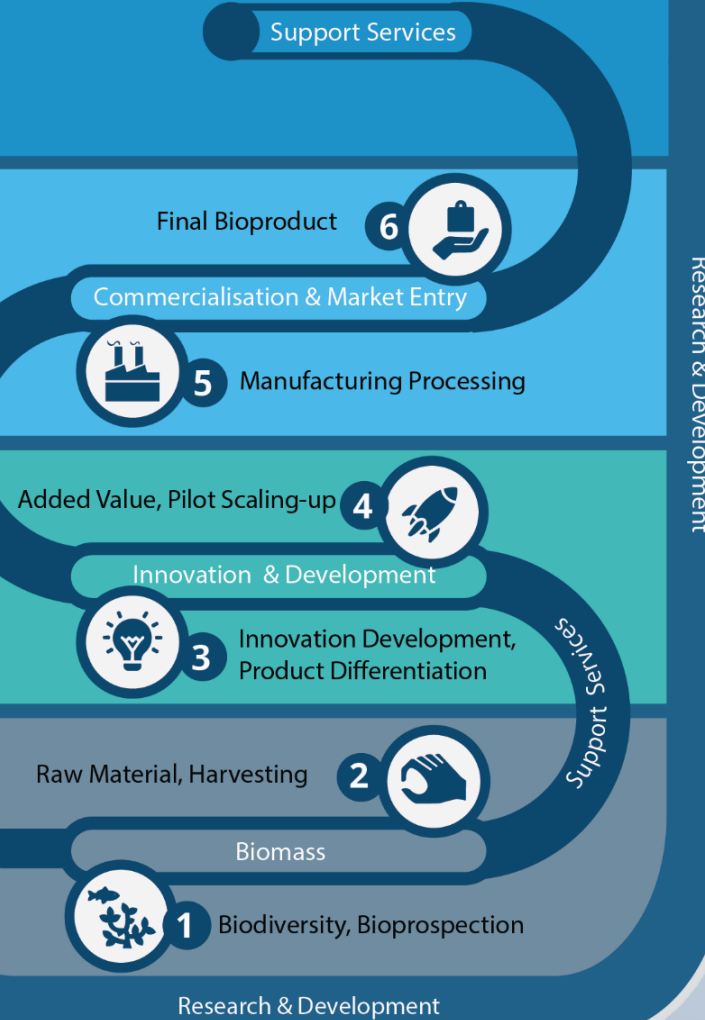


Biomass



Research & Development

Support Services



Most of the challenges identified by stakeholders are associated with:

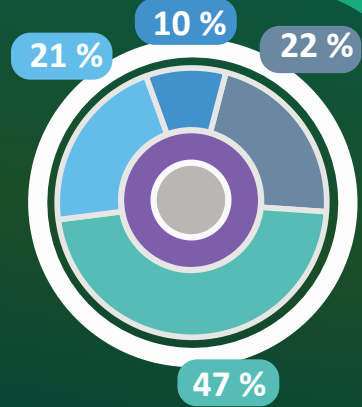
Cooperation

Followed by

Funding &  
Cost of Operations

Legal &  
Regulatory

SCIENCE,  
TECNOLOGY  
& LOGISTICS



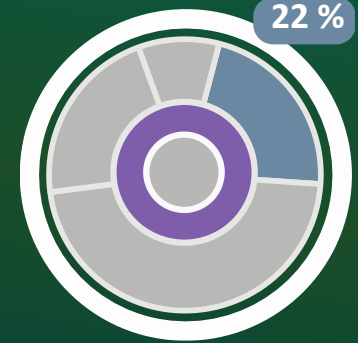
Harvesting, Biomass  
Production & Bioprospecting

Innovation Development  
& Product Differentiation

Commercialisation  
& Market Entry

Support  
Services

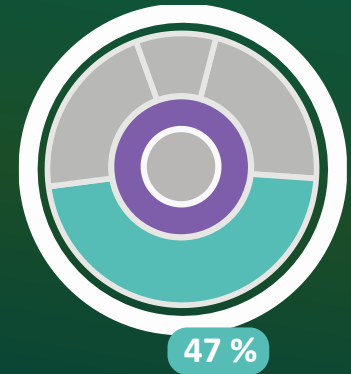
SCIENCE,  
TECNOLOGY  
& LOGISTICS



“ Missing capacity to replicate bioresources in laboratory

Harvesting, Biomass  
Production & Bioprospecting

SCIENCE,  
TECNOLOGY  
& LOGISTICS

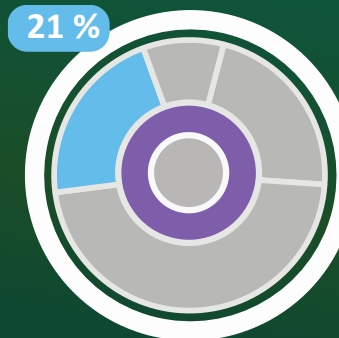


“

Difficulty in hiring  
specialised human  
resources

Innovation Development  
& Product Differentiation

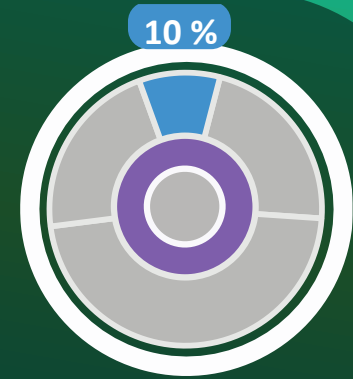
SCIENCE,  
TECNOLOGY  
& LOGISTICS



“  
Difficulty in  
penetrating  
existing value  
chains

Comercialization and Market  
Entry

SCIENCE,  
TECNOLOGY  
& LOGISTICS

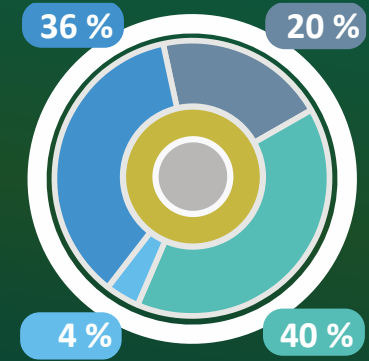


“

Difficulty in accessing  
laboratory spaces

Support  
Services

## COOPERATION



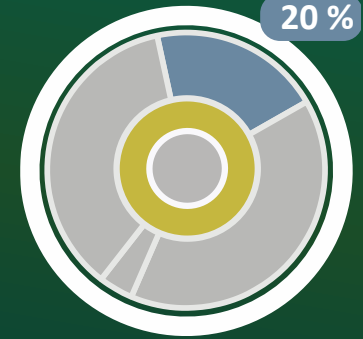
Harvesting, Biomass  
Production & Bioprospecting

Innovation Development  
& Product Differentiation

Commercialisation  
& Market Entry

Support  
Services

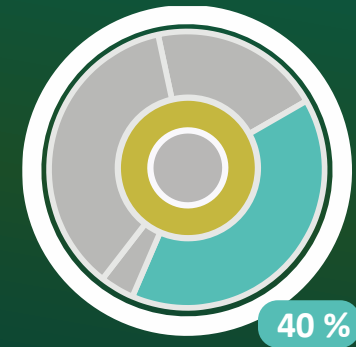
## COOPERATION



“ Access to  
bioresources/  
biobanks is complicated  
or not clear

Harvesting, Biomass  
Production & Bioprospecting

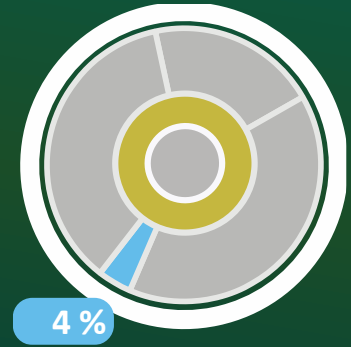
## COOPERATION



“  
Difficulty in accessing  
pilot scale units

Innovation Development  
& Product Differentiation

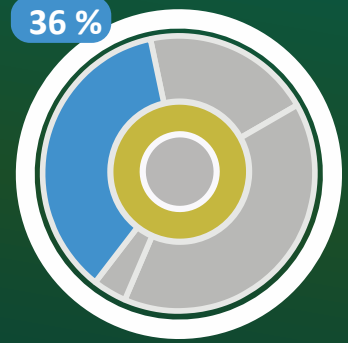
## COOPERATION



“  
Difficulty in accessing  
manufacturing facilities

Commercialisation  
& Market Entry

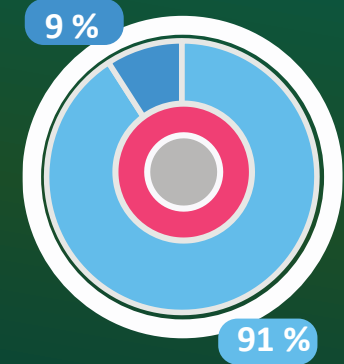
## COOPERATION



“  
Difficulty in finding  
national cooperation  
partners

Support  
Services

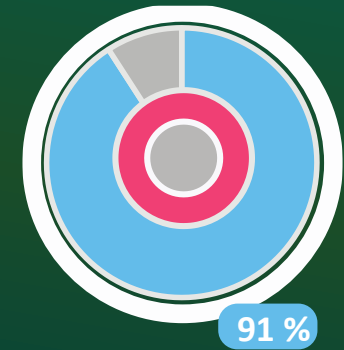
## COOPERATION



Commercialisation  
& Market Entry

Support  
Services

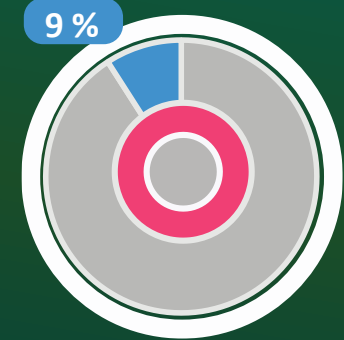
## COOPERATION



“Difficulty in reaching out to clients

Commercialisation  
& Market Entry

## COMMUNICATION & MARKETING

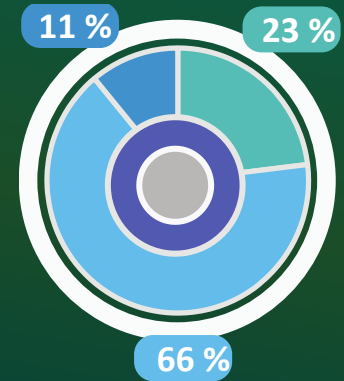


“

Difficulty to find the right events to showcase products and find new clients

Support  
Services

MARKET  
& CONSUMER

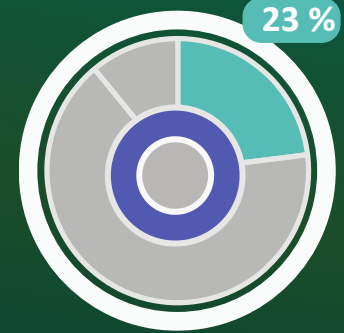


Innovation Development  
& Product Differentiation

Commercialisation  
& Market Entry

Support  
Services

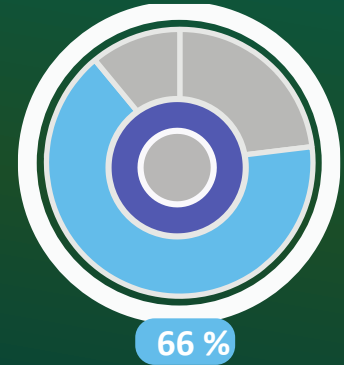
MARKET  
& CONSUMER



“There is no market demand for innovative added-value products”

Innovation Development  
& Product Differentiation

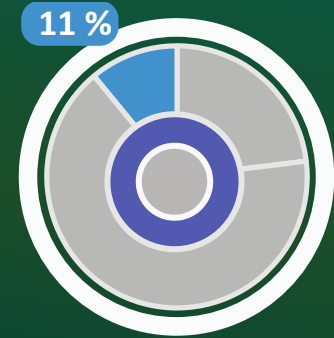
MARKET  
& CONSUMER



“  
Difficulty in  
determining real  
market need

Commercialisation  
& Market Entry

MARKET  
& CONSUMER



“Need help in defining  
and developing a  
business model”

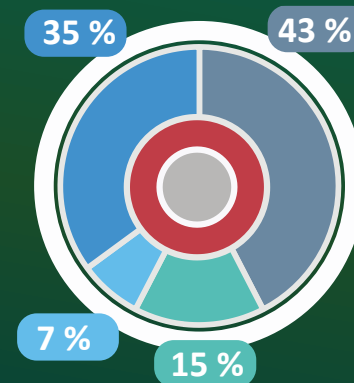
Support  
Services



Mapping

Challenges

FUNDING  
& COST OF  
OPERATIONS



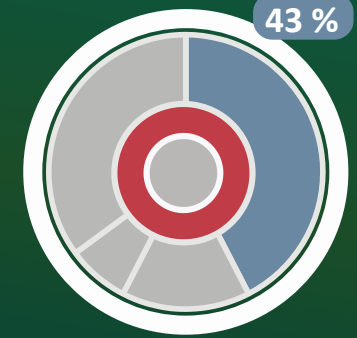
Harvesting, Biomass  
Production & Bioprospecting

Innovation Development  
& Product Differentiation

Commercialisation  
& Market Entry

Support  
Services

FUNDING  
& COST OF  
OPERATIONS

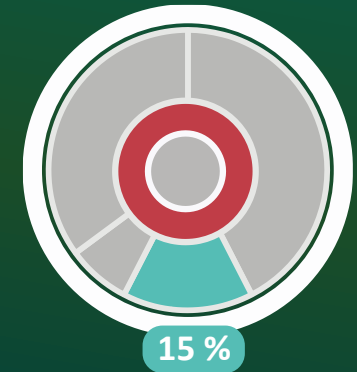


“

Complex mechanisms  
to receive funding

Harvesting, Biomass  
Production & Bioprospecting

FUNDING  
& COST OF  
OPERATIONS



“

Difficulty in attracting  
reliable funding

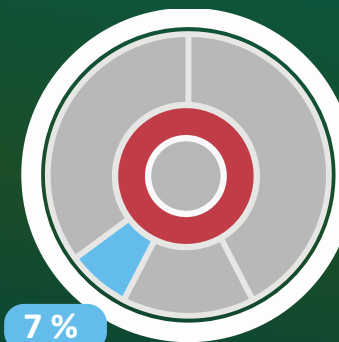
Innovation Development  
& Product Differentiation



Mapping

Challenges

FUNDING  
& COST OF  
OPERATIONS

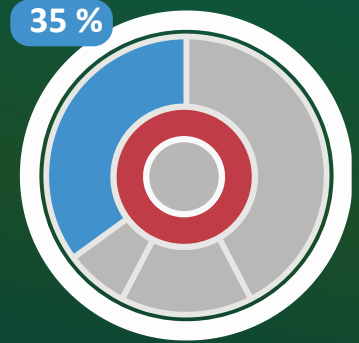


“

Can not match desired  
price tag/ unit

Commercialisation  
& Market Entry

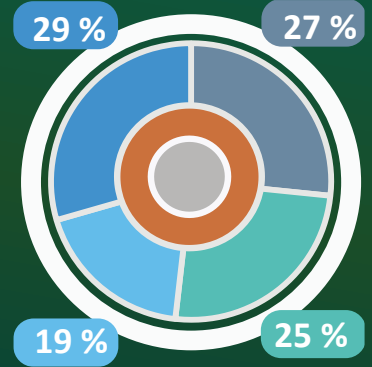
FUNDING  
& COST OF  
OPERATIONS



“Need help in  
attracting  
or securing funding

Support  
Services

LEGAL &  
REGULATORY



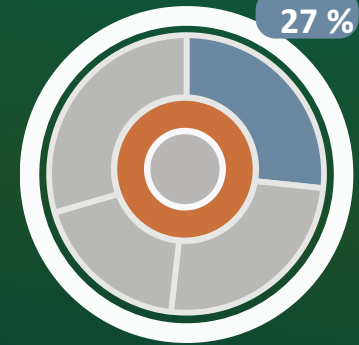
Harvesting, Biomass  
Production & Bioprospecting

Innovation Development  
& Product Differentiation

Commercialisation  
& Market Entry

Support  
Services

LEGAL &  
REGULATORY

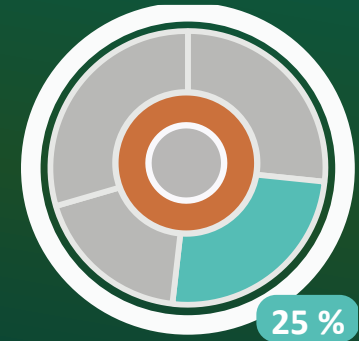


“

Complex licensing  
and regulation

Harvesting, Biomass  
Production & Bioprospecting

LEGAL &  
REGULATORY

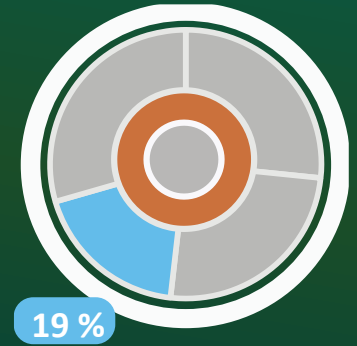


“

Complex licensing  
and regulation

Innovation Development  
& Product Differentiation

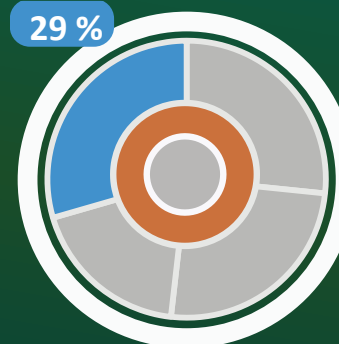
LEGAL &  
REGULATORY



“ Intellectual property issues

Commercialisation  
& Market Entry

LEGAL &  
REGULATORY



“

Lack of financial sector's  
knowledge on the Blue  
Bioeconomy aspects

Support  
Services



SCIENCE, TECHNOLOGY  
& LOGISTICS

Promote Tech Transfer Offices at  
Universities



2019-2020



SCIENCE, TECHNOLOGY  
& LOGISTICS

Funding scheme for equipment  
Networks and upgrading ship equipment for modern  
bioprospection

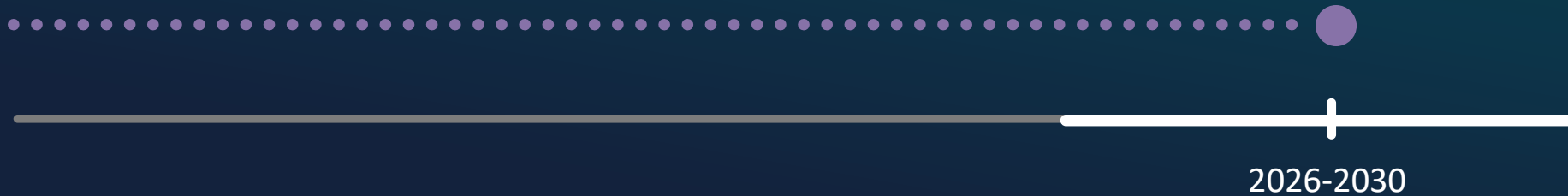


2021-2025



SCIENCE, TECHNOLOGY  
& LOGISTICS

Public-private partnerships for sharing equipment  
and facilitate  
access to bioprospecting missions





Mapping

Challenges

Actions



## SCIENCE, TECHNOLOGY & LOGISTICS

Co-fund projects to install pilot units  
close to local industries, and improve commercial connections and logistical  
platforms surrounding blue bioresources production centres



2026-2030



SCIENCE, TECHNOLOGY  
& LOGISTICS

Create  
a quota system  
for marine algae



2026-2030



## COOPERATION

Promote national and international matchmaking events, roadshows and collaborative actions between stakeholders



2019-2020



COOPERATION

Promote synergies through Blue  
Bioeconomy acceleration programmes



2019-2020



## COOPERATION

Continue to support initiatives like  
the **Blue Demo Network** and  
**Collaborative Laboratories (Co-LABs)**



2019-2020



## COOPERATION

Create open innovation-based calls  
to address industry challenges and  
promote blue economy innovation  
vouchers



2021-2025



COOPERATION

Promote access to opportunities for  
public and private R&D institutions



2021-2025



COOPERATION

National blue pilot infrastructure to  
be used through the value chain



2021-2025



COOPERATION

Create a blue biobank national infrastructure with clear access rules



2026-2030



## COMMUNICATION & MARKETING

SMEs trainee vouchers for  
communicating industry reality  
to students



2019-2020



## COMMUNICATION & MARKETING

Implement a **Blue Hub National portal** with information about stakeholders, bioresources, and available infrastructures



2019-2020



Mapping

Challenges

Actions



## COMMUNICATION & MARKETING

Funding for promotional actions,  
professional outreach and dissemination  
and branding campaigns of national blue bioproducts



2021-2025



## COMMUNICATION & MARKETING

Revise training programmes for scientists, executives and public bodies  
to improve entrepreneurship,  
management and industrial skills



2021-2025



Mapping

Challenges

Actions



## COMMUNICATION & MARKETING

Policy and position papers  
by national stakeholders



2026-2030



MARKET  
& CONSUMER

Communication materials to  
promote the sector and inform  
stakeholders and consumers



2019-2020



MARKET  
& CONSUMER

Update the satellite account of the sea to include novel  
blue biobased activities



2019-2020



MARKET  
& CONSUMER

National market study on blue  
bioproducts and their applications





## FUNDING & COST OF OPERATIONS

*Simplify national funding schemes*, reduce time for evaluation, and implement fast track processes from decision to payment



2019-2020



FUNDING  
& COST OF OPERATIONS

Blue acceleration programmes and  
funding for risky entrepreneurial  
exploratory projects



2019-2020



FUNDING  
& COST OF OPERATIONS

Intellectual property and PhD  
vouchers for SMEs and startups



2019-2020



**FUNDING**  
**& COST OF OPERATIONS**

Broaden the scope of blue funding schemes to cover industrial processes,  
upscaling and de-risking  
technological development processes



2021-2025



FUNDING  
& COST OF OPERATIONS

Incentives for foreign investors  
to invest in the national Blue  
Bioeconomy

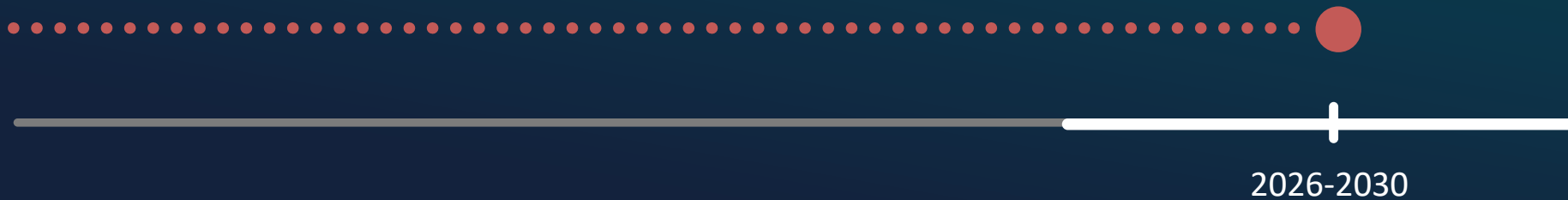


2021-2025



**FUNDING**  
**& COST OF OPERATIONS**

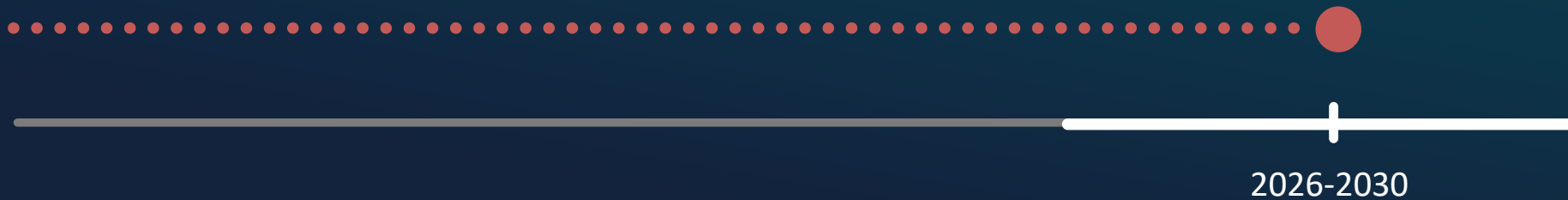
Incentives for promoting **circular**  
**economy** processes in SMEs





## FUNDING & COST OF OPERATIONS

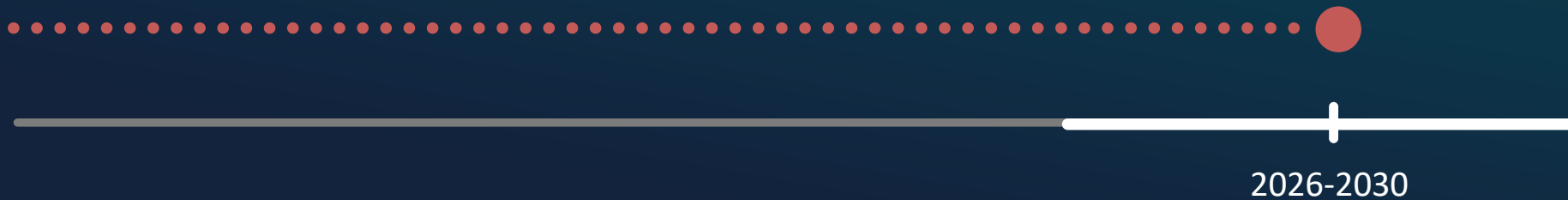
Create a public-private blue  
investment fund





**FUNDING**  
**& COST OF OPERATIONS**

Specific bank support credit lines for  
the blue sector





LEGAL &  
REGULATORY

Simple and efficient rules to  
access blue bioresources



2019-2020



LEGAL &  
REGULATORY

Simpler and faster regulatory  
approval paths for blue bioproducts

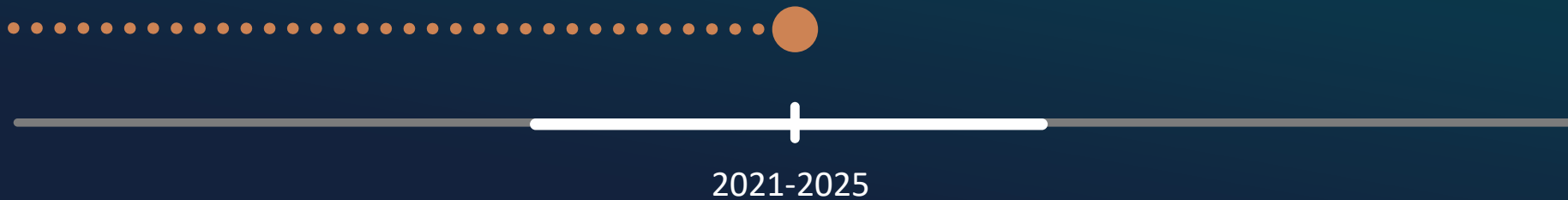


2021-2025



LEGAL &  
REGULATORY

Blue simplex to Blue  
Bioeconomy activities



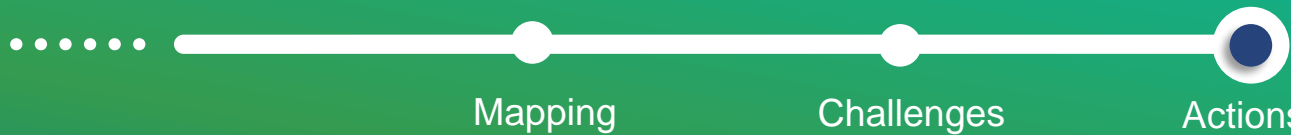


LEGAL &  
REGULATORY

Faster regulatory process for **blue**  
intellectual property protection

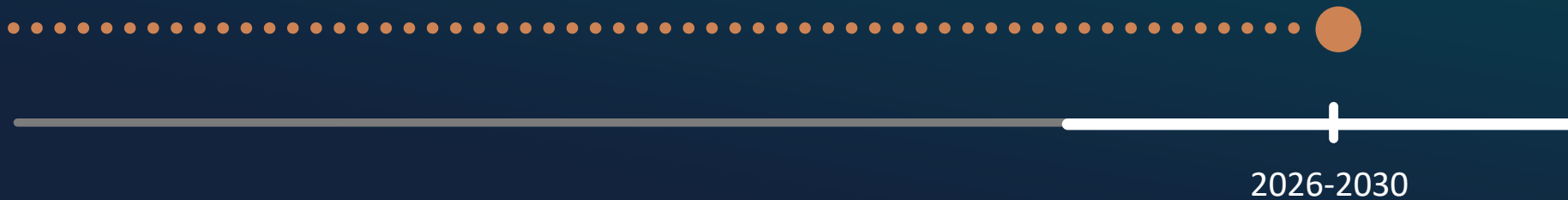


2021-2025



**LEGAL &  
REGULATORY**

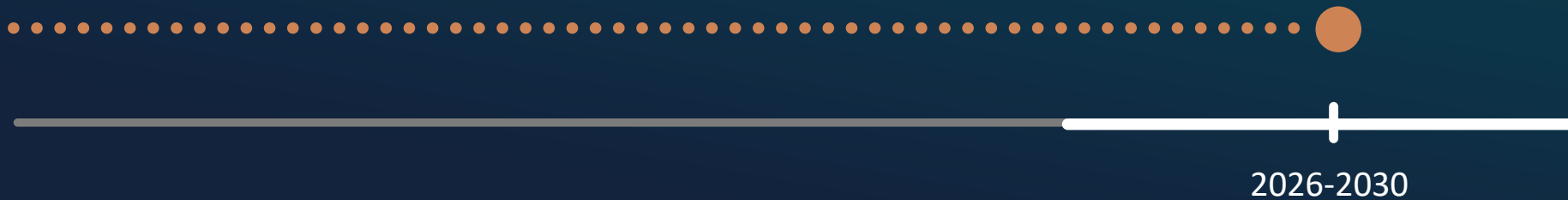
Implement **market importation  
barriers** to non-EU suppliers

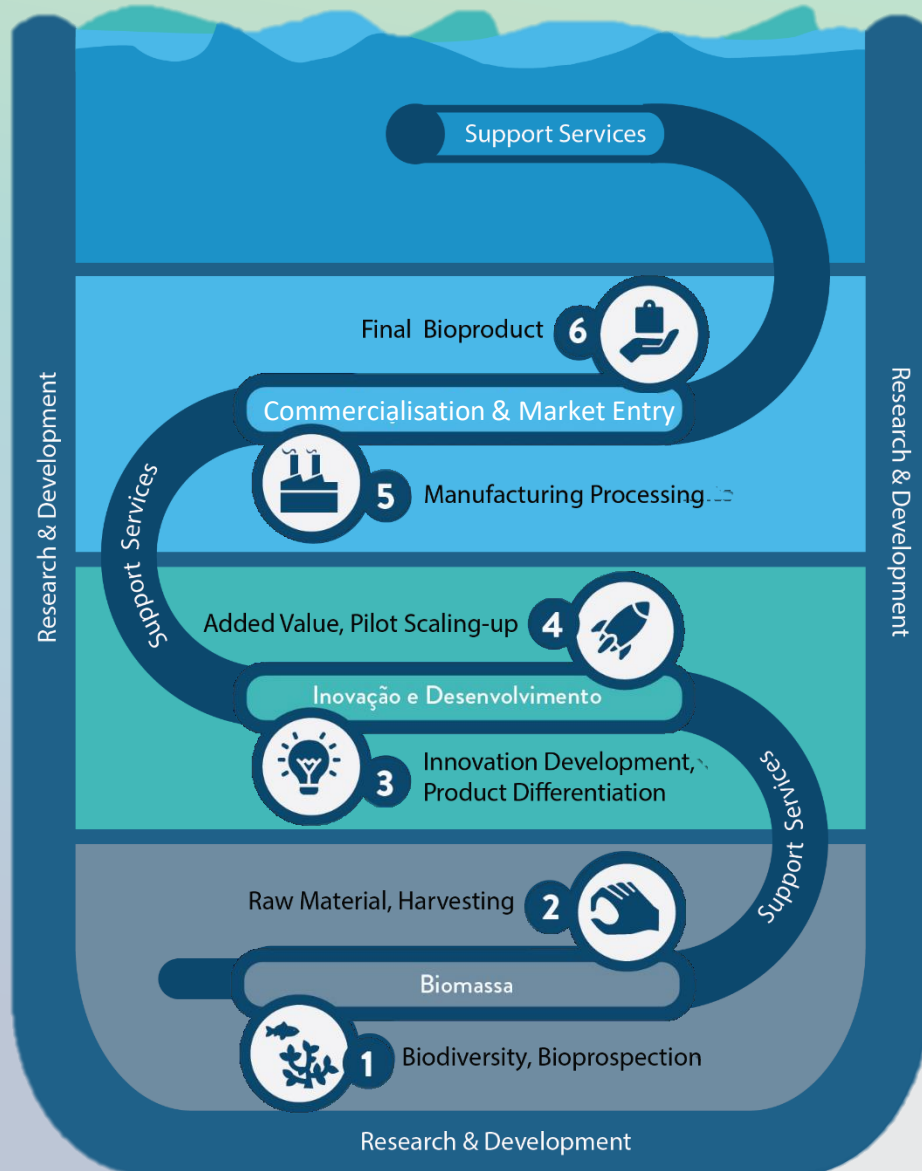




LEGAL &  
REGULATORY

Faster legislation approval  
mechanisms for aquaculture





## Actions transversal to the whole value chain

- 1 Create a **Blue Hub National Portal** with information about all stakeholders, their expertise, products and services.
- 2 Support a **network** that centralises requests for infrastructures related to bioresources, prototyping and pilot upscaling facilities.
- 3 Implement training sessions in entrepreneurship, management and industrial skills in the training programmes for young scientists enrolled in blue bio-based courses.
- 4 Simplification of national funding schemes through the implementation of two stage submission projects, and implementation of fast track processes from decision to payment.
- 5 Blue bioeconomy acceleration programmes, competitive funding calls to address challenges suggested by the industry, and funding schemes for high risk experimentation and exploratory projects.

# THANK YOU

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**ciimar**

*A roadmap is, by nature, a plan that aims to lead somewhere better. It focuses on actions and predicted timelines to promote a certain sector during a predefined timeframe. Therefore, more than just evaluating the specific challenges that the Portuguese Blue Bioeconomy sector is facing today, this roadmap is the result of a multi-stakeholder consultation endeavour and followed by a thorough data analysis. It takes advantage of the stakeholders' expertise on how the blue bio-based sector will be able to improve the sustainable use of bioresources for new products, services and processes.*



BLUE<sub>and</sub>  
GREEN

