



# BIG strategic action plan in the national and European context

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**BIG** is articulated in 6 research trajectories.

1. Marine environment and coastal zone
2. Blue Biotechnology
3. Renewable energies from the sea
4. Abiotic marine resources
5. Shipbuilding and Marine Robotics
6. Marine biotic resources

**Implementation Roadmap:**

Develop a **strategic plan** aimed at identifying **technological developments**, generate appropriate **technology roadmaps**

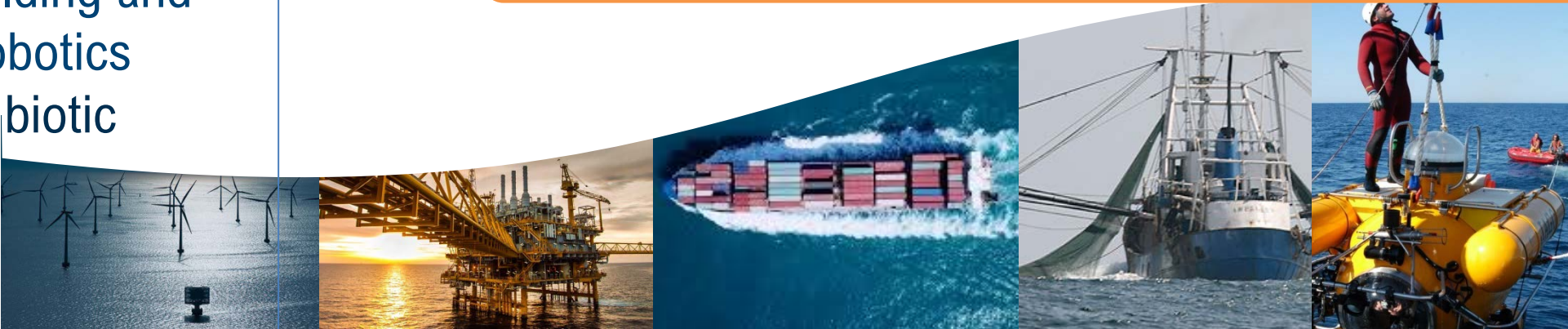
Bring to the **attention of political decision-makers, the available technological opportunities**, in terms of infrastructures, training and human capital;

Mobilize both the **industry**, the **research** and the **training sectors** in order to implement (together with regional administrations) an extended national **partnership**.

Develop **public-private investment plans** with a focus on **research, innovation and knowledge** transfer;

Play a role of **coordination and promotion of access to European funding**, and cooperation activities at **international level**;

Disseminate information to the public in general, and to **promote knowledge sharing among public and industrial sectors**.





## **WG1 Marine Environment and Coastal Areas**

*protection of habitats and marine biodiversity, achievement of Good Environmental Status (GES), sustainable management of the use of the sea that guarantees ecosystem services. Focus on the integration of marine observation systems and technologies for the sustainable use of the marine environment and for the mitigation of impacts.*



## **WG2 Marine biotic resources**

*Renewable biotic resources exploited in a sustainable manner, implement dedicated political strategies (e.g. multi-annual management plans), promote the development of new technologies for environmental sustainability, knowledge and protection of marine habitats, food security, the enhancement of fishery products and the diversification of aquaculture products and their production systems*



## **WG2 Marine abiotic resources**

*Much of the national oil and gas production is extracted from the sea. There are margins for sustainable development and optimization: digitization, automation and modularity will allow to increase the safety of mining activities and expand the areas of extraction to the ultra-deep sea. Scientific studies are strongly needed to protect the environment. The seabed is still almost completely unexplored and potentially rich in important resources.*



## **WG 4 Shipbuilding and marine robotics**

*Maritime transport system: marine vehicles and port infrastructures, the set of non-transport surface units (for example supply vessels, research vessels, fishing units, etc.) and underwater robotics.*



## **WG 5 Renewable energies from the sea**

*Development of energy converters for wave motion, tides and offshore wind (research centers, university spin-offs, SMEs and large companies). Current technological challenge concerns: productivity of the conversion systems, generation platforms, durability of the plants in the marine environment, reduction of maintenance costs, monitoring and mitigation of the impacts on the marine environment*



## **WG 6 Blue biotechnology**

*Relate to the development of automated biosensing technologies for in situ monitoring of environmental quality and risks to human health, biotechnological solutions and bioremediation strategies for the recovery of polluted marine sites.*

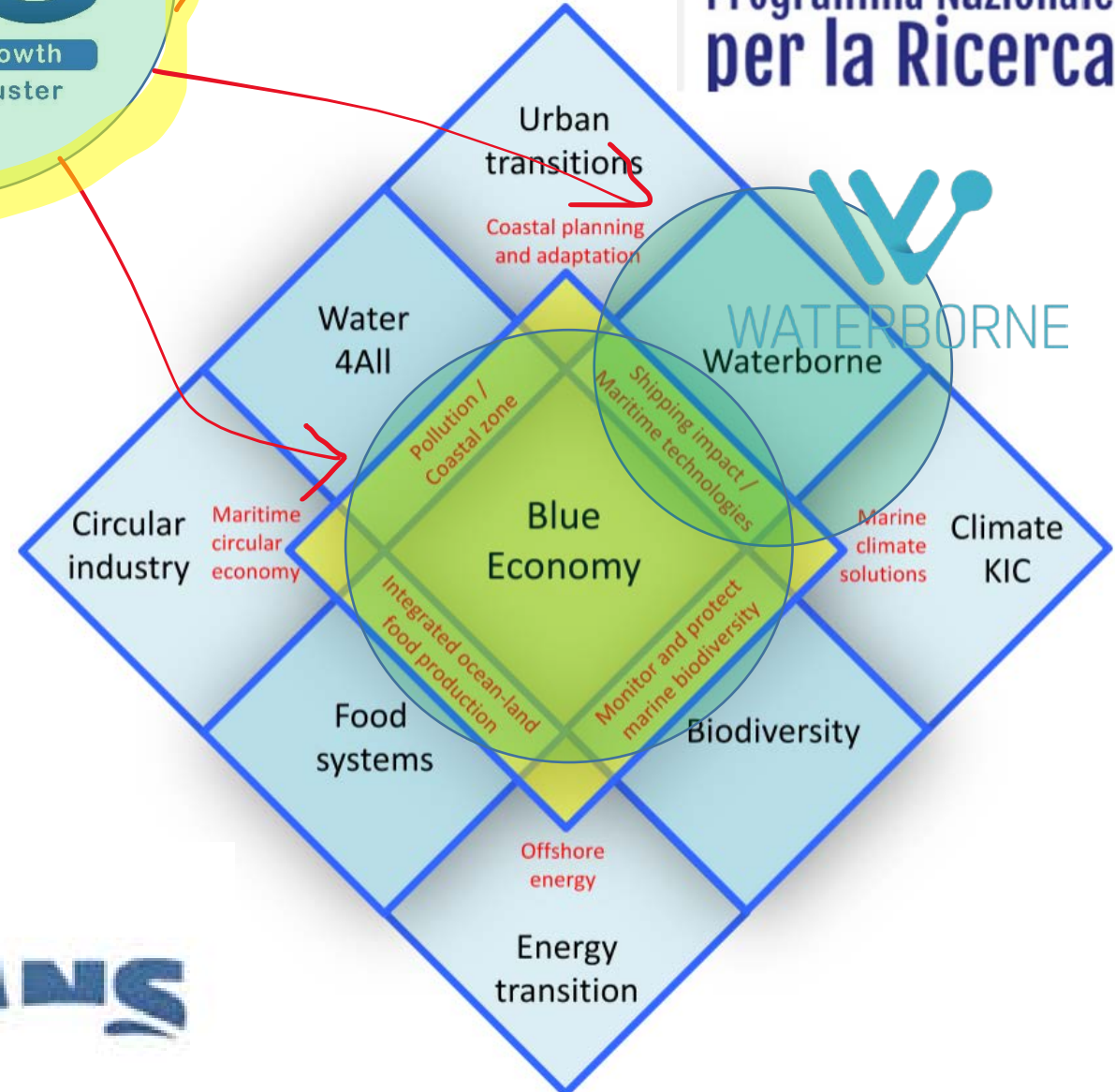
*Discovery and production of new bioactive molecules for new drugs, production of biomaterials from marine organisms, re-use of fishery waste materials to generate products with a high commercial value, etc.*





# Piano Nazionale di Ripresa e Resilienza

#NEXTGENERATIONITALIA 



## THE NATIONAL CONTEXT

The **national recovery and resilience plan (PNRR)** provides for various measures for infrastructures and research, also in relation to the themes of the BIG Cluster:

- **the National Center for Biodiversity**, with funding of € 320 million, with numerous activities relating to **marine biodiversity**.
- **the National Center for Sustainable Mobility**, again of 320M€, which has one of the themes dedicated to **sustainable maritime mobility**

In addition to the interventions of the National Centers, PNRR also offers proposals for **regional innovation ecosystems** have strong connections with marine themes:

e.g. the **RAISE Ecosystem of the Liguria Region**

## **RAISE ecosystem / Spoke 3 –Sustainable environmental caring and protection technologies**

Development of an ecosystem of innovation with a network of nature-neutral technologies, for monitoring, preservation, and remediation of different **natural ecosystems on land and sea**, for the promotion and valorization of the Liguria territory.

Development of ecosystems of *robots, sustainable materials and (bio)sensors, AI-based solutions* ....., envisioning new strategies for planning and actuation of **sustainable management of the territory and costal areas**.

### **National Research Program (PNR) 2021-2027.**

It is the main reference for research activities for the next seven years, and contains the main guidelines for the development of the research policy on the Sea.

One of the 28 coordination tables was dedicated to "**Knowledge, technological innovation and sustainable management of marine ecosystems**"..

## THE EUROPEAN AND INTERNATIONAL CONTEXT

**Decade of Ocean Science for Sustainable Development**, a **United Nations** / mobilize the scientific community, governments, the private sector and civil society around a common research program.

**European Partnership “A climate neutral, Sustainable and productive Blue Economy Partnership” (SBEP)**

One of the 49 partnerships that the European Commission has established with Horizon Europe, and **the only one for coordinated by Italy**. Cluster BIG **has been indicated by the MUR as the ONLY consultation tool for the national community of the blue economy**

**WATERBORNE<sup>TP</sup>** European Technology Platform for the Waterborne sector

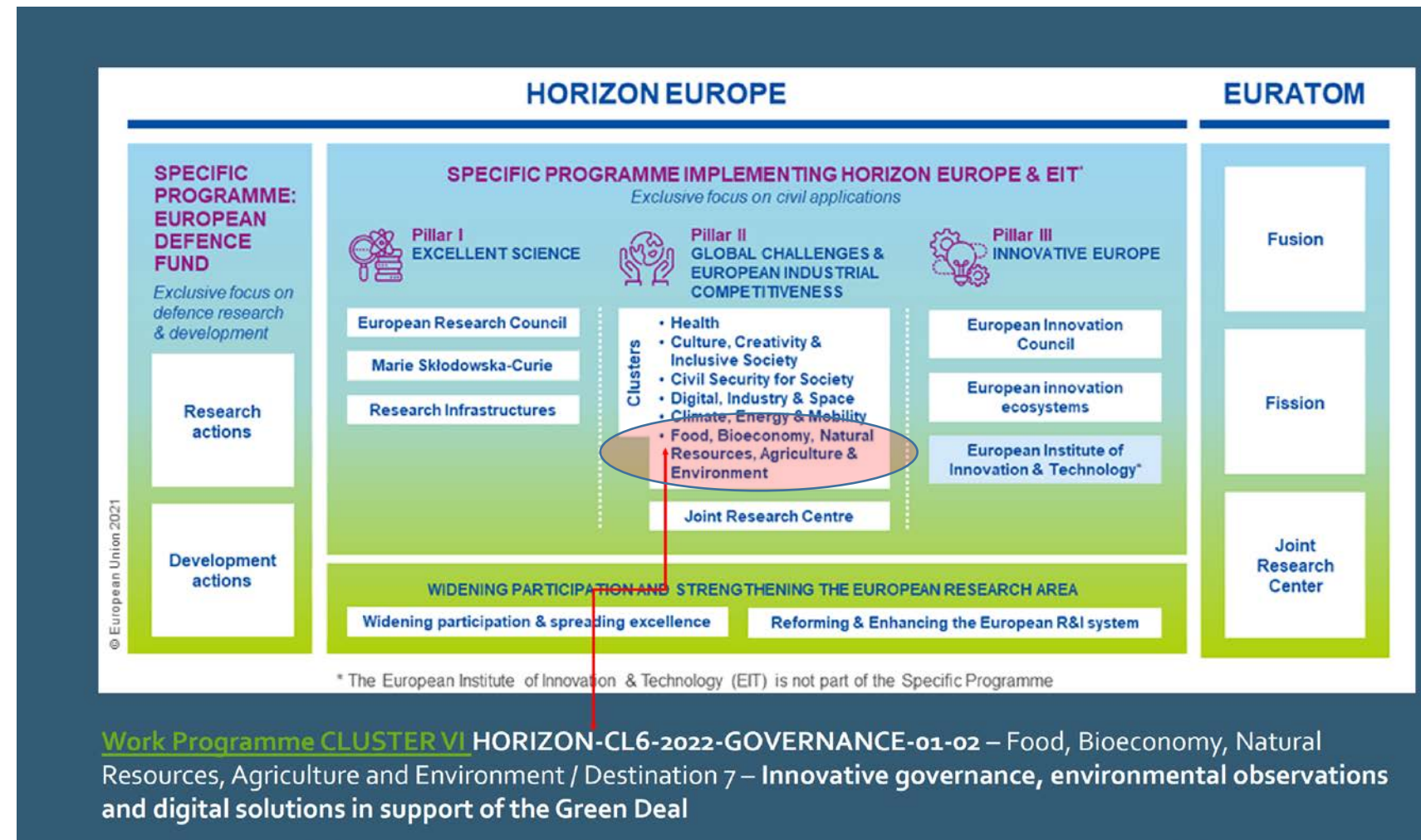




# Sustainable Blue Economy Partnership (SBEP)

Design, steer and support a **just and inclusive transition** to a regenerative, resilient and **sustainable blue economy**.

The SBEP aims to boost the transformation needed towards a **climate-neutral, sustainable, productive and competitive blue economy by 2030**, while creating and supporting the conditions for a **healthy ocean for the people by 2050**.



SBEP

transform the blue economy in line with the EU Green Deal and Digital strategies and the Recovery Package.

contribute in the medium term to the **9 Expected Outcomes (EOs)** of call **HORIZON topic HORIZON-CL6-2022-GOVERNANCE-01-02** and in the wider long term to **6 Expected Impacts (EIs)** addressed in the **Destination 7 – Innovative governance, environmental observations and digital solutions in support of the Green Deal**,

Connected areas of impact to which outcomes of SBEP R&I co-funded projects can contribute

Climate change mitigation and adaptation;

Enhancing ecosystems and biodiversity on land and in water;

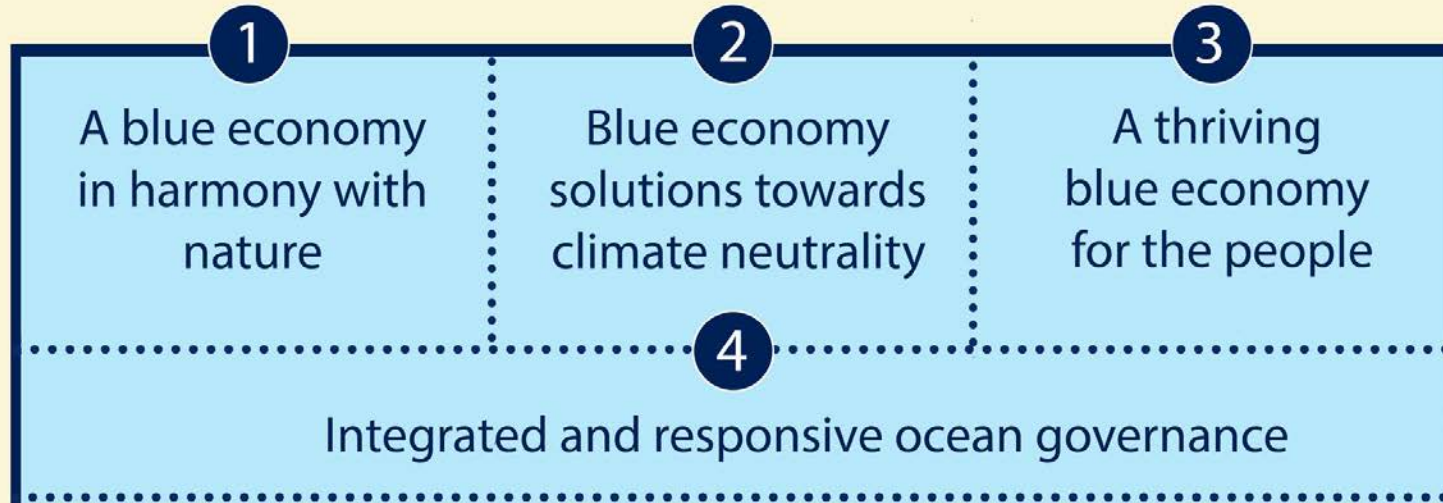
Sustainable food systems from farm to fork on land and sea;

High quality digital services for all

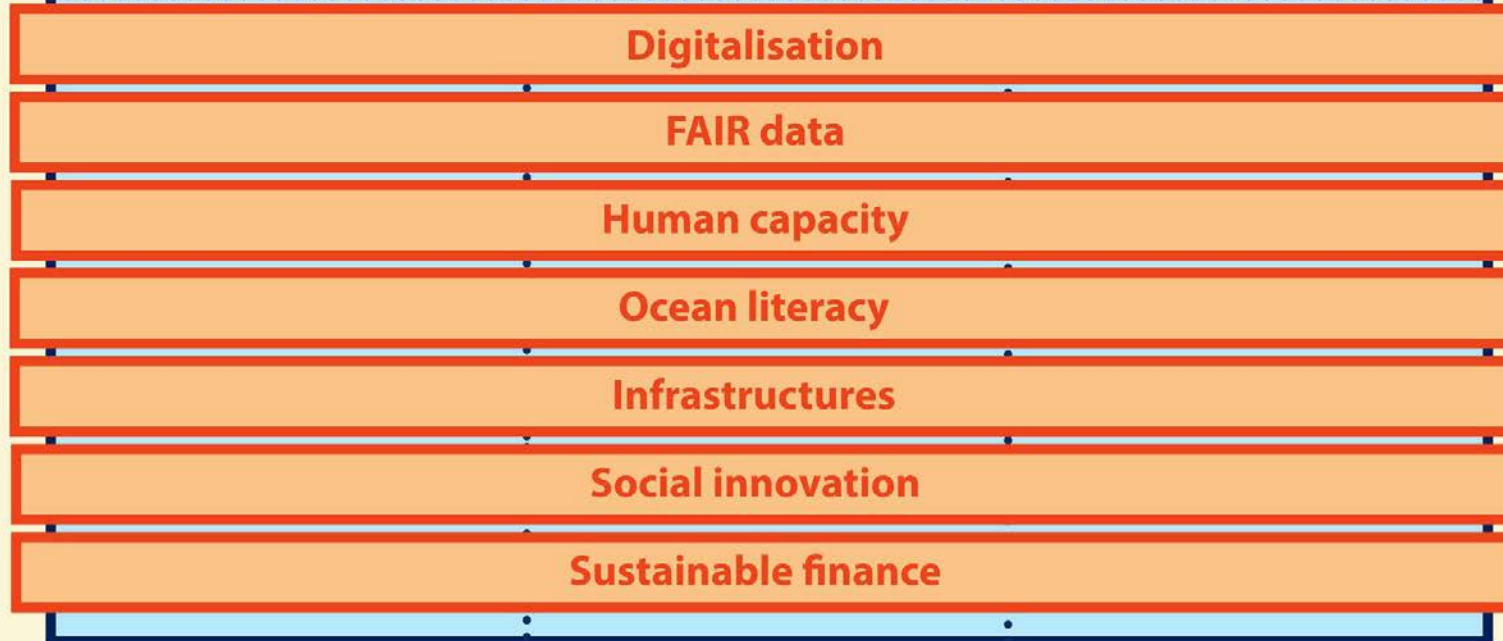
In cash and in-kind contribution by 25 MS/AC + EC top-up (in cash) to launch joint calls and implement additional activities (capacity building, shared use of research infrastructures, etc...)



PILLARS



KEY ENABLERS



**Strategic Research and Innovation Agenda (SRIA)**

by MS/AC + EC + Sea-basins initiatives, with support of JPI-O

39 Objectives

4 Pillars

7 Cross-cutting enablers



1) **SRIA has 39 objectives**

2) **MS were asked to indicate:**(i) urgency and **importance** of the objectives; **(ii) tools** to be used: R&I calls, synthesis research, joint public procurements, mapping and scoping exercise, foresight backcasting, access to infrastructure, data, models, capacity building activities, demonstrator, dissemination, stakeholder engagement, open science, citizen science, others, ... ; **(iii) regional added value**

3) **39 priority objectives were identified and framed into five impact oriented thematic**

**intervention areas** to operationalize the SRIA in line with the EU policy objectives and the call text

4) They will be implemented and monitored on scientific, environmental, economic, technological and social outcome and impact by use of performance indicators.

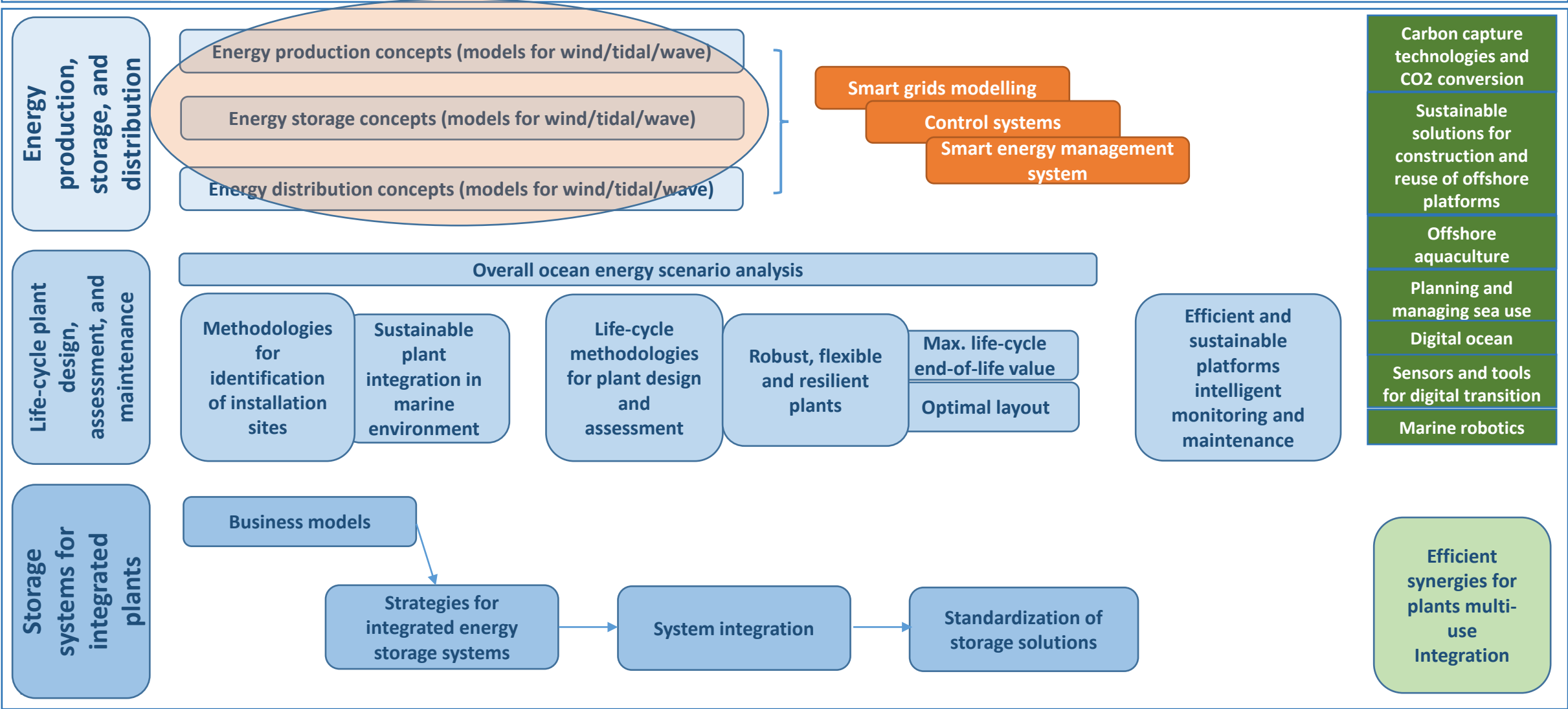
**IA 1 - Development and validation of Ocean Digital Twins at subsea-basin scale**

**IA 2 - Blue generation marine structures**

**IA 3 - Planning and managing sea-uses**

**IA 4 - Healthy 'Blue Food' under a 'One Health' approach**

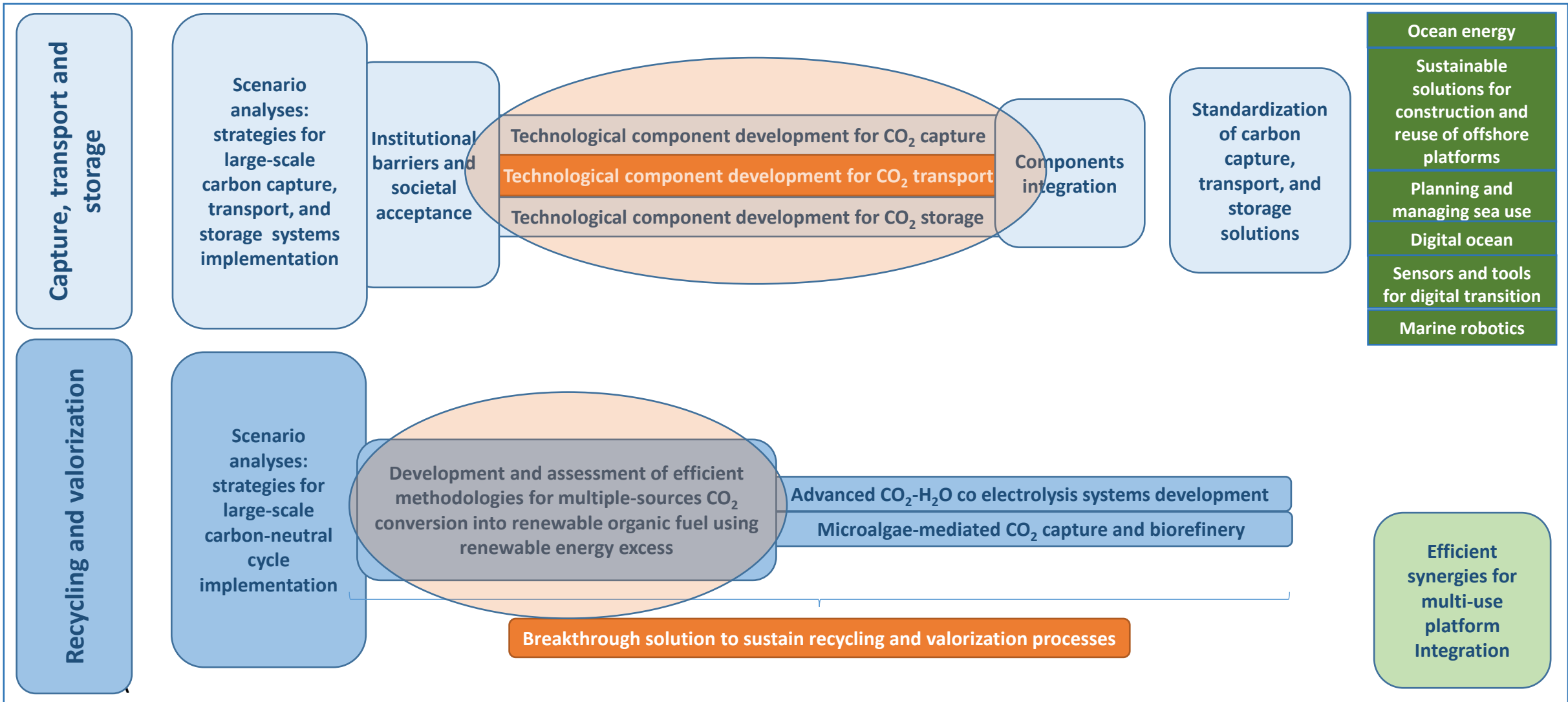
**IA 5 - Enabling the green transition of 'Blue Food' production systems'**



**Timeline**



Ocean energy	<b>CCS technologies and CO<sub>2</sub> conversion</b>	Sustainable solutions for construction and reuse of offshore platforms	Offshore aquaculture	Deep-sea mining	Planning and managing sea use	Digital ocean	Sensors and tools for digital transition	Marine Robotics
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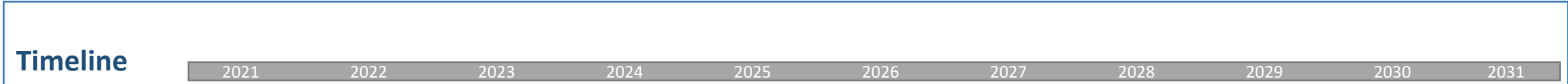
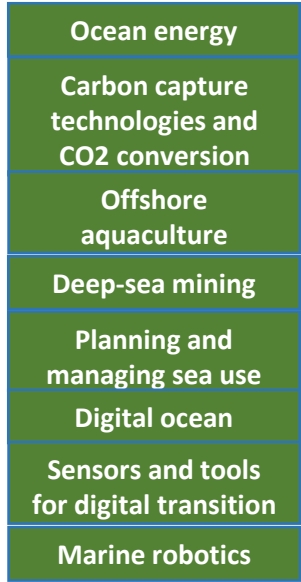
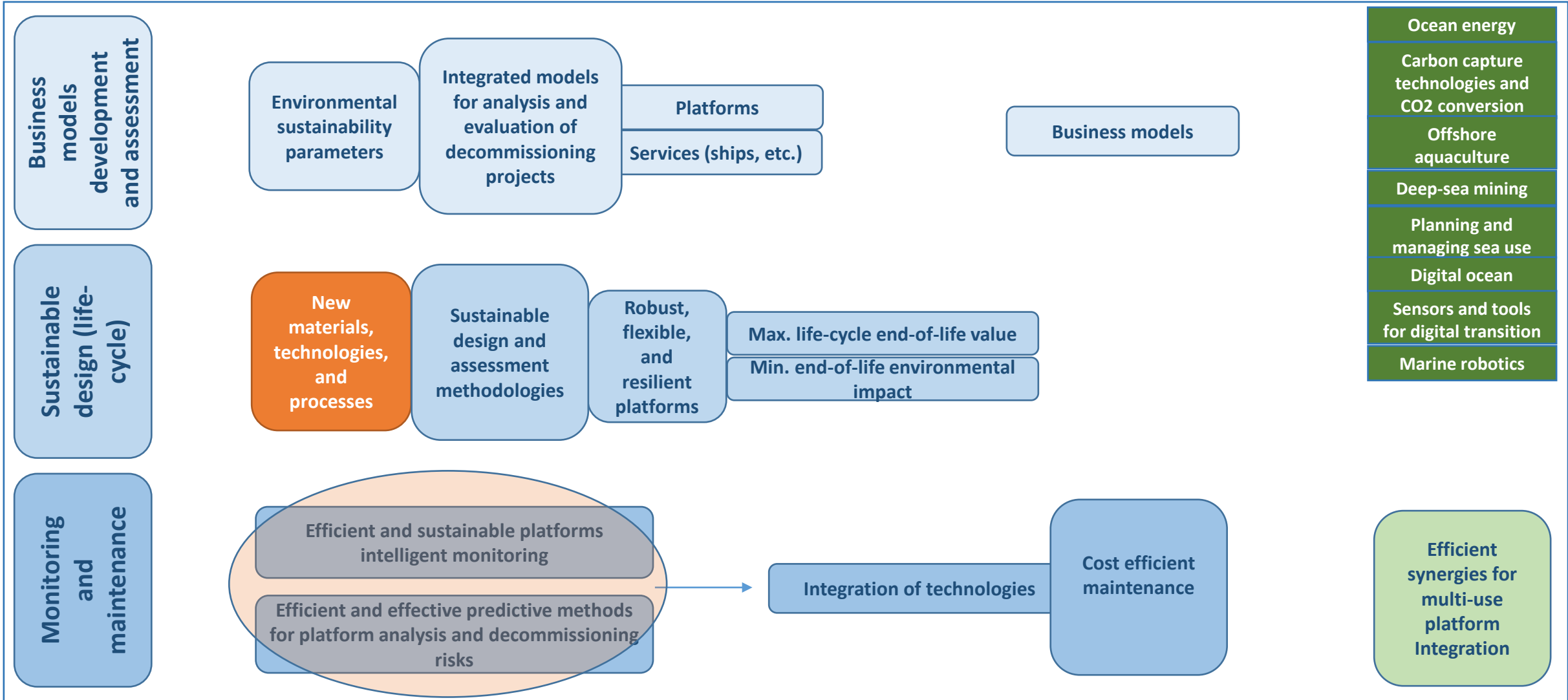


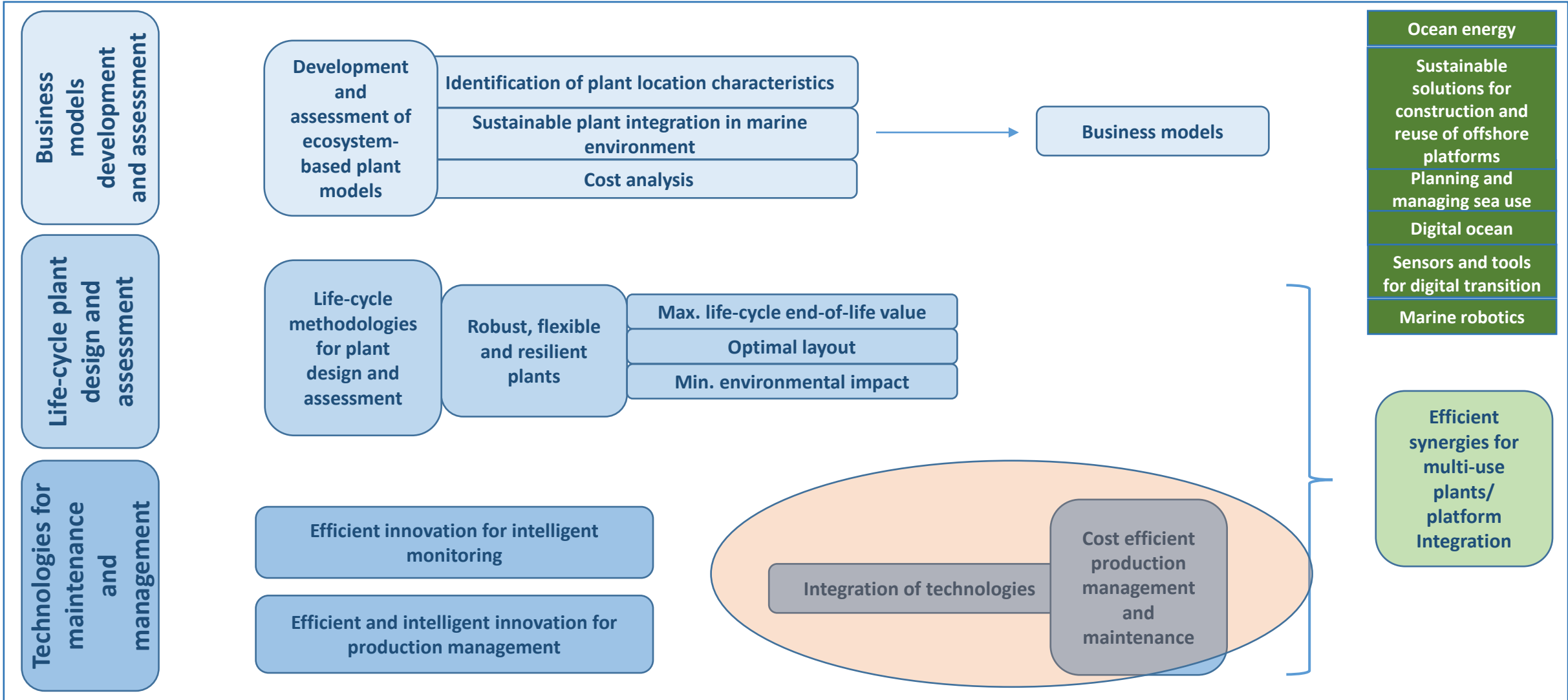
<b>Ocean energy</b>
<b>Sustainable solutions for construction and reuse of offshore platforms</b>
<b>Planning and managing sea use</b>
<b>Digital ocean</b>
<b>Sensors and tools for digital transition</b>
<b>Marine robotics</b>

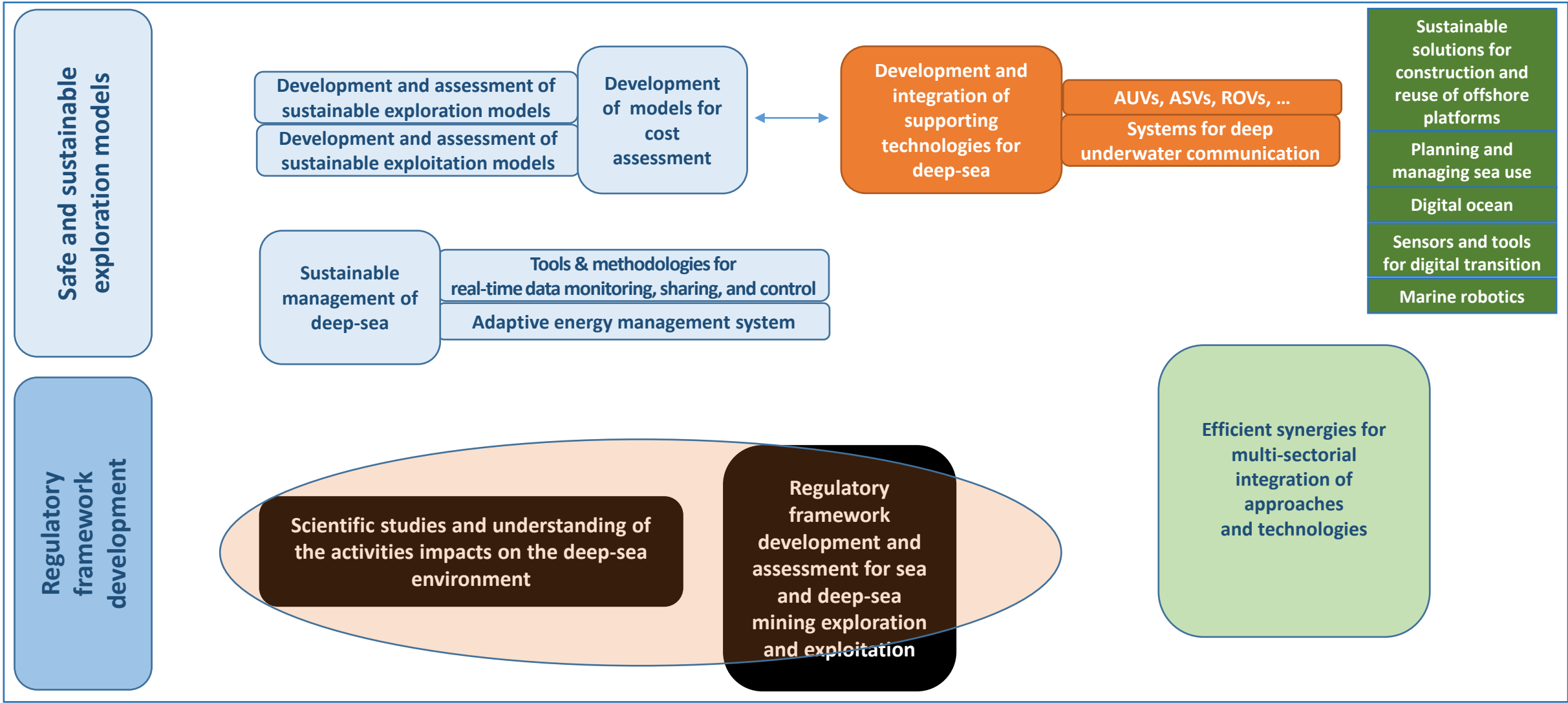
**Timeline**

2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
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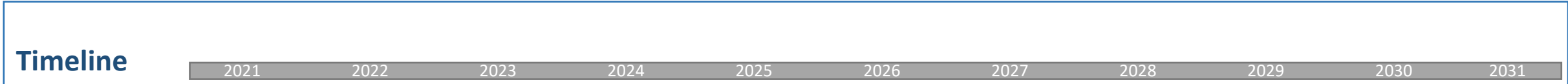
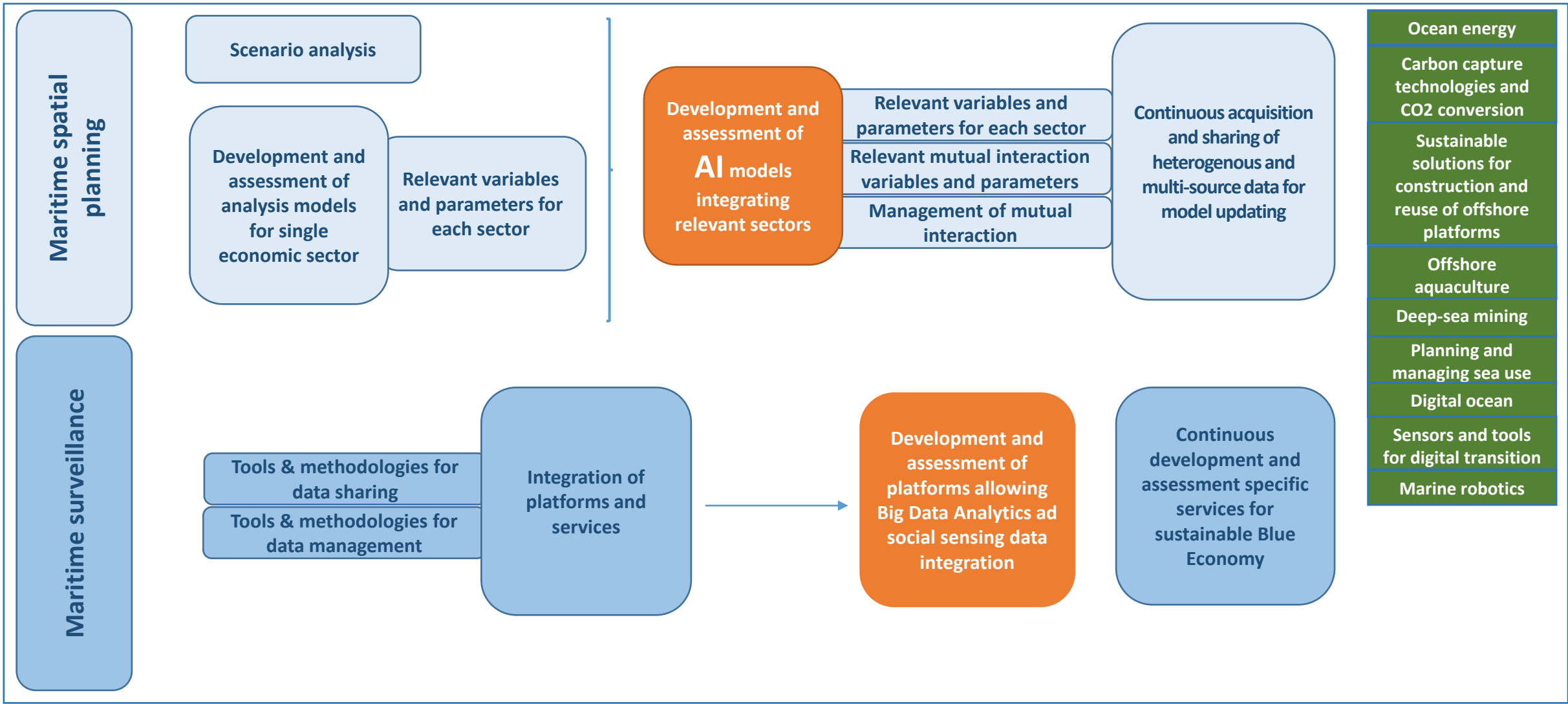


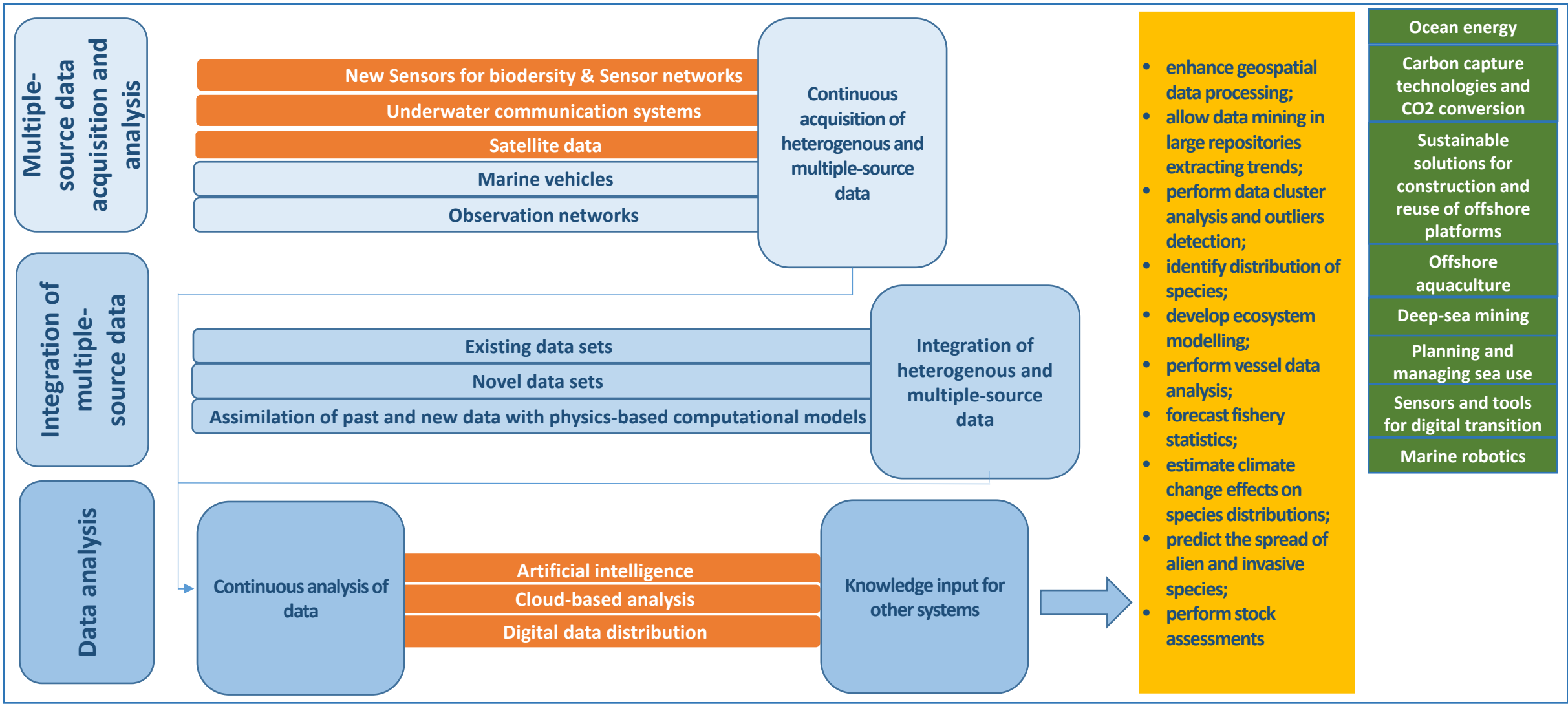


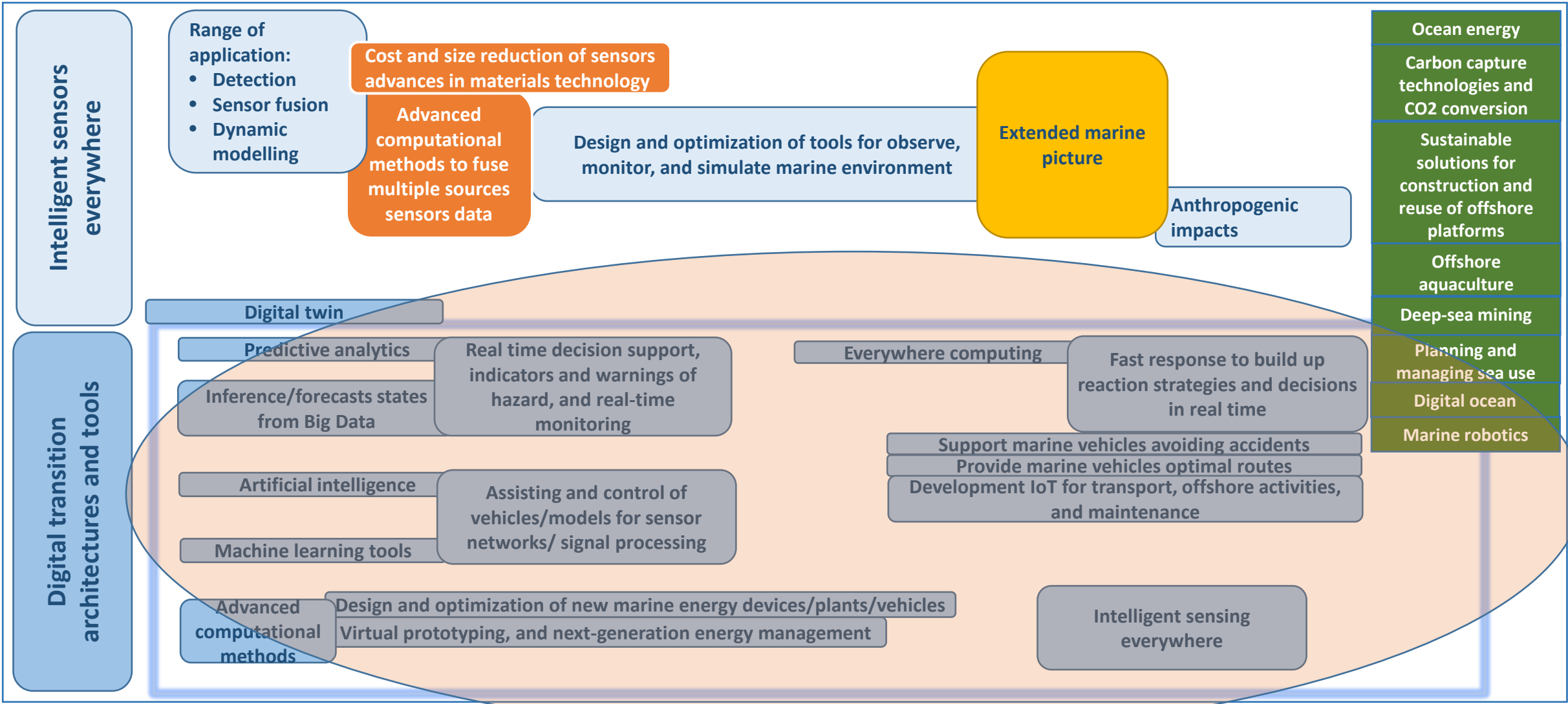












- Ocean energy
- Carbon capture technologies and CO2 conversion
- Sustainable solutions for construction and reuse of offshore platforms
- Offshore aquaculture
- Deep-sea mining
- Planning and managing sea use
- Digital ocean
- Marine robotics



