BONUS, the joint Baltic Sea research and development programme for years 2010-2017, was started by the BONUS member states together with the EU and officially launched in September 2010 by a co-decision of the European Parliament and the European Council as a Treaty on the Functioning of the European Union (TFEU) Article 185 activity.

**Executive summary**

In the Baltic Sea basin and its catchment, ecosystems transform under many inter-connected multiple stressors deriving from internal (i.e. pollution, land use) and external (i.e. global change) causes. To manage such a complicated basin, strong cooperation between riparian countries are needed. Even though the riparian countries surrounding the Baltic Sea have made a great effort for environmental protection, efficient solutions to sustain the health of the Baltic Sea ecosystem has not been implemented at a level to support a Blue Economy. Therefore, with a vision of “Economically and ecologically prosperous Baltic Sea region where resources and goods are used sustainably and where the long-term management of the region is based on sound knowledge derived from multidisciplinary research.” The BONUS programme has emerged.

BONUS aims to integrate the Baltic Sea system research into a durable, cooperative, interdisciplinary and focused multinational programme in support of the regions sustainable development. For this purpose, within the scope of BONUS, the research communities of Earth system research in marine, maritime, coastal terrestrial, economical and societal fields come together to address the major challenges faced by the Baltic Sea region.

**Strategic Objectives**

The content of this BONUS strategic research agenda is policy-driven and solution-oriented. The BONUS strategic research agenda addresses the major challenges of the Baltic Sea region by setting strategic objectives which build on the programme’s overall framework.

The overall framework of the BONUS strategic research agenda 2011-2017, including the most recent update that occurred in 2014, consists of the five main strategic objectives (Table 1) and 19 specifically defined themes (Table 2). The themes of the BONUS strategic research agenda arise from these five mutually interlinked strategic objectives.

Table 1 The BONUS strategic objectives

|  |
| --- |
| 1. Understanding the Baltic Sea ecosystem structure and functioning
2. Meeting the multifaceted challenges in linking the Baltic Sea with its coast and catchment area
3. Enhancing sustainable use of coastal and marine goods and services of the Baltic Sea
4. Improving the capabilities of the society to respond to the current and future challenges directed to the Baltic Sea region
5. Developing improved and innovative observation and data management systems, tools and methodologies for marine information needs in the Baltic Sea region
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Table 2 Research and innovation themes of the BONUS strategic research agenda

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| --- |
| **Research themes** (abbreviated titles)  |
| 1.1 Dynamics of biogeochemical processes  |
| 1.2 Changing biodiversity  |
| 1.3 Food web structure and dynamics  |
| 1.4 Impacts of hazardous substances  |
| 2.1 Changes in catchment land cover patterns  |
| 2.2 The role of the coastal systems  |
| 2.3 Integrated coastal management  |
| 2.4 Eco-technological approaches  |
| 3.1 Maritime risk analysis and management  |
| 3.2 Effects of air and water pollution by shipping  |
| 3.3 Improving stock assessments, spatial heterogeneity of stocks  |
| 3.4 Evaluation framework for fisheries management  |
| 3.5 Sustainable aquaculture in the Baltic Sea  |
| 4.1 Governance structures, performance and policy instruments  |
| 4.2 Linking ecosystem goods and services to human lifestyles and well-being  |
| 4.3 Maritime spatial planning  |
| 5.1 Integrated monitoring programmes  |
| 5.2 Innovative measurement techniques  |
| 5.3 User-driven ICT services  |

The sub-themes of the BONUS SRA is designed to explicitly outline of the kind of research that is needed, and therefore also expected, from the future applicants of competitive project proposals. According to the decision 862/2010/EU of the European Parliament and Council, BONUS programme was divided into two phases, the **strategic phase** that lasted for 18 months and **the implementation phase** of 5 years that is still ongoing.

**A Brief Comparison of BONUS SRA with SEAS-ERA SRAs and BLUEMED SRA**

A more detailed comparison of BONUS with the SEAS-ERA SRAs (Black Sea 2012 and Atlantic 2013) and the BlueMed SRA are given in the supplementary documents that include detailed tables that enables comparing research themes. Here, major conclusions are given:

**The SEAS-ERA project**

The FP7 SEAS ERA project (2010-2014) is a network of European marine research funding organizations (RFOs) located along the European seaboard in the Atlantic, Mediterranean and Black Sea. The SEAS-ERA partnership maintains close contacts with the Baltic Sea RFOs through the EU BONUS project.

The principle aims of the SEAS-ERA network are to improve co-operation between national competitive marine research funding programmes, to facilitate better co-operation in addressing shared opportunities and challenges, to ensure better use of existing resources and capacities, to bridge identified gaps, to avoid duplication, to jointly fund strategic projects of mutual interest and in doing so, contribute to the sustainable development of the marine resource and progress the establishment of the marine component of the European Research Area (ERA).

**BLUEMED**

The BLUEMED initiative oﬀers a shared strategic framework for working towards a healthy, productive and resilient Mediterranean Sea that is better known and valued. It is designed to tap the full potential of the marine and maritime sectors, structuring transnational cooperation to create new ‘blue’ jobs and to promote and improve social wellbeing, sustainable prosperity and the environmental status of the region and its surroundings.

BLUEMED is the result of joint eﬀorts by Cyprus, Croatia, France, Greece, Italy, Malta, Portugal, Slovenia and Spain, with the support of the European Commission. It is now planned to expand towards including other Mediterranean countries.

**Comparison between SRAs**

When these four Strategic Research Agendas (Atlantic, Black Sea, BlueMed and Baltic Sea BONUS), four major observations can be noted:

* While the SEAS-ERA projects (applied for Atlantic and Black Sea) and BLUEMED have identical ‘three-pillar’ strategy outlines (i.e. basic science – applied science – infrastructure), BONUS follows its unique five-stage strategy outline tailored towards management challenges.
* In the SEAS-ERA project and BLUEMED SRAs applied research – science focusing on both conservation of existing resources & capacities and but also on sustainable development- is in the forefront. Especially the BlueMed SRA seems to give more emphasis on the H2020/Blue Growth vision. In the BONUS SRA, however, the protection of existing resources & capacities is emphasized. Still, a Blue Growth vision is set for the Baltic area but the management challenges need to be addressed first.
* How the different strategies tackled with the ‘coastal’ zone can be different among the SRAs. In the Atlantic, Black Sea and BlueMed; Integrated Coastal Zone Management (ICZM), Maritime Spatial Planning (MSP) and Marine Protected Areas (MPA) are usually evaluated under one ‘theme’, while in BONUS SRA these subjects are treated as separated research themes. This clearly means more potential calls for coastal management in the Baltic Sea that lies at the heart of the BONUS approach.
* Blue Growth sectors such as harvesting the oceans non-living resources: Sustainable mineral, oil and gas extraction from coastal and offshore areas takes place in both the SEAS-ERA project and BLUEMED, however BONUS does not focus on multi-purpose offshore platforms and its products. Therefore, there is less emphasis of ocean energy and mineral resources for the Baltic Sea strategy.