

# GREEN AND SAFE WATERBORNE TRANSPORT & TECHNOLOGY

## GREEN -WATT - ERA-NET COFUND 2016

- Position Paper -

### 1. WHY DO WE NEED AN ERA-NET ON WATERBORNE TRANSPORT AND TECHNOLOGIES?

As waterborne transport systems are increasingly the backbone of the international trade and exchange of goods, the research and innovation activities in that field cannot be tackled at national levels alone. Coordinated actions are required for the maritime industry to strengthen Europe's position in this important and complex economic field. Concentrated and targeted RDI funding on common research priorities will foster waterborne transport in Europe. In this highly competitive sector networking, transnational collaboration and joint initiatives are the keys to success. Actual challenges in that field are:

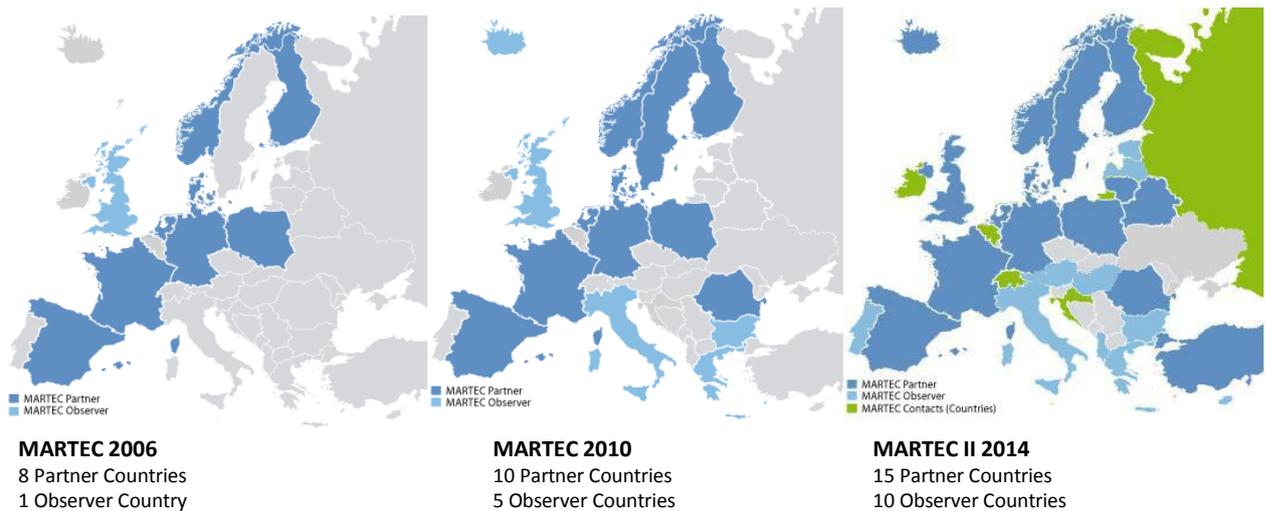
- National and European research in the waterborne sector is often poorly coordinated. **Synergies** towards implementing common goals could only be achieved through a better coordination and harmonizing the foci of funding programmes;
- While collaborative projects funded by the EC are often quite large and complex to attract participation especially of SMEs, national funding schemes offer limited opportunities to collaborate with foreign partners, especially if cross-border funding is impossible;
- The participation in transnational projects offers advantages by using the own national funding, to tackle complex projects which cannot be accomplished by one nation and enter into **new markets**.
- Industry and research actors have quite a **variety of technologically innovative ideas** to strengthen Europe's economic position in this sector which require transnational cooperation.

The MARTEC initiative provided a unique and substantial contribution for improving the above mentioned challenges so far. Based on this experience a closer cooperation of Member States (MS) is essential to foster waterborne transport. The positive effects of cooperation will lead to an **increase of maritime investments** which subsequently **strengthen the industrial innovation** and **secure jobs**. The realisation of a European research and innovation agenda needs a broader and systematic cooperation in the area of waterborne transport covering relevant maritime and marine sectors and regions.

### 2. WHAT HAS BEEN ACHIEVED BY MARTEC?

The history of the MARTEC initiative shows, that from its very beginning it has been a joint effort by national programme owners and governmental decision makers with close links and advice from stakeholders from industry and science in the maritime sector.

The MARTEC network has shown considerable growth throughout the programme. By 2014, the MARTEC II project had brought together 30 ministries and funding agencies responsible for national RDI programmes on maritime technologies across 25 different European countries.

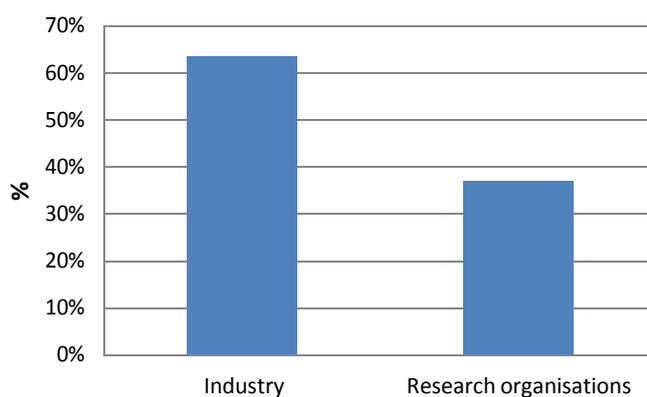


**Fig. 1:** Participating countries in MARTEC

Within this network **33 collaborative maritime projects** and the respective funding budget of about **32 Mio. €** (total costs approx. 50 Mio. €) were supported.

One of the major advantages of MARTEC is that collaborative projects were focused on actual topics related to maritime technologies with an average funding budget of about 1 Mio. €. This is a critical size especially for smaller MS often lacking adequate funds required to address research and innovation on their own.

The research projects funded through MARTEC covered both, industrial research as well as experimental development projects. Companies are the major drivers in bridging the gap between research results and innovation. Therefore, priority for funding was given for projects which included at least one **industrial participant** from each involved country. As national funding rules were applied, some MS even focused on supporting **industrial** partners. The following graph highlights the importance of MARTEC for the industry. In MARTEC about **63 %** of the supported project partners came from industry, which is significantly above the average of FP7 funding (25 %<sup>1</sup>).



**Fig. 2:** Partner distribution within MARTEC Projects

<sup>1</sup> Interim Evaluation of the Seventh Framework Programme; Report of the Expert Group; Final Report 12 November 2010.

## 2.1 Success stories funded by ERA-NET MARTEC

MARTEC is the only mechanism available in the field of maritime technologies, covering topics from both Transport and Blue Growth. Two successfully finalised projects are described below as examples of the diverse fields covered by MARTEC.

### a) Transport - Alternative Fuels

#### Project: BunGas- Bunkering Gas as Fuel for Ships (NO/DE)

The increasing application of LNG as ship fuel requires also a safe transfer of this fuel on-board the gas fuelled vessel. Within the joint project “BunGas” a system for bunkering of LNG fuelled merchant vessels via ship to ship transfer was developed. The existing bunker procedures for conventional fuels cannot be transferred directly to LNG. Up to now there are no generally recognized standards for bunkering of LNG or for the interface to a shore - or sea-based supply in Europe. The project “BunGas” faced the challenge to develop technical systems which are in relation to time, place and bunker process comparable with bunkering conventional fuels.

Within the BunGas project all parties **along the value chain**, who are necessary for the development of bunker standards or will apply the results of the project, were involved: **Shipping companies, supply industry** (engine manufacturers, industrial gas producers and logistic companies), **shipyards** and **classification societies** have cooperated within the presented project.

The results of the project have been introduced to different bodies in order to establish the results achieved during the project. In this context the working groups for the development of the IGF-Code, for the **development of international guidelines** for bunkering in the framework of ISO TC 67 WG 10 and for the development of requirements for the training of the crew are to be mentioned. The base for a safe transfer of LNG as fuel was generated in the “BunGas” project.

### b) Blue Growth – underwater technology

#### Project: HISEM - High Sensitive Deep Sea Methane Monitoring (DE/NL)

In the area of Offshore Oil & Gas there is an urgent demand to measure swiftly and in-situ the methane concentration in the order of magnitude of the ocean background concentration (i.e.  $\sim 2-3 \pm 0.1$  nmol/l) which could be **useful for subsea pipelines** and production systems inspection for **leakage detection** of polluting material into the marine environment. Since October 2013, the HISEM system is available under the product name Hydroc™ CH4 HISEM MK1 by the **SME Contros**. First orders from international customers have been recorded.

### 3. WHAT IS THE BENEFIT OF A COFUND GREEN-WATT?

Building upon the experience and success of MARTEC an ERA-Net Cofund in the field of waterborne transport & technology would be able to cover the following societal challenges of HORIZON 2020:

- **Increasing competitiveness** of European Transport industry through innovation by lowering operating costs for the European maritime industry which will secure and eventually boost new jobs, growth and investment
- **Ensuring cleaner and more efficient propulsion systems**, increased **safety in navigation** as well as **environmentally friendly coatings** for freighters and recreational ships and yachts,
- **Efficient use of natural resources** by using alternative fuels
- **Swiftly responding to market needs** and **societal changes in consumer behaviour** towards greener food, sustainable transport modes and recreational trends (cruise liners)
- **Offshore challenges and innovative maritime technologies** including enabling technologies

Discussions within the former MARTEC consortium comprising of most of the ministries and funding agencies responsible for maritime RDI funding in Europe as well as with industry stakeholders and research actors from the maritime technology sector have recently confirmed the increasing demand for a maritime transnational mechanism to overcome fragmentation in national RDI strategies.

Through already existing close links to the *Joint Programming Initiative OCEANS* the planned ERA-NET would therein significantly contribute to the so-far poorly implemented goals on sustainable waterborne technologies. Besides interest groups like offshore industry, other cross-cutting sectors like marine research and maritime tourism will benefit from the developed waterborne technologies.

The proposed ERA-NET Cofund GREEN-WATT will build upon strategic harmonisation activities started in MARTEC and by implementing joint transnational calls for proposals and thus foster competitiveness of the European maritime transport and technology sector in a broader sense. Compared to other transport modes, the waterborne sector still requires more resource-efficiency, environmental-friendly technologies like propulsion systems and safer navigation tools.

GREEN-WATT will focus on common challenges in the waterborne sector according to the four main priorities for transport research and two priorities for Blue Growth under Horizon 2020:

1. **Increasing sustainability: resource-efficient transport means respecting the environment**
  - Reduction of underwater noise and emissions (SO<sub>x</sub>, NO<sub>x</sub>, black carbon, ballast water etc.)
  - vessel efficiency and energy management
  - Biofouling and corrosion prevention by Hi-tech coating materials for ships, wind turbines, platforms etc.
  - Intelligent sensor systems for measurements of emissions, ensuring data exchange between technological units etc.
  - Cost efficient sharing of national maritime research infrastructures
  - providing environmentally friendly technologies for sensitive regions like the Arctic

- 2. Making transport and transport systems seamless: intermodal mobility, less congestion, greater safety and security**
  - Individual safety concepts harmonized with navigational requirements
  - new concepts of the recycling-oriented construction, to final disposal vessels/platforms,
  - Intelligent predictive maintenance systems
  - Optimized dockside logistics and handling between different transport modes
  - Hinterland connection to inland waterways
- 3. Keeping transport competitive: the European transport industry as a global leader**
  - Top quality, globally competitive and environmentally friendly products
  - improved and novel production technologies and processes for flexible manufacturing, the increased focus on organization and networking along the value chain; automation of production
- 4. Making transport research responsive: socio-economic research and forward-looking activities for policy-making**
  - Develop sustainable technological solutions and management tools in response to the increased interest and competing claims on the coastal area
  - Development and implementation of new standards and guidelines at the European and international level (IMO guidelines) for the protection of the seas
- 5. Offshore challenges and innovative maritime technologies**
  - Eco-friendly technology for deep sea mining and exploitation of deep sea resources
  - Development of intelligent and cost efficient ocean observation technologies (autonomous or remotely operated vehicles, e.g. for pipeline/cable inspection)
  - Sub-sea technologies for new/emerging services at sea
  - Seabed mapping technologies
  - Technologies for detection and removal of munition
  - Detection and response capacities to oil spills and marine pollutions
  - Sustainable and cost-efficient platforms for offshore technologies
- 6. Underwater enabling technologies**
  - Develop innovative technologies for sectors that have a high potential for sustainable jobs and growth, such as: aquaculture, coastal tourism, marine biotechnology, ocean energy, seabed mining
  - Sensor development for detection, monitoring and observational research
  - Underwater communication and navigation technologies
  - Innovative, robust and reliable energy supply for automated sub-marine technologies

The activities in the **ERA-NET Cofund Waterborne Transport & Technology** will include a **cofunded call in 2017**, strategic coordination activities as well as **annual calls** and the exchange of information among national programme owners and programme managers. The network will include representatives from national and regional public authorities competent for public maritime research programmes.

There is a major interest in the maritime community (science & industry) to participate in transnational calls for projects. The following countries have expressed so far their interest to participate in a future ERA-NET Cofund (see table below).

Except the below mentioned partners from MARTEC, Italy and Austria indicated their interest to also participate in GREEN-WATT. Nevertheless, the consortium is not completed yet and welcomes further member states in this ERA-NET Cofund.

Participant organisation name	Participant short name	Country
Forschungszentrum Jülich GmbH	Jülich	Germany
Federal Ministry of Economic Affairs and Energy	BMWi	Germany
The Research Council of Norway	RCN	Norway
Swedish Maritime Administration	SMA	Sweden
The Scientific and Technological Research Council of Turkey	TUBITAK	Turkey
Centre d'études et d'expertise sur les risques, l'environnement, la mobilité et l'aménagement	CEREMA	France
Machine Technology Center Turku Oy (Maritime Cluster Programme)	KTK	Finland
Innovate UK	Innovate UK	UK
National Centre for Research and Development	NCBR	Poland
Fundación Instituto Tecnológico para el Desarrollo de las Industrias Marítimas	INNOVAMAR	Spain
Unitatea Executiva Pentru Finantarea Invatamantului Superior, a Cercetarii, Dezvoltarii si Inovarii	UEFISCDI	Romania
Enterprise Ireland	EI	Ireland
Latvian Maritime Academy	LMA	Latvia
Ministry of Transport, Information Technologies and Communications	MTITC	Bulgaria
National Academy of Sciences of Belarus	NASB	Belarus
Klaipeda University	KU	Lithuania
Fundação para a Ciência e a Tecnologia	FCT	Portugal

### Time line and budget

It is envisaged that ERA-NET Cofund GREEN-WATT would be implemented from [Q1 2017] to [Q4 2021]. The co-funded call will have a budget of more than 20 Mio. € plus the EC Cofund contribution. It is envisaged to implement further calls and strategic coordination activities.

### Administration

The Cofund will be administrated by Forschungszentrum Jülich GmbH.

Calls will be published on a further developed website based on the already existing MARTEC web page ([www.martec-era.net](http://www.martec-era.net)) as well as disseminated in the participating member and associate states.