MARINE ENERGY research activities in the Basque Country

VII Marine Energy Conference

9th November 2021
Bizkaia Aretoa

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GRUPO spri TALDEA

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EUSKADI 2030 STIP

The **Science, Technology and Innovation Plan** is the reference framework in which all the policies and support activities for R&D&I carried out by the Basque Government are integrated and coordinated.

VISION 2030

Euskadi stands among the most advanced regions of Europe in innovation by 2030, with a high standard of living and quality employment.

STRATEGIC PILLARS

- Scientific Excellence
- Technological Leadership of Industry
- Open Innovation

CORE ELEMENT

- Talent

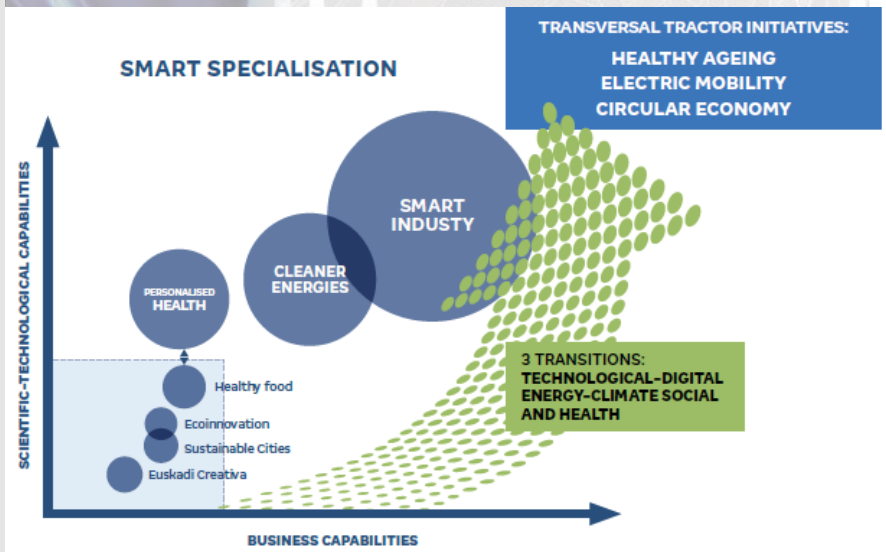
OPERATIONAL OBJECTIVES

- Results oriented
- Development and Innovation
- Internationalisation
- Promotion of Talent

RIS 3 EUSKADI 2030

The **Research and Innovation Smart Specialisation Strategy** has been reviewed.

It is a living strategy that evolves based on the context and vision of the Steering Groups and the other governing bodies, made up of stakeholders from the 'triple helix' (companies, universities, technology and research centres and the Administration) aim to drive the deployment of the general strategy and participate in its design or revision, facilitating alignment with the strategies of each stakeholder.



3 STRATEGIC PRIORITIES

- Smart Industry
- Cleaner Energies
- Personalized Health

3 TRANSITIONS

- Technological- Digital
- Energy-Climate
- Social-Health

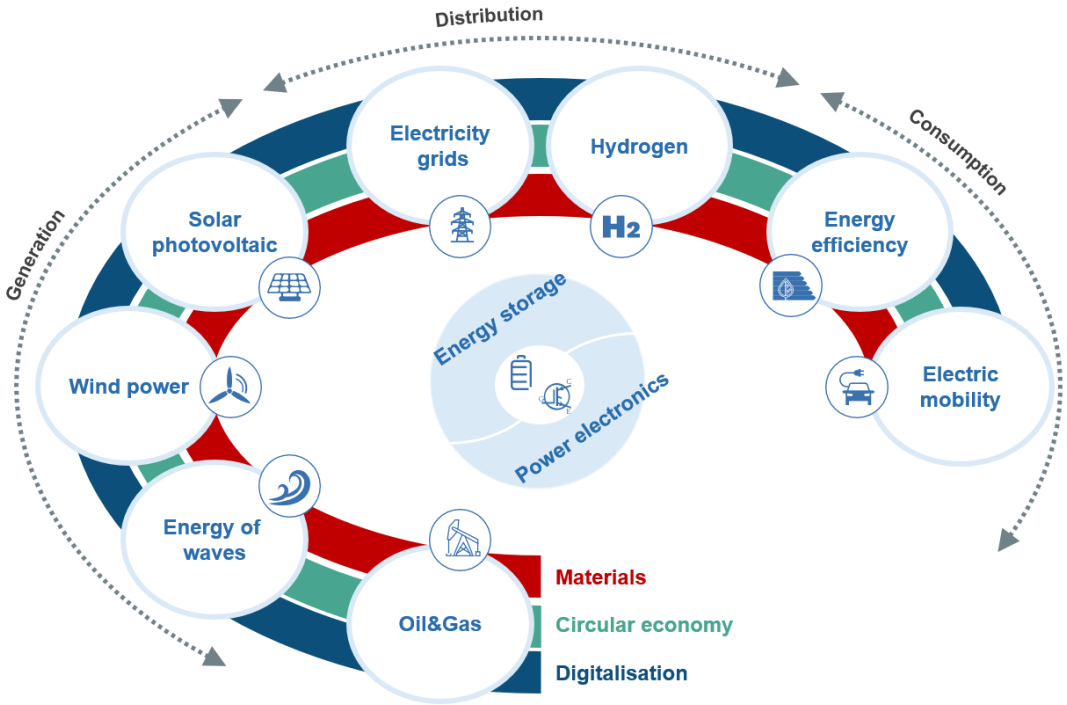
3 TRANSVERSAL TRACTOR INITIATIVES

- Healthy Ageing
- Electric Mobility
- Circular Economy

4 AREAS OF OPPORTUNITY

+ MAP OF BASIC TECHNOLOGIES

energiBasque



- **EnergiBasque's vision** is to make **Euskadi** a **leader in Europe for the development of technological and industrial initiatives in energy**
- Each strategic area has a series of objectives, which are deployed through the technological lines, transversal actions and proposed strategic initiatives

Wind Power

- Support the **development of a globally-competitive offering in the different wind value-chain segments**, both in systems and components of the wind turbine as well as in equipment and services associated with the wind farm.
- Encourage the **development of equipment, components and services t**hat meet the demanding technical and economic requirements of the **offshore wind market.**
- Facilitate the **digitisation of the various systems and components** that are integrated into a wind farm, so that **data management and analysis** become a source of competitive advantages for companies in the value chain.

Energy of Waves

- Promote projects and initiatives that support companies which develop **generation systems and components** for this emerging market, especially using BIMEP infrastructure as an area of testing and technology development.

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Wind Power

Technological fields and lines

Fields	Core TL in the field	Digitisation	Energy Storage	Power Electronics	Circular economy	Materials
Wind turbine components and subsystems	• Value-added components for high-powered wind turbines • Simulation and testing of components, equipment and subsystems • Optimisation and homogenisation of new components	• Sensorisation of critical components and auxiliary systems • Algorithms for optimising component design	• Energy storage systems and hybridisation with other generation sources	• Power electronics equipment for energy quality, protection, control and measurement • High power conversion equipment	• Ecodesign of components	
Operation and maintenance of wind farms		• Simulation and digital twin systems • Connectivity and cybersecurity of components • CMS systems for the maintenance of offshore parks • Monitoring for an extension of the service life of wind farms • Monitoring systems applied to maintenance tasks in offshore wind farms			• Models adapting to Onshore and offshore climat e change	
Towers, structures and offshore foundations (fixed and floating)	• New concepts applied to the manufacturing of towers, foundations and auxiliary systems • Integrated design of fixed offshore foundations • Offshore floating platforms					• New solutions consisting of materials and coatings resistant to degradation in offshore environments • New concepts of materials for towers and foundations

Technological fields and lines

Fields	*Core Competences*	Digitisation	Energy storage	Power Electronics	Circular economy	Materials
PTO sensors and systems, subsystems, components and network connection	• PTO sensors and systems • Subsystems and critical components • Mooring systems			• Equipment for the connection and transmission of generated energy		• Materials and coatings for offshore environments
Installation, logistics, operation and maintenance of marine parks	• Technologies and mathematical models to characterise marine sites • Pre-normative research for the definition of specific certifications for waves • Automated and/or autonomous systems for marine park inspection	• Predictive maintenance (digitisation and monitoring) • Development of digital tools for planning and optimisation of marine facilities and their O&M		• Electrical connections for parks		

PTO – Power Take Off

R&D SUPPORT PROGRAMS

BSTIN AGENTS

ELKARTEK

Support for the performance of **Collaborative Research**, **carried out by the Research, Development and Innovation Entities** integrated in the Basque Science, Technology and Innovation Network of the Basque Country, in the areas of specialization framed in the Euskadi STIP 2030.

Collaborative Fundamental Research Projects: carried out in collaboration by BSTIN agents belonging to at least three types of BSTIN agents in the RIS priority areas. They can be multi-year and require a **minimum total budget of € 500,000 per project and € 50,000 per participating entity**

AZPITEK

Support for the **acquisition, installation and updating of scientific-technical equipment** necessary for the execution of quality research, the improvement of results and their scientific-technological, economic and social impact, as well as for the operation of the existing infrastructures.

Scientific-technical equipment is understood to be the set of physical means (equipment) and facilities (enclosure provided with the necessary physical means) that are required for the development of R + D + i activities.

BASQUE COMPANIES

HAZITEK (STRATEGIC)

Support for carrying out **Industrial Research or Experimental Development BY COMPANIES in Euskadi**, and in the areas of specialization of the Euskadi STIP 2030.

Arising from business leadership and with the use of **scientific -technology capacities of the Basque Country**, **carried out in cooperation with a minimum of 3 companies.**

They require a **minimum budget of € 4 million** and a **maximum duration of 3 years**

HAZITEK (COMPETITIVE)

Support for carrying out **Industrial Research or Experimental Development projects BY COMPANIES in Euskadi**, aimed both at the development of new products and at the launch of New Scientific and Technological Based Companies NEBCT.

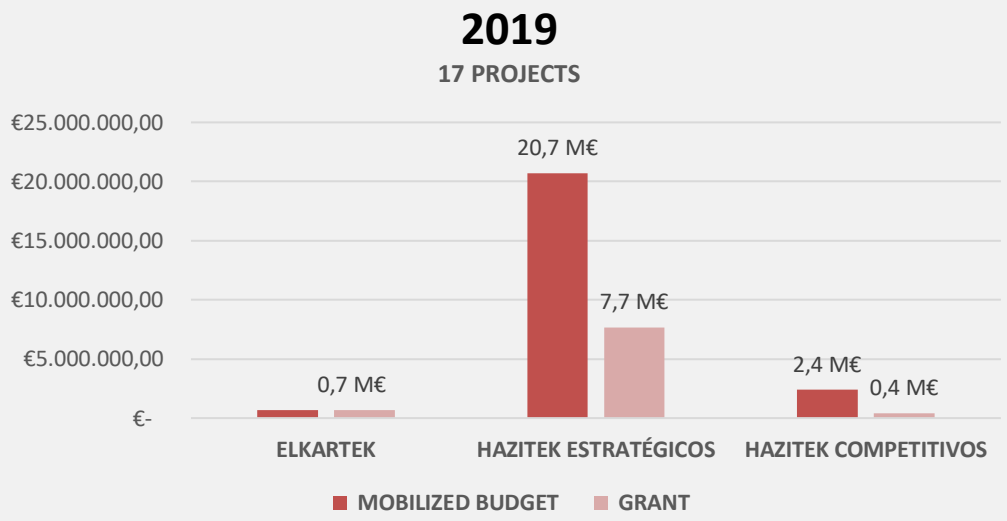
They can be **done individually or in cooperation** and require a **minimum total annual budget of € 100,000**.

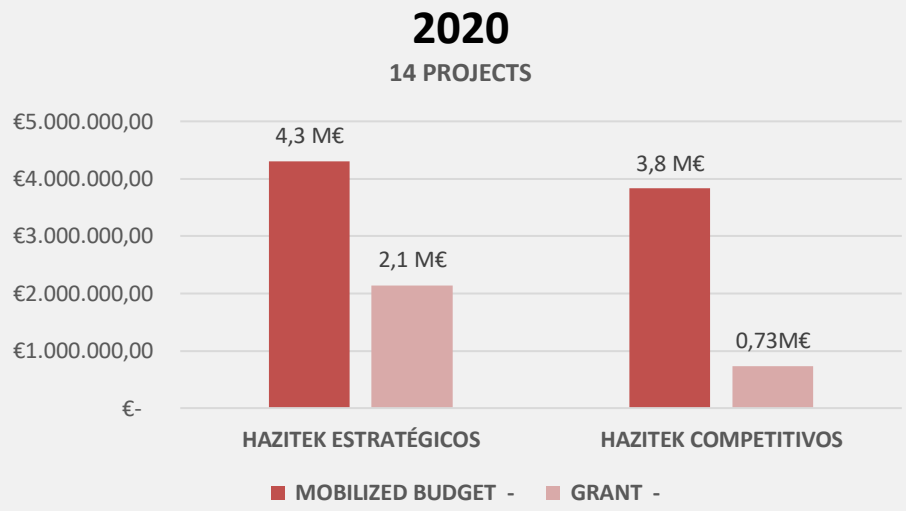
MARINE ENERGY SUPPORTED PROJECTS

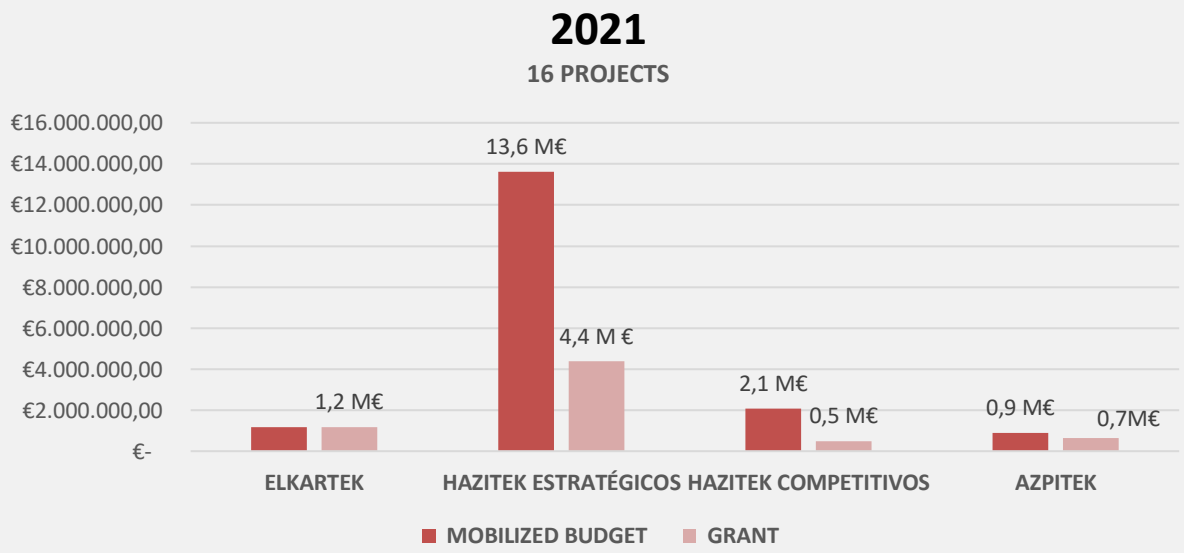
In the last 3 years, **47 R&D projects** in the field of **marine energy** have been supported through the Elkartek, Hazitek and Azpitek programs with a **total grant of more than 18 million €, which has mobilized a budget of almost 50 million €**

2019	SUPPORTED PROJECTS	GRANT	MOBILIZED BUDGET
ELKARTEK	1	697.998,97 €	697.998,97 €
HAZITEK ESTRATÉGICOS	4	7.681.429,00 €	20.703.896,74 €
HAZITEK COMPETITIVOS	12	431.957,12 €	2.399.787,24 €
2020		**GRANT**	**APPROVED BUDGET**
ELKARTEK	-	-	-
HAZITEK ESTRATÉGICOS	1	2.144.661,00 €	4.305.955,12 €
HAZITEK COMPETITIVOS	13	729.466,77 €	3.830.667,01 €
2021		**GRANT**	**APPROVED BUDGET**
ELKARTEK	1	1.195.002,98 €	1.195.002,98 €
HAZITEK ESTRATÉGICOS	3	4.380.122,00 €	13.617.007,09 €
HAZITEK COMPETITIVOS	11	511.024,25 €	2.096.850,47 €
AZPITEK	1	655.115,01 €	900.500,00 €
TOTAL	**47**	**18.426.777,10 €**	**49.747.665,62 €**

MARINE ENERGY SUPPORTED PROJECTS







TECHNOLOGICAL FIELDS AND LINES OF R&D SUPPORTED PROJECTS

Wind Power

Technological fields and lines

ELKARTEK HAZITEK EST.

Fields	Core TL in the field	Digitisation	Warehousing	Power Electronics	Circular economy	Materials
Wind turbine components and subsystems	• Value-added components for high-powered wind turbines • Simulation and testing of components, equipment and subsystems • Optimisation and homogenisation of new components	• Sensorisation of critical components and auxiliary systems • Algorithms for optimising component design MANUWIND 2021 WIND 4.0 2019	• Energy storage systems and hybridisation with other generation sources	• Power electronics equipment for energy quality, protection, control and measurement • High power conversion equipment	• Ecodesign of components	
Operation and maintenance of wind farms		• Simulation and digital twin systems • Connectivity and cybersecurity of components • CMS systems for the maintenance of offshore parks • Monitoring for an extension of the service life of wind farms • Monitoring systems applied to maintenance tasks in offshore wind farms WIND 4.0 2019 FLOAT&M 2021			• Models adapting to Onshore and offshore climat e change	
Towers, structures and offshore foundations (fixed and floating)	• New concepts applied to the manufacturing of towers, foundations and auxiliary systems • Integrated design of fixed offshore foundations • Offshore floating platforms DEMOSATH 2019 BIZIMOOR 2019 SEAPOWER 2019 WIND2GRID 2020	MATHEO 2019				• New solutions consisting of materials and coatings resistant to degradation in offshore environments • New concepts of materials for towers and foundations NEOMAT 2021

TECHNOLOGICAL FIELDS AND LINES OF R&D SUPPORTED PROJECTS

Energy of Waves

Technological fields and lines

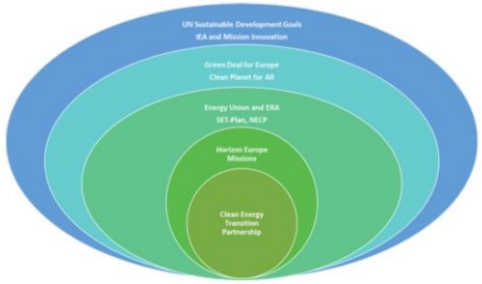
ELKARTEK HAZITEK EST.

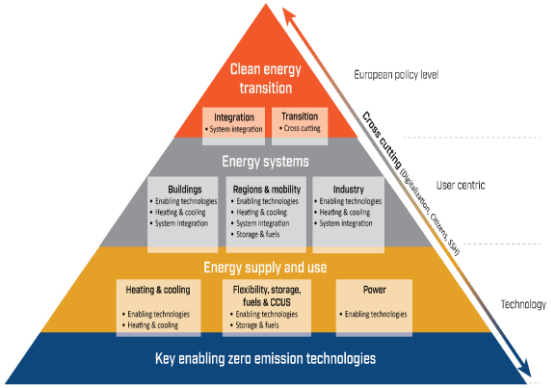
Fields	*Core Competences*	Digitisation	Energy storage	Power Electronics	Circular economy	Materials
PTO sensors and systems, subsystems, components and network connection	• PTO sensors and systems • Subsystems and critical components • Mooring systems			• Equipment for the connection and transmission of generated energy		• Materials and coatings for offshore environments NEOMAT 2021
Installation, logistics, operation and maintenance of marine parks	• Technologies and mathematical models to characterise marine sites • Pre-normative research for the definition of specific certifications for waves • Automated and/or autonomous systems for marine park inspection	• Predictive maintenance (digitisation and monitoring) • Development of digital tools for planning and optimisation of marine facilities and their O&M		• Electrical connections for parks		

CETP
Clean Energy Transition Partnership

70 National and Regional RDTI programme owners and managers

32 countries to align their priorities and implement annual joint calls from 2022 to 2027





14 million euros of commitment from the Basque Country

Transnational initiative on joint RTDI programming to boost and accelerate the energy transition, building upon regional and national RTDI funding programmes.

It aims to empower the energy transition and contribute to the EU's goal of becoming the first climate-neutral continent by 2050, by pooling national and regional RDTI funding for a broad variety of technologies and system solutions required to make the transition.

7 M€ EVE. Energy Agency of the Basque Government
7 M€ Economic Development, Sustainability and Environment Department of the Basque Government

ESKERRIK ASKO

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GRUPO spri TALDEA

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