

The Basque Energy Industry

Euskadi, a complete offer around the world

→ Innovative → Integral → Global



**BasqueTrade
& Investment**

Agencia Vasca de Internacionalización
Nazioartekotzeko Euskal Agentzia

GRUPO
spri
TALDEA



EUSKO JAURLARITZA
GOBIERNO VASCO
BASQUE GOVERNMENT

We are

An innovative, competitive and highly internationalized ecosystem

Main indicators and features

- **Integral industry.** High density of companies and professionals, covering the entire supply chain
- **International expertise:** participation in flagship projects worldwide
- **Global footprint,** following customers and projects all over the world
- **Leadership in key emerging industries:** technological and industrial leaders in hydrogen, offshore wind, floating technologies (solar and wind), marine energies, smart grids...
- **Key Enabling Technologies:** cybersecurity, Artificial Intelligence, Digitalization, Advanced materials, simulation and prediction tools...
- **Intensity in R&D:** strong ecosystem in R&D, leading key European energy projects



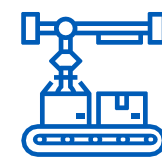
434
Companies



56,090 M€
75% of turnover,
outside the Basque
Country



96,305
employment
(25,968 jobs locally)



425
Facilities
worldwide in
69 countries



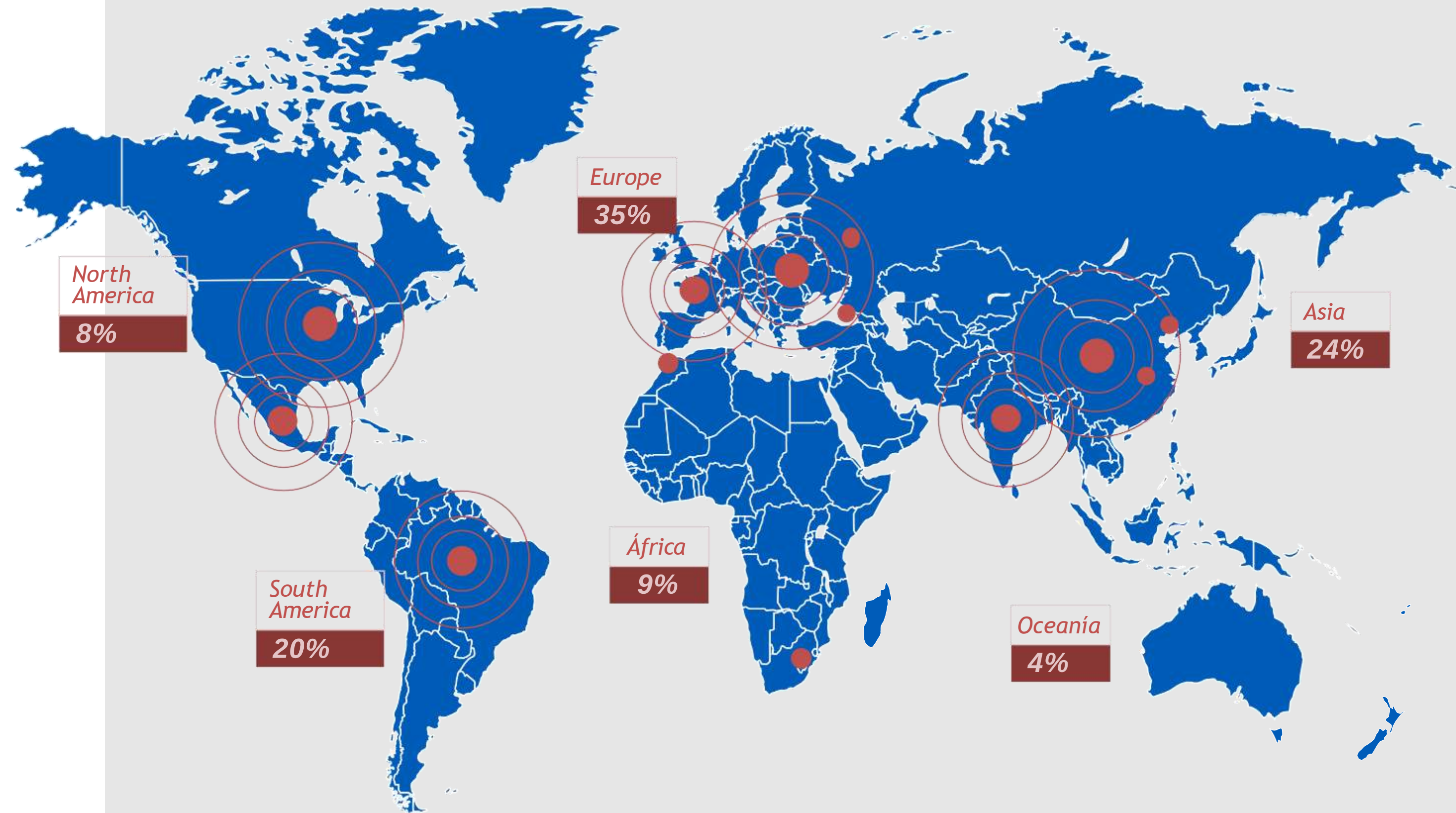
60%
International
turnover



742
Million € allocated
in R&D

where we are

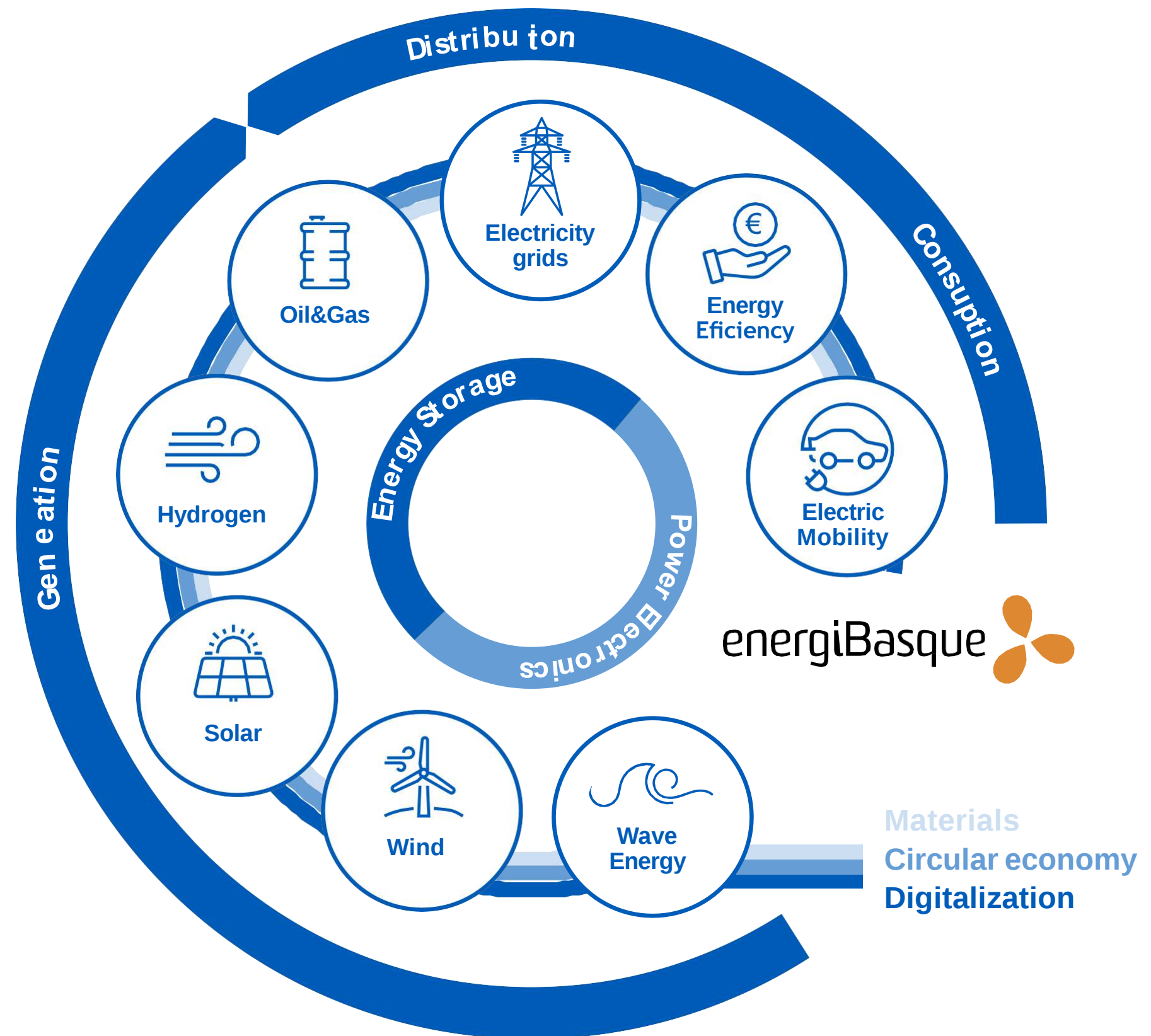
Basque component
companies are
present in 69
countries with 425
facilities



Technological Areas

Leading international benchmark companies and relevant technological capabilities in multiple areas.

Priority areas of research, technological and industrial development in the energy field



Value Chains

Eight value chains have a significant presence in the Basque Country



Oil&Gas

- Two leading operators such as Petronor and Nortegas
- Main entry point of LNG in Atlantic Arc (BBG)
- Three combined cycle plants (BBE, Bizkaia Energía and Iberdrola)
- Cluster of component manufacturers (Ampo, Tubacex, Tubos Reunidos, Vicinay, etc.) and engineering firms (Idom, Sener, etc.)



T&D of power and smart grids

- Iberdrola, one of the main electricity companies by market capitalisation worldwide
- A relevant set of manufacturers of T&D equipment, with leading companies internationally in their market niches (Arteche, Ingeteam, Ormazabal, ZIV, etc.)
- INGRID, a unique international laboratory, with great experimental capacity in high voltage and high power
- Iberdrola has located in Bilbao its global smart grid innovation center, "Global Smart Grids Innovation Hub"



Electric mobility

- More than 30 companies active in electric vehicle charging, with a presence in almost all segments of the Value Chain.
- Presence of both recharging operators and services, including IBIL, Iberdrola and AVIA, and manufacturers of recharging points with their own technology, such as ZIV and Ingeteam
- Leading companies in markets related to electric traction (CAF, Orona, Irizar, etc.)



Energy Storage

- CIC energiGUNE, international benchmark in Energy Storage research (electrochemical and thermal)
- More than 25 companies who are strongly committed to the incorporation of energy Storage as a source of innovation in their respective sectors



Wind

- Iberdrola, world leader wind energy operator
- Siemens Gamesa, world leader in wind turbine manufacturing
- Solid value chain in both the manufacture of equipment and components (Antec, Ingeteam, Iraeta, etc.), and in services (GES, Elecnor, etc.)
- Leader in offshore technologies: The Basque Country boasts 5 of the 34 floating platform technologies in the world and a unique open sea test-site



Marine energy

- Presence of 38 companies in the marine energy sector, especially in wave energy.
- BIMEP, a unique technological infrastructure for the research, demonstration and exploitation of collection systems with a total power of 20MW
- Mutriku, the first OWC (oscillating water column) plant in the world connected to the power grid
- HARSHLAB, the largest floating test laboratory for the offshore industry



Solar

- Solid positioning both in the development of technology and in the promotion of plants, with more than 120 companies active in the photovoltaic solar energy sector, covering almost the entire value chain
- Significant presence of other Basque companies in the value chain in certain market niches (P4Q, Glual, Lointek, etc.);
- Ingeteam and Solarpack, leaders in photovoltaic solar energy
- Stansol Energy, developer of the largest floating photovoltaic farm in Spain



Hydrogen

- The hydrogen value chain in the Basque Country is in full development, with companies with activity in production, storage, transport and distribution.
- The Basque Hydrogen Corridor brings together 78 companies and organisations to advance the decarbonisation of sectors such as energy, mobility, industry and services.
- Petronor has installed a 2.5 MW electrolyser as a first step in the Basque Hydrogen Corridor and REPSOL, IDOM and TECNALIA have joined an international consortium to develop a pioneering green hydrogen project in Europe

Leading reference projects

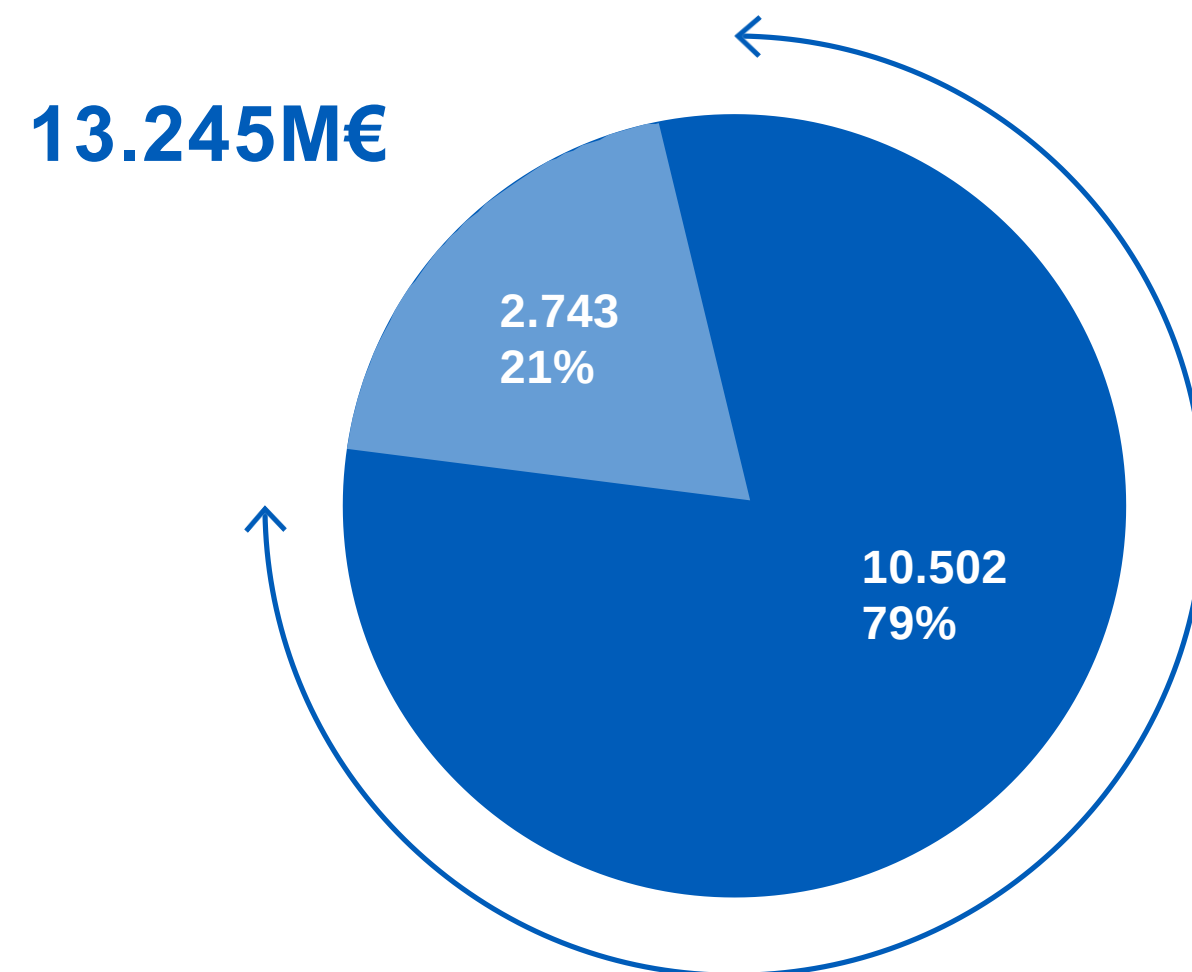
Basque companies participate as leaders or suppliers in many of the energy flagship projects worldwide



Leading reference companies

Main companies and players in Basque energy sector

Turnover of the Basque Country energy sector (2020, €M)
20 biggest companies in the sector



The energy sector in the Basque Country is led by 8 large operators...



...4 service companies with relevant capabilities and size...



...and a large group of manufacturers with a strong international position



...which are supported by a robust scientific-technological infrastructure



Collaborative Environment

A network prepared to help the business sector compete for international leadership

In addition to the business fabric, there is a dynamizing cluster and a strong science and technology infrastructure



Cutting-edge university centers

Several research groups and institutes in multiple areas
...such as the DeustoTech energy unit, created in 2008 to research in the area of electricity T&D and energy efficiency



A great research center for Energy Storage

CIC energigUNE...
...with a world-class infrastructure and significant Energy Storage capabilities, a key technological area for other energy areas



Multinational competence centers

7 international competence centers...
...with cases like that of General Electric in digital protection and control equipment or the MESA power laboratory (Schneider Electric)



Nanotechnology Research Center

CIC nanogUNE...
...with activity in bioenergy, photovoltaic solar, Energy Storage, energy efficiency and materials for offshore wind and marine energy



The Basque Energy Cluster aims to boost the competitiveness of the Basque energy sector through collaboration. The Cluster acts as a catalyst for the opportunities offered by the energy transition



Benchmark technology centers at international level

Tecnalia and IK4, large technology corporations with consolidated presence in numerous energy areas...
...and other technology centers such as Cidetec and Vicomtech, with outstanding activity in Energy Storage and display and communication technologies



18 Business R&D units...

...with several extensions and improvements of the existing units in recent years (the from Artech) Demonstration and Experimentation Unit from Ormazabal or the Ultra High Voltage Laboratory



Strategic Initiatives



An infrastructure at the disposal of technology and product developers which makes possible research and demonstration (at full-scale) of devices and systems for capturing and converting energy from waves

<https://bimep.com/>



The Basque Hydrogen Corridor was founded with the aim of creating a hydrogen ecosystem to enable progress to be made in the decarbonisation of the energy, industrial, residential and mobility sectors

<https://www.bh2c.org/en>



Basquevolt is an advanced centre focused on the production of the next generation of solid-state lithium batteries. The centre aims to become a European leader and make possible mass deployment of electric transportation, stationary energy storage and advanced portable devices.

<https://basquevolt.com/en>



Energy Intelligence Centre (EIC), flexible and collaborative space in which to develop technological knowledge and R&D projects, in the areas of:

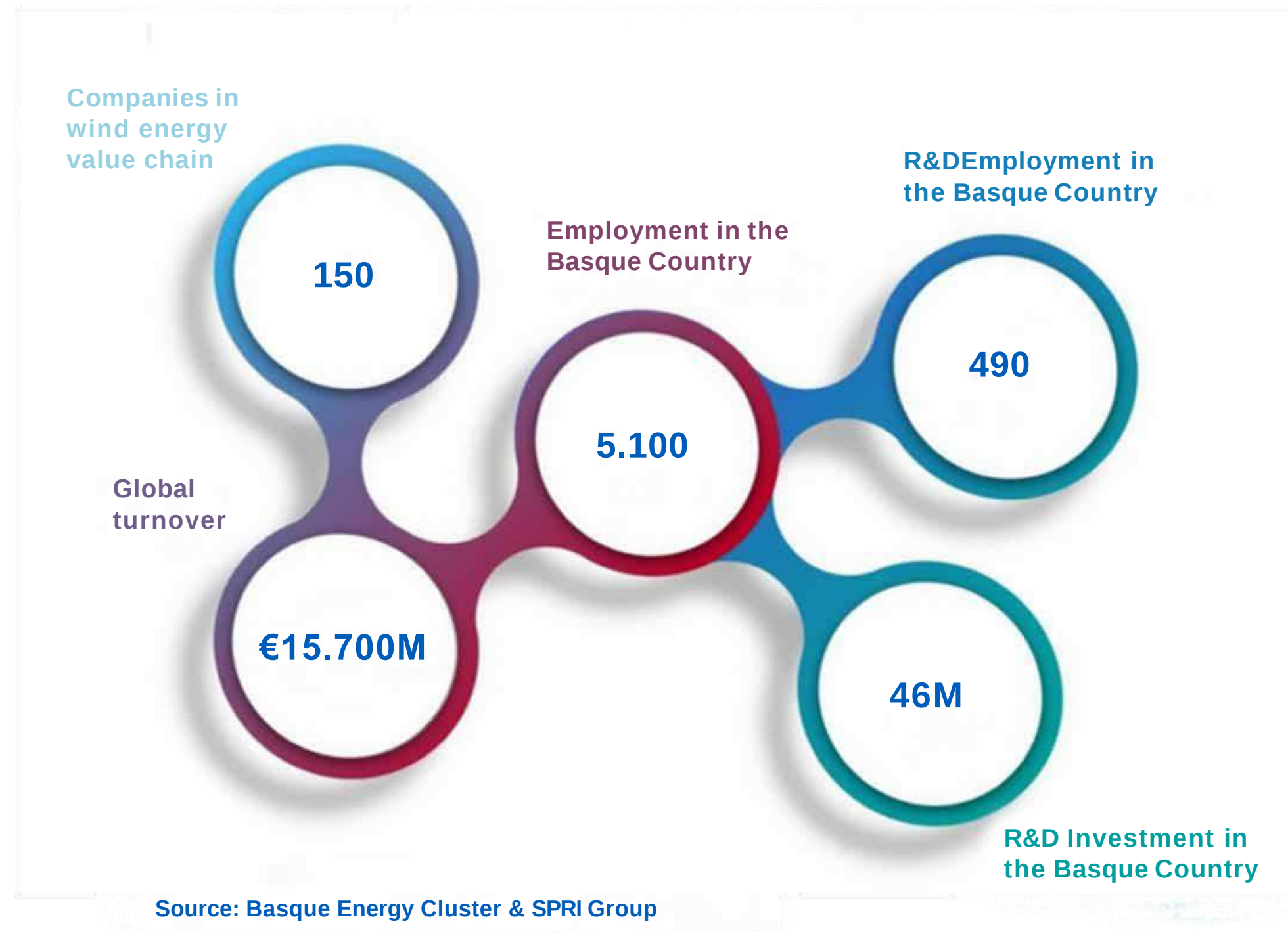
- Oil & Gas
- Sustainable Mobility and
- Electricity Transport & Distribution

Basque Wind Industry



Our value in wind

Key figures of the wind power sector in the Basque Country 2021



Industrial steelmakers, machine tool manufacturers, moldmakers, machining...

Developers
2

Manufacturers
87

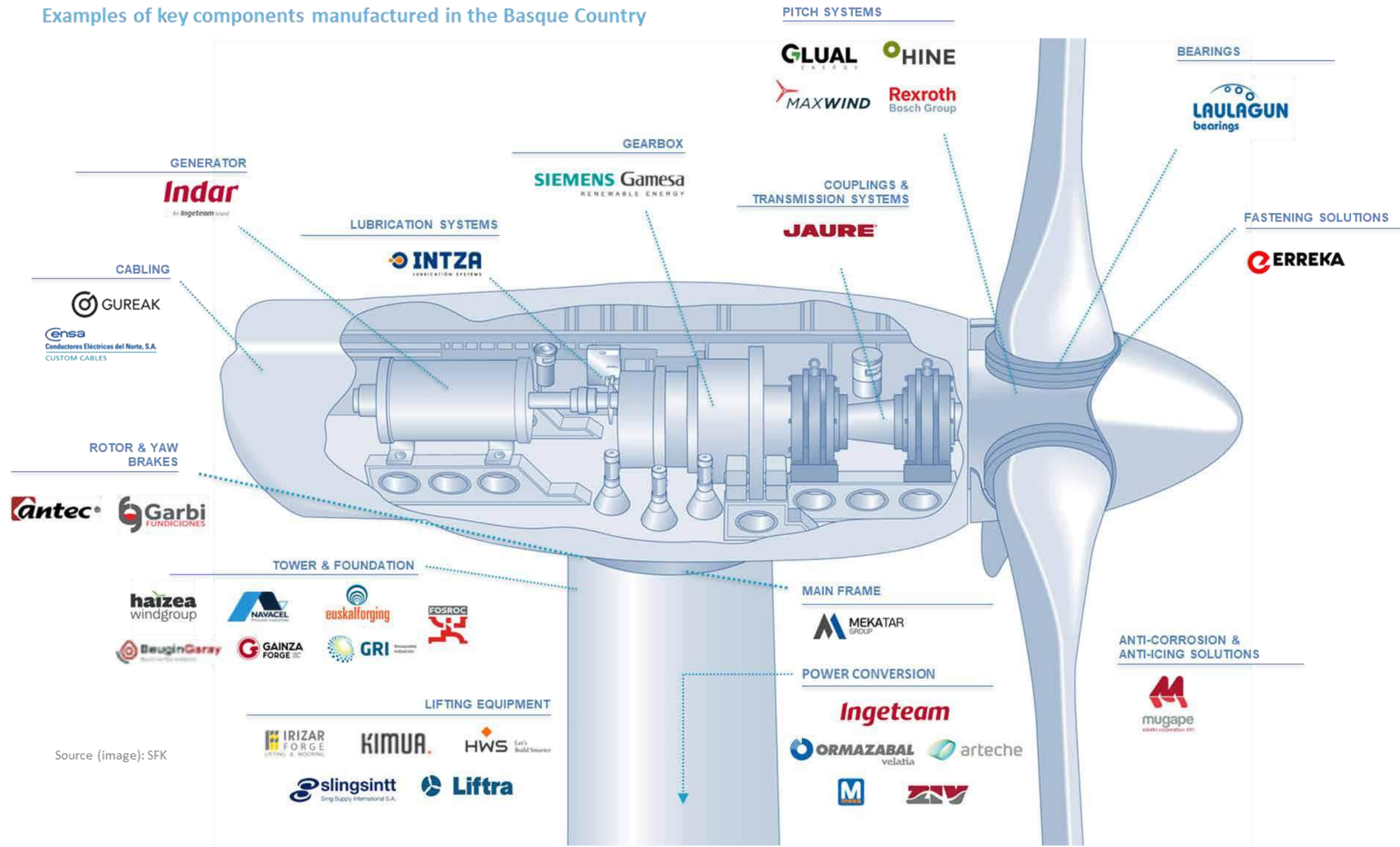
Service Providers
58

Services Innovation and technology centers, industrial and software engineering, consulting, universities, vocational training centers...

Our value in wind

Value chain - It covers all the stages of the Wind energy supply chain and works on all windmill functions

Examples of key components manufactured in the Basque Country



Source (image): SFK

Our value in wind

*The Basque Country boasts 5 floating platform technologies
in the world and a unique open sea test-site*



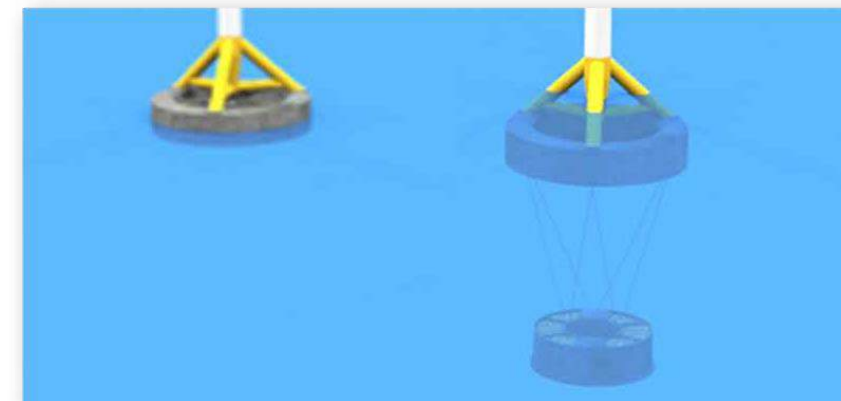
SATH (Swinging Around Twin Hull)
Concrete floating platform



W2Power
Twin turbine floating wind platform



NAUTILUS Floating Solutions
Semi-submersible four-leg floating foundation



WHEEL
Hybrid Wind Floater Technology:
Compact lowdraft barge in harbour
Transparent spar in operation



Hive Wind
Semi-submersible floating steel platform



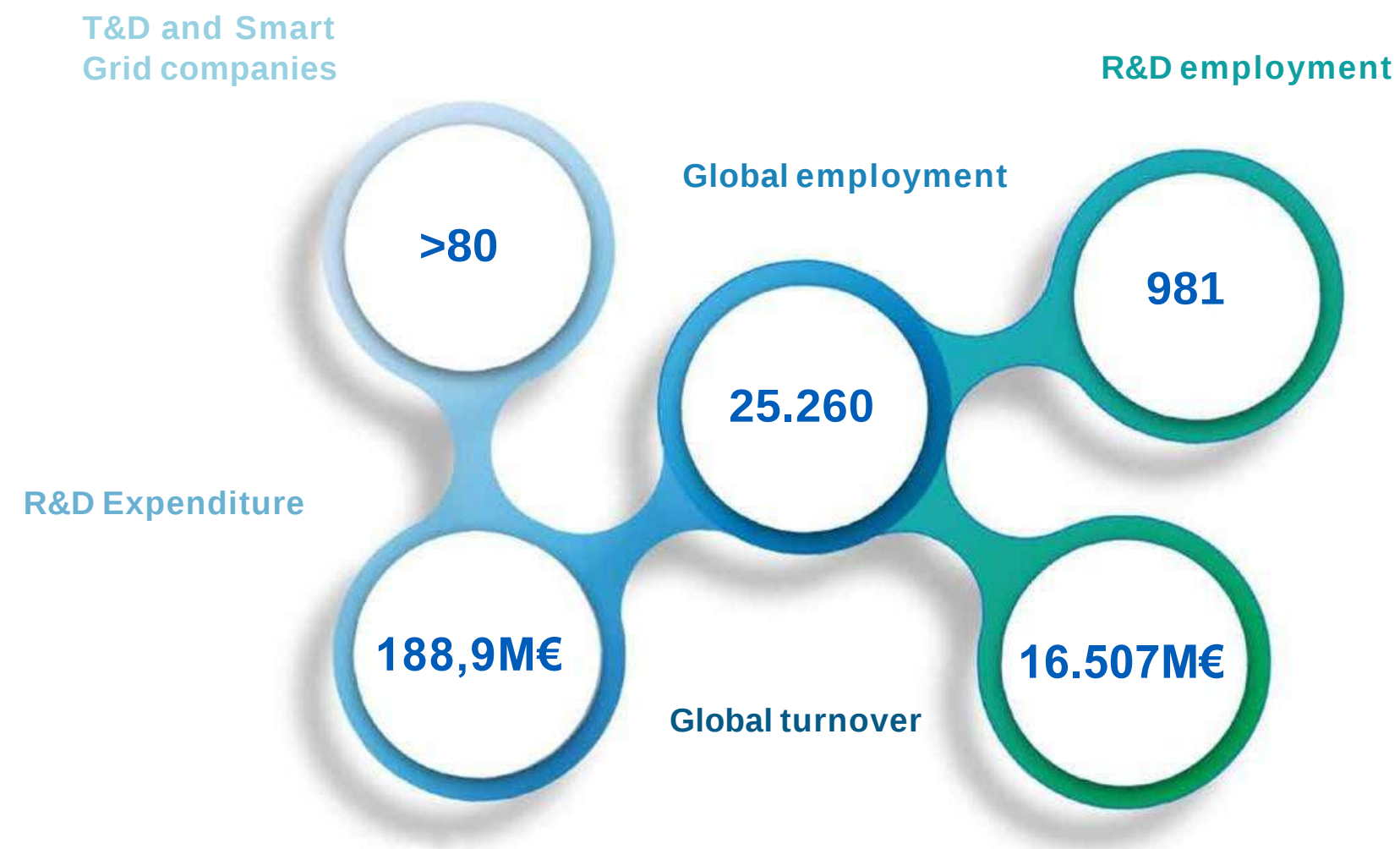
BiMEP
Open sea test site with grid connection for floating wind platform

Basque Smart Grid Industry



Our value in Smart grid

T&D and Smart Grid Activity in the Basque Country



Design and engineering, Installation, Operation and Maintenance, manufacturers...

Utilities
3

Manufacturers
36

Service Providers
47

Services, innovation and technology centers, industrial and software engineering, consulting, universities, vocational training centers...

Source: Basque Energy Cluster

Our value in Smart grid

A complete and
competitive value chain
with Basque companies
in all segments

Design and engineering



Grid operators



Installation and maintenance



Operation systems and applications



Power electronics and storage



High and medium voltage equipment



High and medium voltage equipment



Test and certification of electronic equipment



Measuring equipment (smart meters)



Customer-centric services and user participation



Knowledge/ r&d agents in network technology



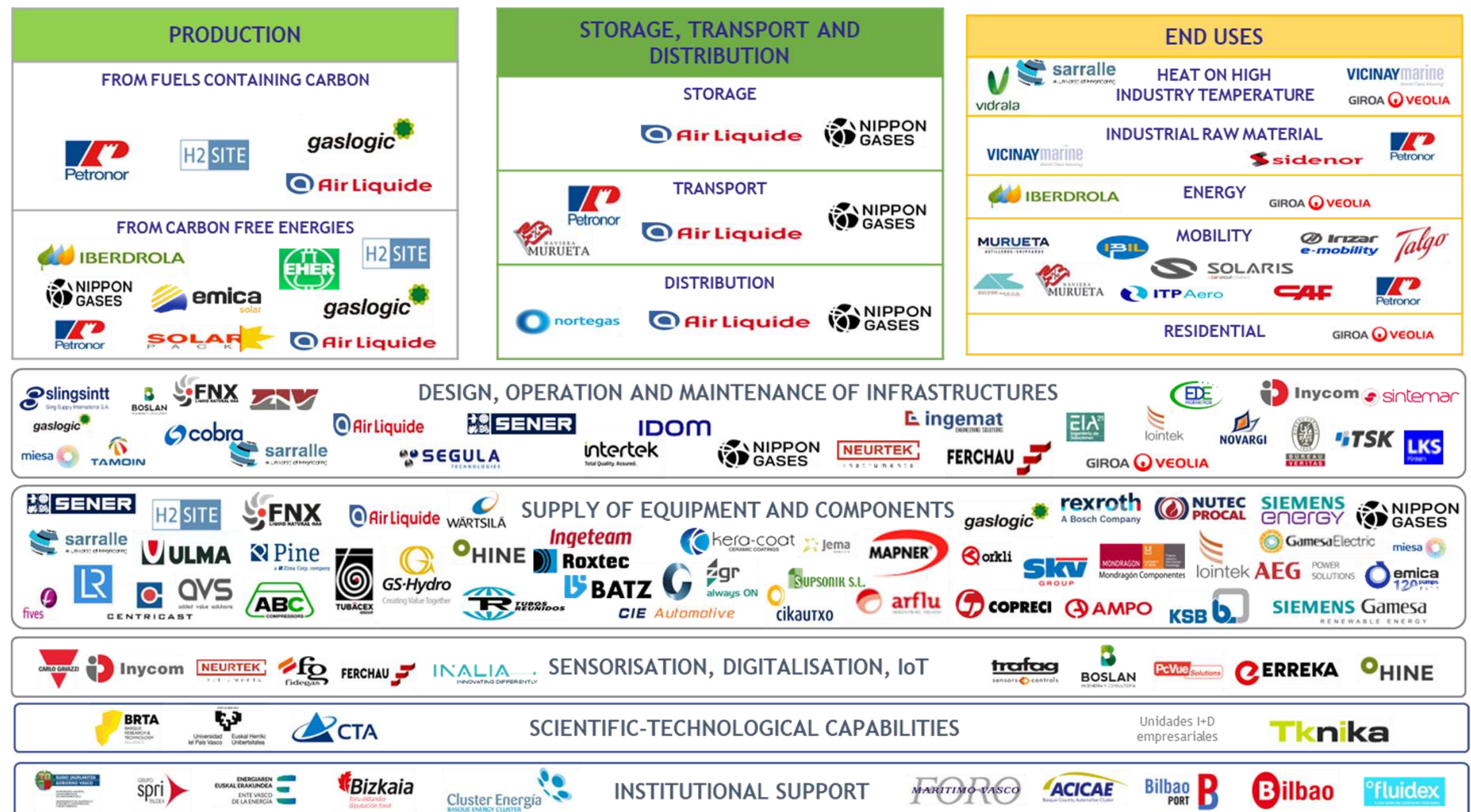
Basque Green Hydrogen Industry



Our value in Hydrogen

The Basque country holds important technological and industrial capacities to position itself and compete in the hydrogen value chain

Main Activity Areas and estimated Budget



EUSKADI

BASQUE COUNTRY



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& Investment**
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