



# European Research Roadmap for ICT Enabled Energy-Efficiency in Buildings and Constructions

## Abstract

Energy Efficiency (EE) as a whole is a key challenge for our world today and in the future. When considering current climatic changes, carbon emissions, decreasing fossil fuel resources, and ever increasing energy costs.

In Europe between 40% and 50% of energy generated provides heating and power to buildings, while accounting for approximately 30% of carbon emissions. There is an urgent need to improve energy management from construction, through occupancy, and through demolition/re-use.

## Objective

As part of the EU's efforts to improve Buildings' Efficiency REEB provides a contribution to the coordination of high value research, The industrial sector targeted by REEB is *Building Construction*: houses, residential buildings, large infrastructures. There is no specific classification of building type.

REEB examines new, used, renovated, residential, tertiary and industrial buildings. REEB focuses on the use of ICT (Information and Communication Technology) to support and develop "*Building Automation*", and improve EE, leading to, what is termed, "*smart-buildings*" of tomorrow. Smart-buildings provide optimal management of a building's energy.

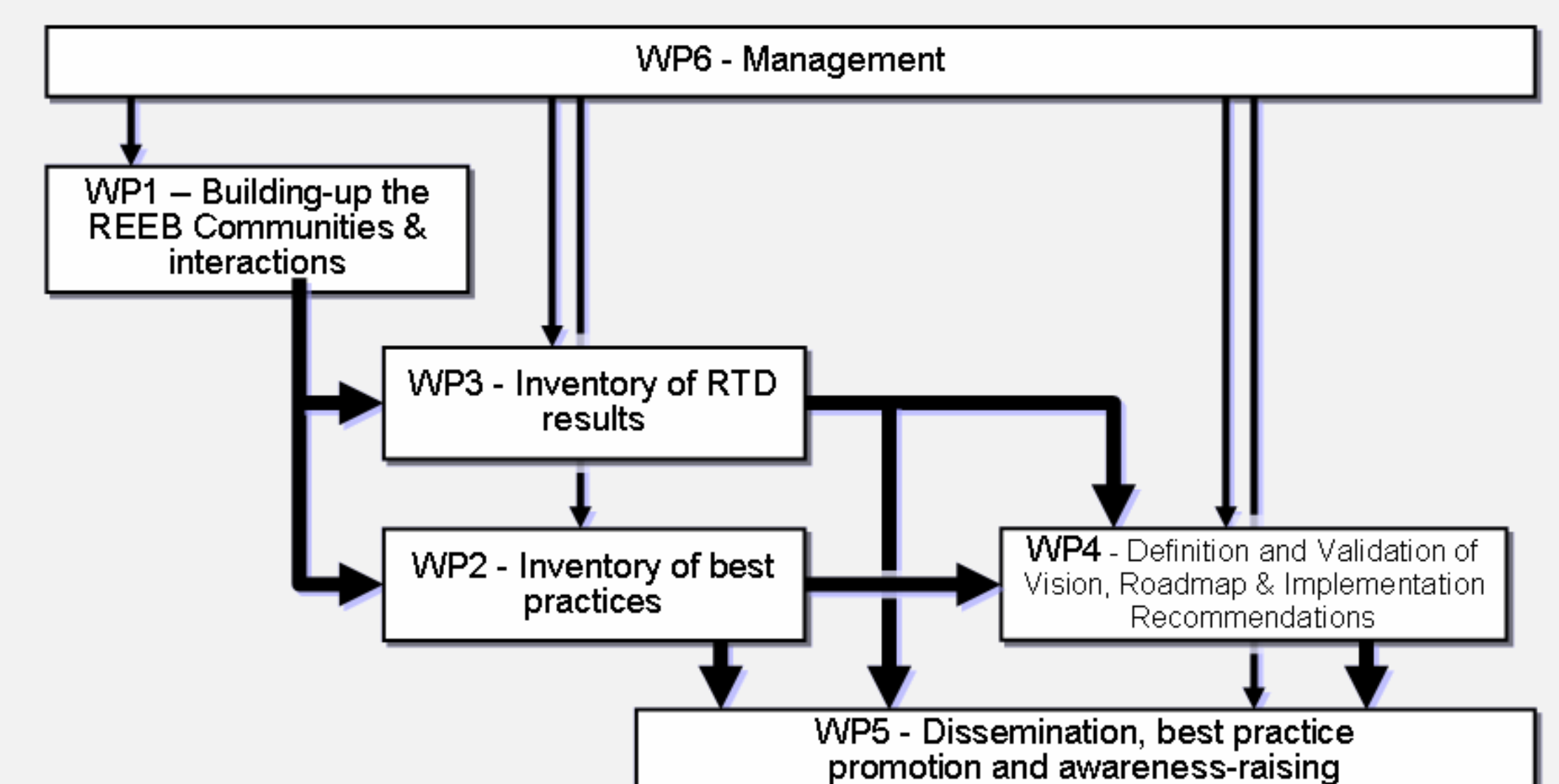


Figure 1 REEB Work Packages

## Approach

The main objectives of the REEB include:

- The establishment of an European-led community dedicated to the innovative use of ICT supporting energy-efficiency (EE) in construction.
- The identification of a set of well founded best practices for usage of ICT applications and tools for Energy Efficiency in Europe and world-wide, as well as most representative ongoing standardization initiatives and development regulations;
- The drawing up of a cartography of current and emerging projects and international research initiatives related to the ICT support to EE in the built environment.
- The development of a Vision, a Roadmap and a set of recommendations for implementations of ICT – supported EE technologies in Construction.

REEB will focus of the following key areas:

- ICT methods and tools supporting optimal design of products and services with respect to energy consumption and the related environmental impact.
- Integrated ICT-based systems enabling eco-efficient production, conservation and distribution of energy.
- New ICT-based control and monitoring systems applicable to industrial processes, office buildings, living environments in order to optimise energy consumption and to reduce environmental impact.
- Design, simulation and strategy adaptation of energy use profiles, especially in terms of in-house/in-building consumption management, with a focus on energy-neutral new or renovated home and working environments, supported by innovative business models and platforms for energy efficiency service provision.

## Achievements

The "Cartography of EE-Research" highlighted strengths and deficits in current EU and international research.

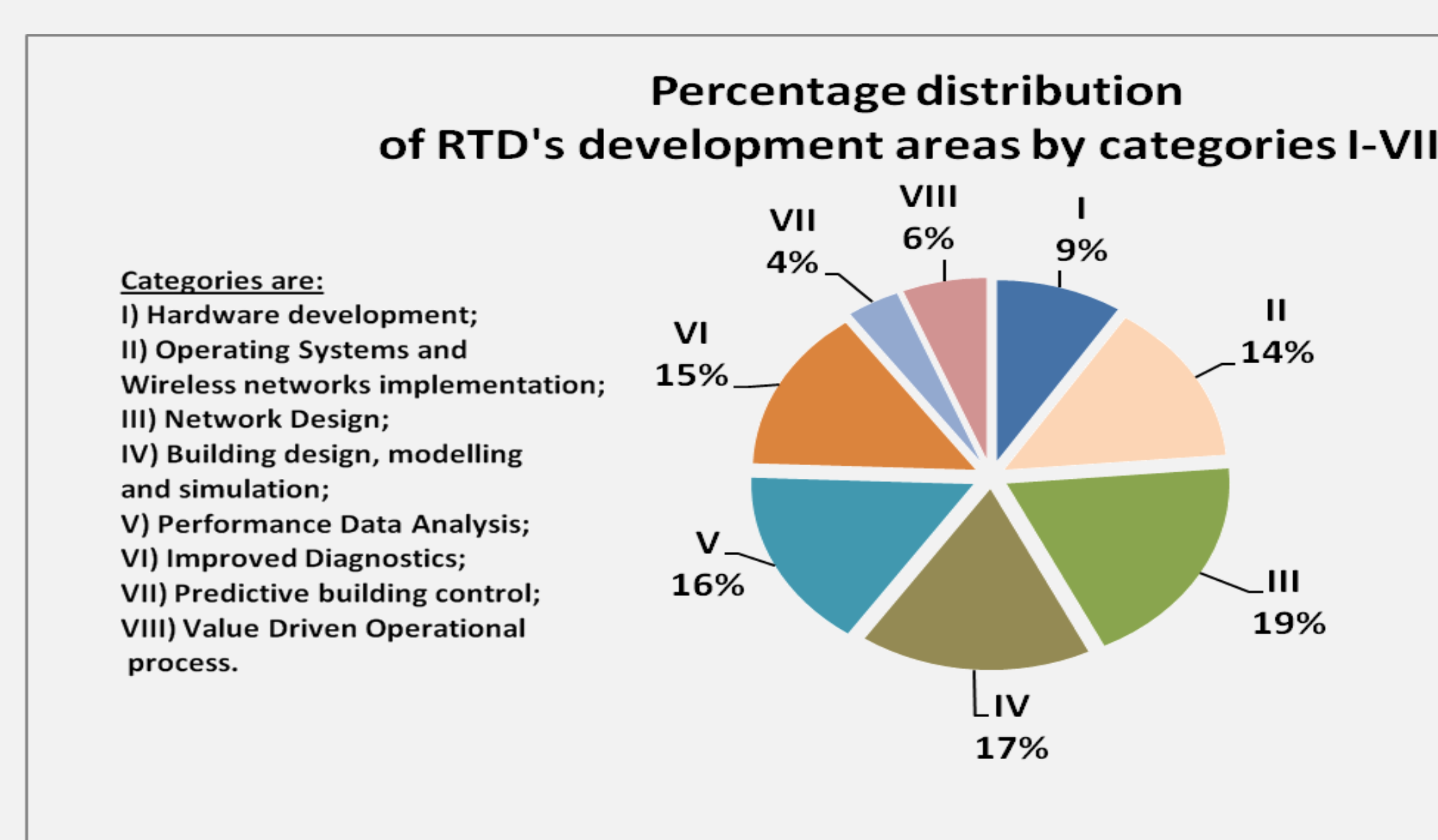


Figure 2: Cartography of EE-Research

The results developed in REEB were used by the European Commission and the European Construction Technology Platform to develop the "*Multi-Annual Research Roadmap*" for the Energy-Efficient Buildings PPP-Initiative of the European Commission in FP7 and HORIZON 2020 (see right).

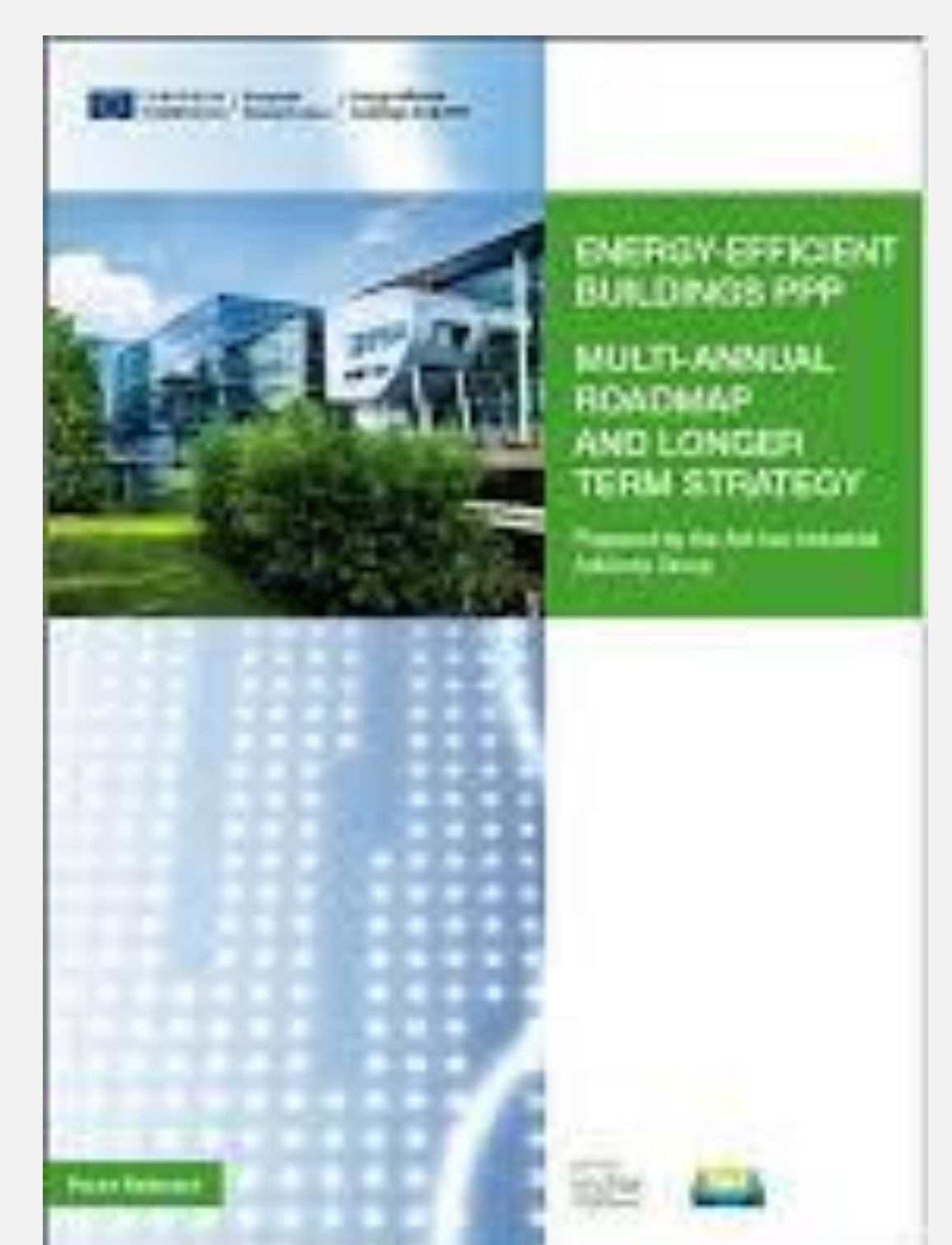


Figure 3: Multi-Annual Roadmap

## Project Partner

### Project Coordinator:

CSTB: Centre Scientifique et Technique du Bâtiment

Fundación LABEIN Spain

### Project Partner

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Commissariat à l'Energie Atomique France

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