

# ICLIMABUILT

FUNCTIONAL AND ADVANCED INSULATING AND ENERGY  
HARVESTING/STORAGE MATERIALS ACROSS CLIMATE ADAPTIVE  
BUILDING ENVELOPES

## PROJECT PRESENTATION

Dr Dimitris Fantanas – NTUA Coordination team

- **Full title:** Functional and advanced insulating and energy harvesting/storage materials across climate adaptive building envelopes
- **Acronym:** iclimabuilt
- **Call identifier:** H2020-NMBP-TO-IND-2018-2020 (**FOUNDATIONS FOR TOMORROW'S INDUSTRY**)
- **Topic ID:** DT-NMBP-05-2020 **Open Innovation Test Beds for materials for building envelopes (IA)**
- **Number of partners:** 27
- **Duration:** 48 months (01.03.2021 – 28.02.2025)
- **Funding:** ~ 15M €
- **Coordinator:** NTUA, R-NanoLab, Prof. C. A. Charitidis

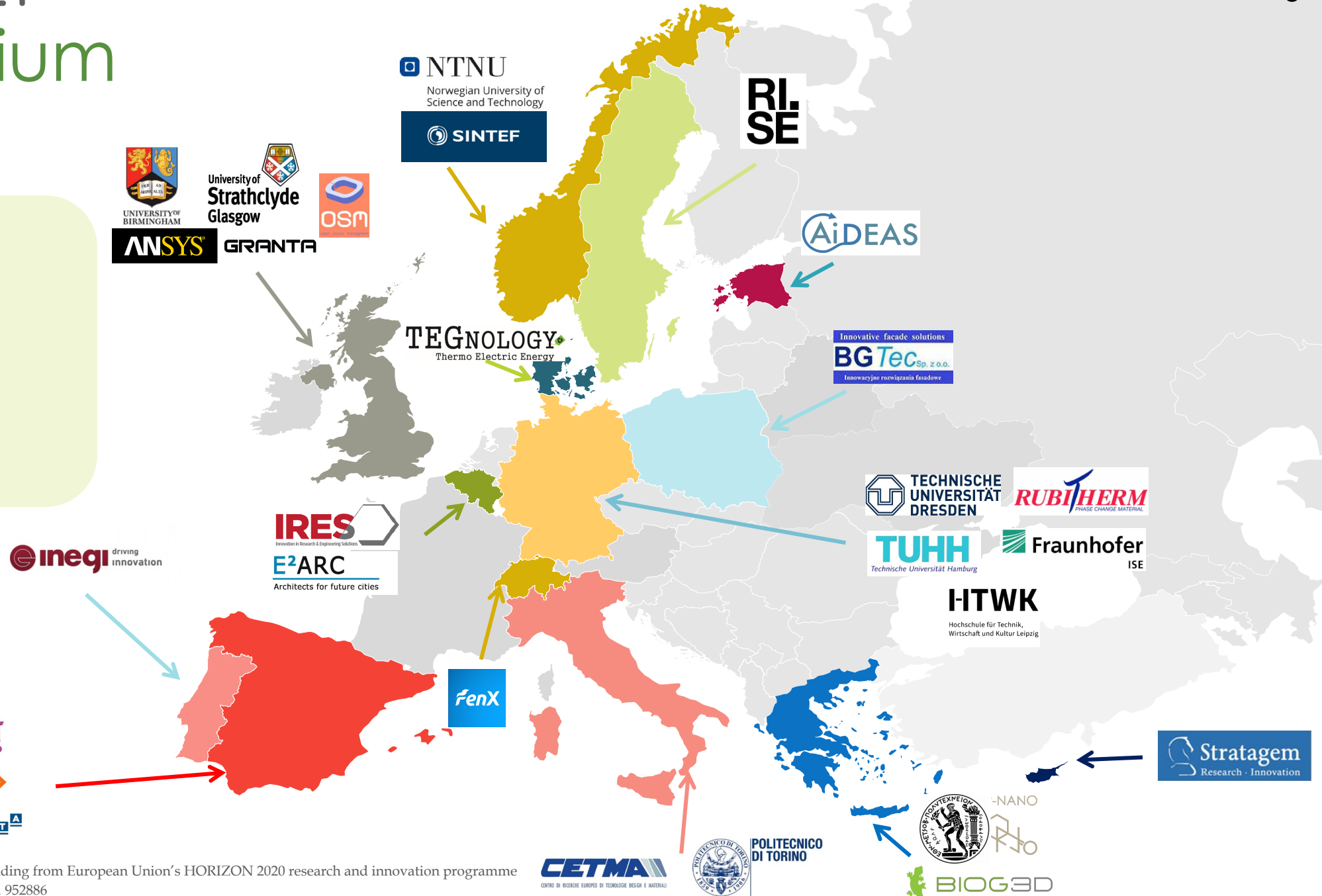


# iCLIMABUILT Consortium

27 Partners

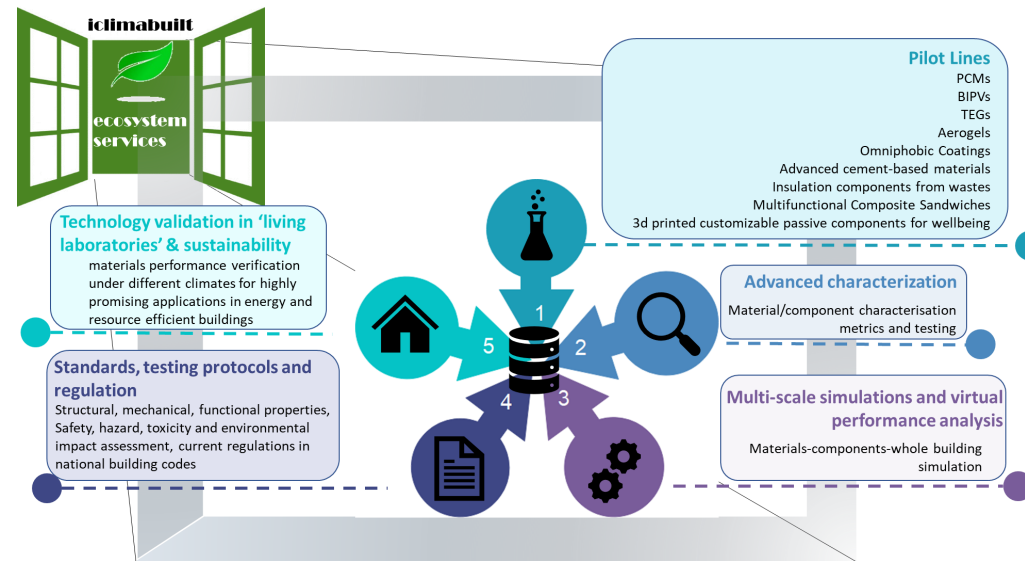
- 16 RTOs
- 11 SMEs

14 EU countries



iclimabuilt has received funding from European Union's HORIZON 2020 research and innovation programme under Grant Agreement No. 952886

iclimabuilt's **goal** is to create an **open access ecosystem** for developing, upscaling and testing innovations in building envelope materials and technical systems via its **9 Pilot Lines (PLs)** to reach **Nearly Zero Energy Buildings (nZEB)** balance.



Support the **translation of research results into innovations** and help **small high-tech firms to scale up** and cope with the continuous rising of technological complexity **by creating a service ecosystem through a Single-Entry-Point** for necessary infrastructures and tools to test, validate and upscale new technological solutions.



# Main Targets



## Target 1

**Materials development** for improved thermal and functional performance of building envelope solutions



## Target 2

**Design and assembly of technical systems** (fully customizable, flexible, modular and de-mountable aesthetic designs)



## Target 3

**Monitoring and characterization strategies** to support decision-making (fully monitored living labs, characterisation facilities and modelling/simulation)



## Target 4

**Dissemination and exploitation activities** reaching stakeholders and firms, as well as expanding the ecosystem.



## Target 5

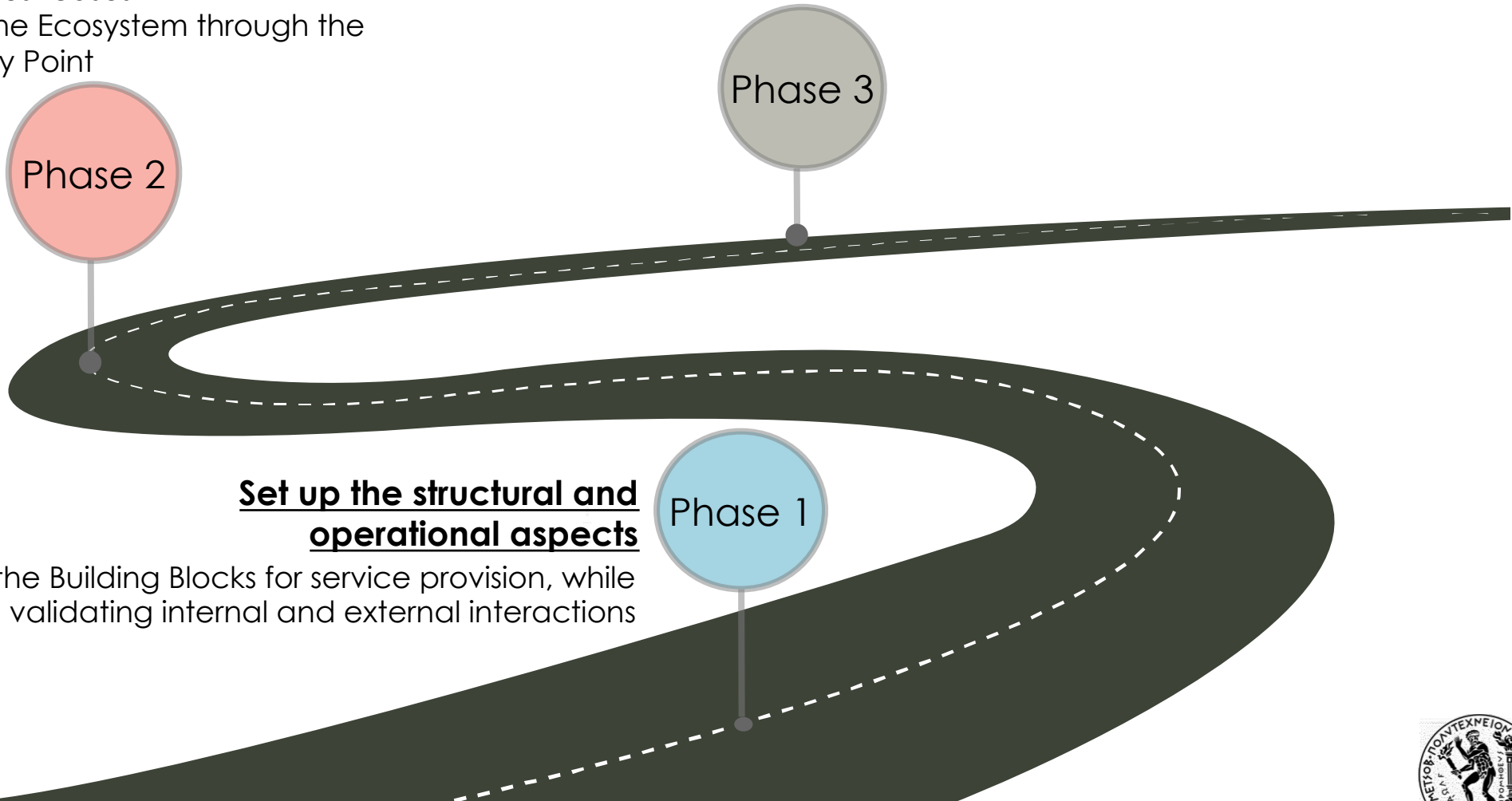
Refined and expedited **access to financing solutions** to reinforce the competitiveness and extroversion of SMEs

**Validation of the ecosystem**

Part 1: Analysis, evaluation & validation of the materials/Pilot Lines – test cases  
 Part 2 : Open Call to the Ecosystem through the established Single-Entry Point

**Ecosystem extroversion and sustainability**

Dissemination & Exploitation activities



**Set up the structural and operational aspects**

Creation of the Building Blocks for service provision, while developing and validating internal and external interactions



## Ecosystem development and technical set-up

- **Built an Ecosystem** based on **6 building blocks** with **9 Pilot Lines (PLs)**
- **Upgrade existing technology infrastructures** with peripheral systems
- **Set up** technical competences/services of the **ecosystem** as horizontal activities to **support all PLs** and **building envelope component** development.

## Validation of the ecosystem

- **Validate** the proper **operation** of the **ecosystem** based on **7 selected test cases** for **upscaling, testing** and **validating** in **operation environment**
- **Develop** a **workflow** for **fast characterization** and **optimization** of **materials** and **building components** on **European (CEN)** and **international (ISO, ASTM) Standards**.
- Proceed with **improvements** of **operational procedures** within **testbed** lines based on the test cases

## Operational efficiency and sustainability

- **Set-up** a **Joint Venture** to **administer** the iclimabuilt **ecosystem**
- **Set up** a **Single-Entry-Point (SEP)** with **increased visibility** to attract new SMEs for **service provision**.
- **Develop** an **innovative cloud-infrastructure-powered platform** (digital system) enabled by Cloud Infrastructure
- Provide **links** with **financing schemes**.

improved industry



## Increase in the number of new SME users for existing test beds

- SMEs will be able to proceed in technological innovation in a fast and cost efficient way.
- Access to advanced facilities and services

## Improved industrial process parameters

- Through various technologies - Digitalisation, AI and data analytics - will facilitate the innovation process through a more resource efficient, flexible in design and manufacturing, and productive value chain.
- These technologies can have a substantial impact on pilot line owners and building envelope component manufacturing.

## Faster verification of materials and system performance

- Real time monitoring and measurement system combined with modelling and simulation.
- Through the unique data management system (iDMS) iclimabuilt will ensure full traceability and data quality by following accepted standard protocols for characterisation.

## Faster verification of materials performance

- Contribute to a cost-effective transformation of existing stock into nearly zero-energy buildings and will tackle the energy efficiency goals, create new jobs and economic growth to SMEs and Europe.



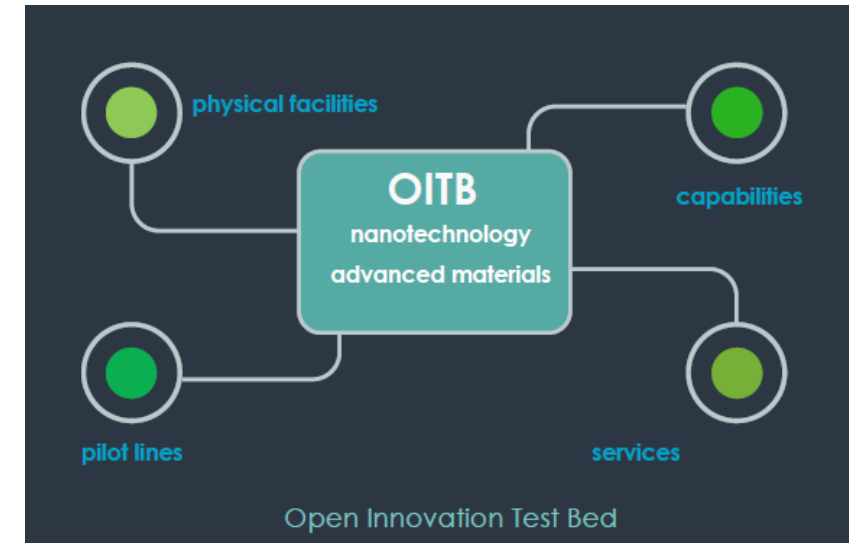


## Form a cross-domain business ecosystem

- Connection between **service suppliers** and **users**
- **Support** new product development/upscaling and testing
- **Innovative** building envelope **materials** and technical **systems**

## Assist small high-tech firms (SMEs)

- To **scale-up**
- To cope with the continuous rising of **technological complexity**



**iclimabuilt** aims to accelerate the development of additional leading-edge technology by focusing on:

- **Materials development** and production **upscaling**
- Design and assembly of **technical systems**
- **Monitoring** and **characterization strategies** to aiding with decision-making
- **Dissemination** and **exploitation** support
- Refined and **expedited access** to **financing** solutions

## Iclimabuilt Service Portfolio:

- **Materials by Design**
  - New Material/Product Development
- **Testing and Characterisation**
  - Laboratory Testing – Materials
  - Laboratory Testing – Components
  - Large-Scale Testing (Outdoor Facilities)
  - Living Laboratory Testing
- **Virtual Performance Testing**
  - Modelling
  - Simulation
  - Digital Twins

## **Safety Assessment Standards & Regulation**

- Safety assessment
- Sustainability assessment (LCA, LCC)

## **Upscaling**

- Process Optimisation
- Machine Learning

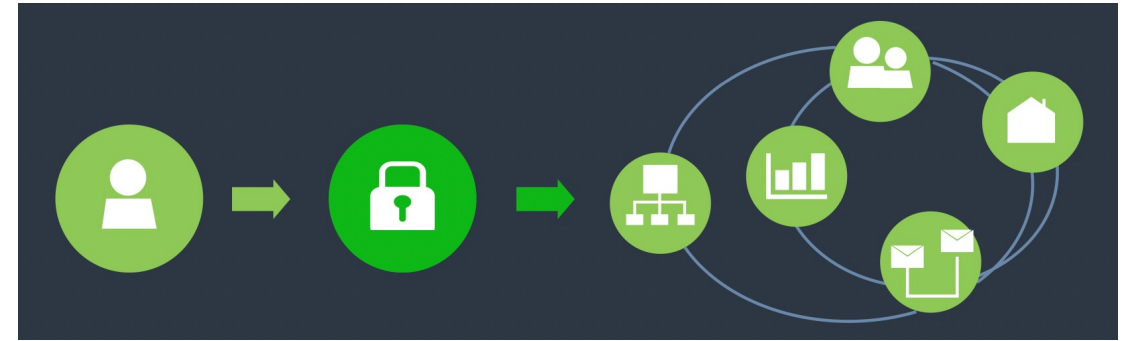
## **Financing, Investment and Innovation**

- Techno- economic analysis and market validation
- Financing support
- Business modelling

**Single-Entry-Point (SEP)** developed to **link customers** with the project **ecosystem**, in order to **test, validate** and **upscale** new technological solutions.

### Added Value:

- **Fast characterization** and **optimization** of materials and building components
  - Under the umbrella of standardized procedures based on European and international Standards.
- **Easy access** to facilities for validation under **real conditions**
  - Fully monitored living labs (5 climate zones in Europe)
- **Fast virtual testing** at material, component and whole building scale
- **Holistic building envelope design**
  - consultancy on architectural aspects; including environmental, technical, functional and design factors
- **Easy and fast access to Financing Solutions**



- **Companies** (or **small consortia**) will be able to **develop and/or test** their **technologies** referring to **materials** for **building envelopes**.
- Specific **application process** and **guideline** will be **developed** within the project.
- The **Open Call** will be utilised to **test** and **validate** the **project ecosystem** and **fine-tune** the **services**.
- Each Open Call **applicant** will need to:
  - **Describe** its **lack in knowledge**
  - Investigate how it is **expected** to **close** these **knowledge gaps**
- Aiming to **implement** at least **one case** per project **Pilot Line**.
- **Funded budget** : Approximately **1.1Milion €**.
- Approximately **10 companies** or **small consortia** will be **funded**
- The Open Call will **launch** in **August 2023**.
- iclimabuilt will offer the **services** through its **Single Entry Point**.



**Stay Tuned!**

# iCLImaBUILT



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