Preliminary Market Consultation

Project Contextualization 24/03/2025

MIREÓ

Metodología Integral para la Rehabilitación Energética Optimizada

Comprehensive Methodology for Optimized Energy Rehabilitation

Junta de Andalucía
Consejería de Fomento, Articulación del Territorio y Vivienda
Agencia de Vivienda y Rehabilitación de Andalucía

Cofinanciado por la Unión Europea
MINISTERIO DE HACIENDA
Fondos Europeos
Junta de Andalucía
European Innovation Council

Metodología Integral para la Rehabilitación Energética Optimizada

Comprehensive Methodology for Optimized Energy Rehabilitation

Presentation Structure

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1 AVRA and Energy Rehabilitation

🏆 **Relevance**:

- 9,511 homes rehabilitated since 2014.
- €70 million invested in energy rehabilitation
- 75,000 managed homes, 50,000 under rental schemes.

🏅 **Recognitions**:

- EnerAgen Award 2024: Best Public Initiative in Energy Transition.
- REBUILD REHABILITA Award: Energy Rehabilitation in Building.

2 Innovation Strategy at AVRA

🔬 **Innovation Strategy**:

- R&D&I strategy in place since 2021
- Innovation Management System
- Environmental Monitoring System

🌍 **Innovation Projects**:

- 3 ongoing Horizon Europe projects
- Public Procurement of Innovation: Industrialized Nearly Zero-Energy Housing

👥 **Organization of 2 International Conferences** on Innovation and Sustainability (2021 & 2023).

🏛️ **Recognized** as an Agent of the Andalusian Knowledge System since January 2022

3 Project Justification

🚨 Energy Rehabilitation Rate in the EU is Insufficient: 1% per year vs. 3% required to meet 2050 decarbonization commitments.
⚡ 75% of buildings in the EU are not energy efficient.
😞 41 million Europeans affected by some degree of energy poverty (2022).
🏚️ Spain: 55% of homes were built before 1980, with no energy efficiency criteria.
🔥 Andalusia: Rising temperatures and increasing climate vulnerability.

3 Project Justification

🏢 Opportunity: Multi-family Housing Typology in Spain vs. Europe. In Spain, 66.9% of households are in multi-family buildings.

🛠️ Shortage of Skilled Labor for energy rehabilitation.

⚡ Need to Promote the Adoption of Innovations and their large-scale application.

4 Main Goals

1. 📈 Optimization of the Energy Rehabilitation Process:
◦ Excellence in management and citizen support.

2. 🚀 Incorporation of Innovations:
◦ Leverage emerging technologies to optimize and accelerate processes.

3. 🏢 Maximize the Extensive AVRA Housing Stock:
◦ No issues with demand aggregation.

5 Identified Needs

Phases of the Value Chain

🧠 **Diagnosis and Planning**: Advanced predictive models, multi-criteria analysis, and large-scale planning.

📐 **Project**: Reduction of timelines, optimal use of generative AI, and document automation.

🏢 **Construction Systems**: Modular rehabilitation and 3D printing.

🎥 **Construction Control**: Computer vision and artificial intelligence for site monitoring.

📡 **Monitoring**: Low-cost and low-maintenance sensors.

5 Identified Needs

New European Bauhaus
beautiful | sustainable | together

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Design Principles and Criteria Inspired by NEB

👥 **Citizen Participation**:Involve communities in the design and decision-making process.

♻️ **Sustainable Materials and Circularity**: Use of eco-friendly, recyclable materials and promoting a circular economy.

🛠️ **Durability and Low Maintenance**: Design for long-lasting, easy-to-maintain solutions.

🎨 **Aesthetic Integration and Minimal Intrusion**: Ensure designs blend aesthetically with surroundings while minimizing disruption.

📖 **Awareness and Training**: Raise awareness and provide training on energy efficiency and sustainability.

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6 State of the Art

🌍 **Planning Phase**: Predictive analysis and simulations at a small geographic scale with a limited multi-criteria approach.
🧠 **Project Phase**: Insufficient utilization of the potential of generative AI assistance and automation.
🧱 Industrialized **Construction Systems** and Additive Manufacturing: In the experimental phase.
📝 **Construction Execution**: Insufficient integration and maturity.
📊 **Evaluation and Monitoring**: Expensive and inefficient.
🌳 Lack of a Systematic Methodology Inspired by **NEB**.

7 Specific Objectives

🌱 Transformation of Energy Rehabilitation with Technological Innovation and an Integrated Approach

🎯 **Key Solutions**:

Advanced Predictive Models for efficient planning and optimal decision-making.

Co-piloting: Generative AI and automation during the project phase to reduce timelines.

Real-world experimentation with off-site systems vs. 3D printing.

Intelligent Construction Control based on AI.

Accessible and Sustainable Monitoring systems.

8 Final Considerations

💶 CPI is not a standard tender: It allows companies to participate in the exploitation of the results.

💰 Market consultation is key to securing project funding.

🔗 More information on the project website: https://www.juntadeandalucia.es/avra/proyectos-europeos/#/contenidos/MIREO.html

This project is receiving assistance from the SPIN4EIC initiative. During the preliminary market consultation phase, it does not receive any additional funding from the European Union.