

Driving Large-Scale Energy Renovation: AVRA's Experience in Managing and Upgrading the Public Housing Stock of Andalusia and in R&D&I Projects

Stakeholder workshop
Financing solutions to support energy
efficiency measures

SHERLOCK



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Driving Large-Scale Energy Renovation: AVRA's Experience in Managing and Upgrading the Public Housing Stock of Andalusia and in R&D&I Projects

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1. What is AVRA?

- Public agency under the Andalusian Government
- Nearly 40 years improving Andalusia's urban and housing landscape
- Manages public housing stock and promotes land and public spaces
- Builds social housing, rehabilitates buildings, and regenerates urban areas
- Focus today: AVRA's role in energy renovation and innovation within Sherlock



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2. Key figures: AVRA's impact in Andalusia



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- Spain's largest public housing stock: **74,000 homes in 525 municipalities**, housing **300,000+ people**
- **500 professionals** working across all **8 provinces** of Andalusia
- Since 2000: 17,000 new homes built and land developed for 59,000 more
- Andalusia's **main industrial land promoter**: 136 projects in 104 municipalities
- **Urban regeneration** in 45 areas, including historic centers and neighborhoods
- **Energy rehabilitation**: 9,500 homes upgraded since 2014, **€80M invested**
- Over **€1B invested in rehabilitation** throughout AVRA's history



3. The current importance of energy rehabilitation for AVRA



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- Energy rehabilitation has become **AVRA's main activity**, surpassing new housing or land development
- **European funds (ERDF)** enable modernization and energy efficiency improvements
- **Institutional commitment:** reducing emissions and aligning with EU & Spanish climate goals
- Holistic approach: rehabilitation + essential repairs, accessibility, and social programs
- Focus **on transforming communities**, not just buildings
- Energy rehabilitation combines **sustainability, innovation, and social cohesion**



4. The need for energy rehabilitation: a European challenge and opportunity



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- Buildings: **36% of EU greenhouse gas emissions, 40% of energy consumption**
- **80% of 2050 buildings already exist** → renovation is key to EU & Spain climate targets
- Current pace: **only 1/3 of needed rate** to reach climate neutrality by 2050
- **Innovative tools exist** (AI, BIM, advanced monitoring) but adoption is limited
- AVRA: 9,500 homes rehabilitated, €80M invested → proof that large-scale rehab is feasible
- Energy rehabilitation = **modernize economy, create jobs, build sustainable cities**
- **Collaboration** and knowledge sharing are essential for the future

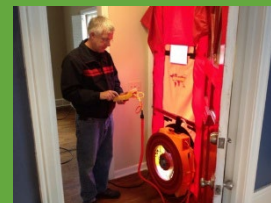
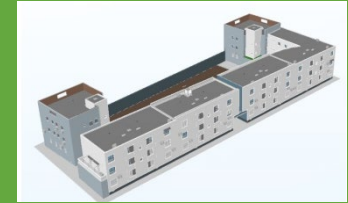


5. AVRA's energy rehabilitation interventions



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- **Comprehensive approach:** passive, active, and innovative solutions for all building elements
- **Roofs & facades:** ETICS, cavity insulation, biomaterials; energy class improvements from C → A, **80% reduction in thermal discomfort**
- **Windows & openings:** double-glazed frames, sunshades for better comfort and efficiency
- **Active systems:** community solar thermal for hot water, evaporative cooling in summer
- **Monitoring & quality control:** thermographic cameras, thermal flow meters, blower-door tests, plus temperature, humidity, and CO₂ sensors
- **Collaboration & community:** university validation, local employment, citizen awareness programs
- Demonstrates that public energy rehabilitation can be **innovative, scalable, and transformative**



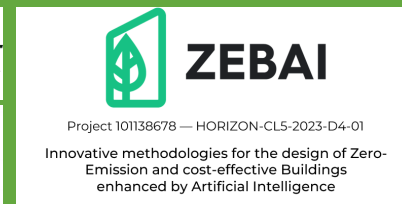
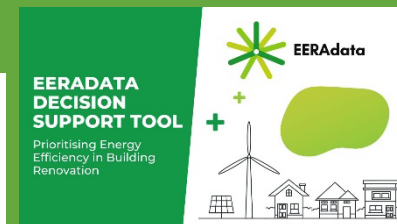
6. Promoting Innovation in Rehabilitation: AVRA's R&D&i Projects



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- **Innovation drives sustainable rehabilitation** through collaborative R&D with European and regional partners
- Projects cover **energy efficiency, energy poverty, and digital technologies** (BIM, AI) in social housing and heritage rehab
- Exploring **AI, modular design, and big data** for zero- and nearly zero-energy buildings
- **€25M+ invested** in R&D&i to develop scalable, replicable solutions
- Focus: **innovation as a tool** to advance climate goals via public-academic-private cooperation



7. MIREO Project: Transforming Energy Rehabilitation Across the Value Chain

- Integral methodology to **optimize all phases** of energy rehabilitation
- Funding: expected **€6M** from Spanish Ministry of Science
- **Phase 1 – Diagnosis & Planning:** AI & Big Data analyze energy, climate, and cadastral data; 3D models support regional-scale decisions
- **Phase 2 – Design:** Generative tools co-pilot plans, models, and documentation; faster, adaptive, and cost-effective solutions
- **Phase 3 – Execution:** Prefabricated modules & robotic 3D printing; AI optimizes processes and custom designs
- **Phase 4 – Construction Supervision:** Computer vision & AI monitor progress, detect deviations, and generate automated reports
- **Phase 5 – Post-Work Monitoring:** Low-cost sensors track energy performance, comfort, and air quality in real time
- **Holistic vision:** New European Bauhaus values – participation, sustainability, circularity, aesthetics
- Goal: Make energy rehabilitation **practical, accessible, replicable**, accelerating a sustainable built environment



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Metodología Integral para la
Rehabilitación Energética Optimizada



New European Bauhaus
beautiful | sustainable | together



8. How AVRA's Experience Aligns with the Goals of the Sherlock Project

A. Public Energy Rehabilitation: AVRA as a Demonstrator

- Acts as a **catalyst**: demonstrates large-scale energy rehabilitation
- **Volume & reach**: 74,000 homes in 525 municipalities → high visibility and impact
- **Visibility effect**: shows citizens and private sector what is achievable → encourages replication

B. Public Innovation Procurement: Driving Private Sector Competitiveness

- **Procurement of innovation** incentivizes companies to develop pioneering solutions
- AVRA can **directly implement projects** when funding (mainly ERDF) is available
- Includes **citizen engagement, awareness, and participation programs**
- **MIREO bridges gap** between emerging technologies and practical application across the rehabilitation value chain
- Demonstrates how **public innovation procurement** can boost private sector competitiveness





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Thank you for your attention