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Rural Energy Efficiency Roadmap

Arzila, Coimbra, Portugal

A step by step renovation guideline

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About RENOVERTY

RENOVERTY will foster energy efficiency building upgrades in the Central and Eastern Europe (CEE), South-eastern Europe (SEE) countries, as well as Southern European countries (SE), by setting the methodological and practical framework to build renovation roadmaps of vulnerable rural districts in a financially viable and socially just manner.

Specifically, the project aims to deliver tools and resources to support local and regional actors to build and execute operational single or multi-household roadmaps for rural areas. A scalable model will also be created to ensure the wide geographical replicability and implementation of the roadmaps by different actors at the EU level. Strategically, the project will contribute to minimising logistical, financial, administrative, and legal burdens caused by a complex and multi-stakeholder home renovation process. Additionally, RENOVERTY will ensure that building retrofits consider the social dimension by incorporating security, comfort, and improved accessibility in the roadmaps to further improve the quality of life of vulnerable populations.

Over the project's three years, seven pilots located in Sveta Nedelja (Croatia), Tartu (Estonia), Bükk-Mak & Somló-Marcalmente-Bakonyalja Leader (Hungary), Zasavje (Slovenia), Parma (Italy), Coimbra Region (Portugal), and Osona (Spain) will implement the roadmaps, while wider integration of rural and peri-urban development is foreseen in the long run.

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1. INTRODUCTION

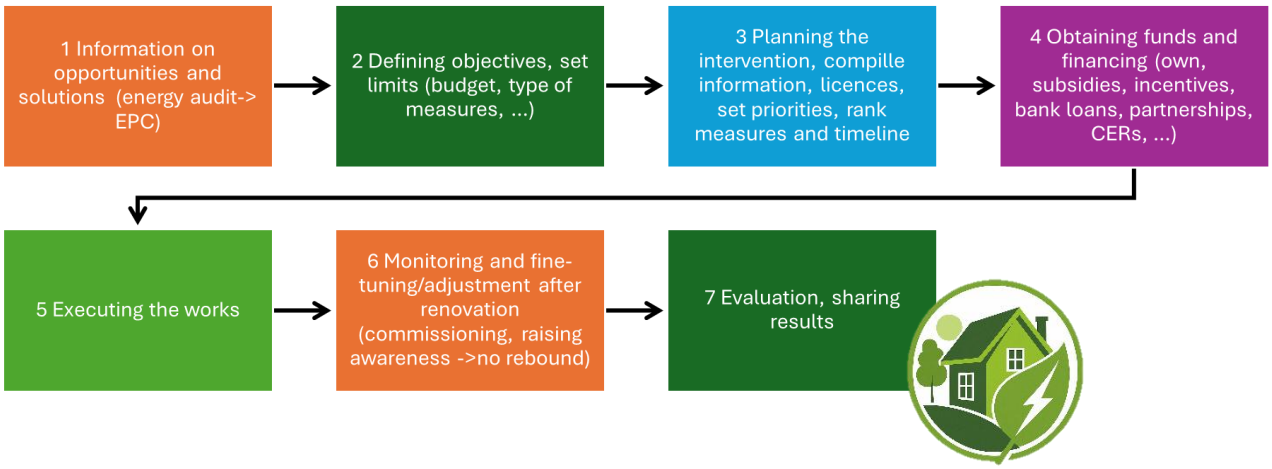
Do you live in a house that is too cold in winter and too hot in summer? Are your energy bills hard to manage? Have you thought about improving the energy efficiency of your home but feel the process is complicated or expensive? **Then this guide is for you.**

It was developed for families living in **Arzila but can be used in similar rural/peri-urban areas in the Coimbra Region**. It explains how to renovate your home to **improve comfort, reduce bills, and protect health**, while taking advantage of **advice, professionals, and funding** available in Portugal.

What you will find inside:

- What "energy renovation" means in everyday terms and why it brings comfort and savings.
- A **step-by-step** path from first advice to planning for works.
- Concrete **measures** (e.g., insulation, windows, heating systems, solar) and typical **costs and savings**.
- Where to **get help** and **funding**, including options for vulnerable households.
- **Common problems** and how to avoid or solve them.

We provide guidance using examples from real experiences in **Arzila (Coimbra)**. Many older houses in these areas have little or no insulation and rely on wood for heating. The guidance applies broadly to similar villages across Portugal and helps tackle one of the biggest social challenges of the upcoming decade – ensuring sustainable, energy-efficient homes for all.



2. ENERGY RENOVATION OF DWELLINGS

Energy renovation means improving your home so it uses less energy, feels more comfortable, and costs less to run. Typical actions include insulating roofs and walls, replacing old windows and doors, upgrading heating and hot water systems to efficient solutions (like heat pumps or clean biomass), installing solar, and choosing efficient lighting and appliances.

Why it matters

- **Comfort:** Rooms keep a **stable, pleasant temperature** and are less humid.
- **Health:** Less mould and damp; better indoor air quality.
- **Savings:** Lower monthly bills, especially in older houses.
- **Property value:** Better energy class often means a **more valuable home**.

In rural and peri-urban areas, where many homes were built before thermal regulations were in place, prior 1990, the gains in comfort, health and energy savings following renovations can be particularly significant. However, there are challenges that can be encountered prior to or during renovations. Upfront costs can feel high, while the process demands decisions about contractors, paperwork, and funding. Yet with the correct sequence of steps, clear advice, and the financing options detailed in this guide, the journey becomes manageable.

3. STEPS TO FOLLOW TO RENOVATE YOUR HOME

Renovations feel complex at first. Breaking the journey into clear steps makes the entire process more manageable. Below, each step indicates what to do to increase the energy efficiency of your home, who can help with each step, how much the works may cost, and what to watch out for along the process.
If you are unsure where to start, ask for help early. Your parish council, municipality, Local Action Group (LAG), social support institutions, local associations and energy one-stop shops can provide advice and free support. They also serve as a gateway for information sessions, paperwork support and referrals to qualified experts.

3.1. Step 1 – Find out what your home needs (opportunities & solutions)

Every successful renovation starts with a simple check-up of your home. A qualified professional visits, looks at your bills and your house, and points out where energy (and money) is being wasted. This "energy audit" is like a health check: it looks for things such as missing insulation, old windows, inefficient heaters or fridges, air leaks and damp spots. From this visit you'll get an Energy Performance Certificate (EPC) — think of it as your home's energy ID card — showing how efficient the dwelling is, on a scale from A+ (most efficient) to F (least efficient).

The EPC lists clear recommendations, estimated costs, and how much you could save each month. The advice can be organised by what should be done first (because it makes the most significant difference or fixes a vulnerability) and what can wait until later, always weighing impact, comfort and cost. Having an EPCs is also required for applications to many funding schemes.

To find a qualified expert (perito qualificado – PQ) go to the SCE website (sce.pt) "Pesquisa de Técnicos" page and search by district/municipality to see accredited experts near you. You can contact them directly from that page. You should ask two or three PQs for a quote and confirm it includes the site visit, certificate registration, and explanatory walkthrough of recommendations.

Who can help: one-stop shops/balcão energia, energy agencies, energy auditors, DECO, NGOs

3.2. Step 2 – Set your renovation goals

Decide what you want to achieve before you start. Most families aim to pay less for energy and feel more comfortable indoors. The energy auditor, based on the results of the EPC, can help you set achievable goals.

- Good practice is to aim for at least 20% lower energy use and for healthy winter conditions (around 18 °C indoors with humidity under 50%).
- In Portugal, adding renewable options can help a lot — for example, solar thermal for hot water because of the large number of sunny days, or biomass heating with heat recovery since wood for burning is often available for free in rural areas.
- Finally, set a maximum budget so you know what is realistic now and what may need to wait for a second phase.

It is important to understand the key metrics and indicators that show whether home energy upgrades are really working. These simple indicators help check progress and confirm that renovations are saving energy and cutting CO_2 emissions. The main renovation goals and indicators used to measure results are presented below. By keeping track of these indicators, it becomes easier to see the real impact of the improvements and make sure homes are becoming more energy efficient.

Table 1: Main renovation indicators and indicator range expectations.

Goal	Indicator	Indicator range
Increased thermal comfort	Indoor temperature in winter/summer	18–22 °C in winter; below 26 °C in summer
Better indoor air quality	Relative humidity / CO_2 level	40–60 % humidity; < 1 000 ppm CO_2
Elimination of damp or mould	Visible damp spots / humidity readings	No visible mould; < 70 % surface humidity
Lower energy bills	Annual energy cost per household	20–50 % reduction after deep renovation
Reduced energy use	Energy consumption per m²	50–100 kWh/m²·year
Improved energy efficiency	Energy Performance Certificate (EPC) rating	class B/C after renovation
Lower CO_2 emissions	Annual CO_2 emissions per home	20–60 % reduction
Increased property value	Market value / EPC label	5–15 % increase in value for upgraded homes
Reduced water consumption	Nº of cubic meters per person	10–30 % reduction, Aim at 0,1m³/day
Health and well-being	Reported comfort and health satisfaction	Residents report fewer cold or damp-related issues

Who can help: one-stop shops/balcão energia, energy agencies, energy auditors

3.3. Step 3 - Plan the work

Good planning avoids stress and surprises. First, gather the basics: what's the current state of the house, what works are recommended, and what paperwork is needed for financial support applications and construction permits. One-stop shops and many municipalities, parish councils and energy agencies offer free guidance.

Once the initial assessment is done, it's time to decide which renovation measures to carry out, and when. Each home is different, so priorities will depend on the building's condition, available budget, and the household's comfort needs. You should review the possibilities with technical support from the energy auditor or the OSS / energy desk to help you choose the right combination of actions for your particular case. Typical improvement measures are:

Insulation (roof, walls, and floors)

What it does:

Improves comfort and reduces energy consumption by keeping heat inside during winter and outside during summer. Insulation also helps reduce dampness, mould, and temperature fluctuations between rooms.

Options:

- **Roof insulation** is usually the most cost-effective first step, as most heat loss occurs through the top of the building.
- **Wall insulation** can be done externally using **ETICS**, internally with insulation panels, or through cavity fill, when the wall structure allows it.
- **Floor insulation** can be installed where there is access from below or when floors are being replaced.

In older or damp houses, repair leaks and waterproofing first, and ensure proper ventilation after the works.

Indicative costs:

- Roof insulation: **€12–€100/m²**, depending on material and accessibility.
- External wall insulation (ETICS): **€30–€80/m²** (can reach €100/m² for high-end finishes).
- Internal insulation: **€25–€45/m²** for typical solutions.

Expected impact:

15–35 % reduction in heating and cooling needs when combined with improved airtightness and efficient windows. Noticeable improvement in comfort and indoor humidity stability.

Windows and doors

What it does:

Prevents unnecessary heat loss while reducing drafts, noise, and condensation, making homes more comfortable and secure while.

Options:

- **Double or triple glazing** with PVC or aluminium frames with thermal break.
- Proper **installation and airtight sealing** are essential to avoid thermal bridges.

Indicative costs:

- Typically **€300–€1,500 per unit**, depending on size, frame material, and glazing type.
- Bundling purchases often allows better prices.

Expected impact:

10–25 % reduction in heating and cooling losses; less noise, better comfort, and reduced condensation on cold mornings.

Heating and domestic hot water

What it does:

Provides warmth and hot water more efficiently, reducing energy costs and improving comfort.

Options:

- **Heat pumps (air-to-water or air-to-air):** Very efficient, providing both heating and cooling; suitable for most climates in Portugal. Require correct sizing and suitable emitters (radiators, fan coils, or underfloor heating).
- **Efficient biomass (pellet stoves or boilers):** A renewable option where pellet supply is available. Ensure a safe chimney, proper ventilation, and fuel storage.

- **Fireplaces with heat recovery:** An upgrade for existing open fireplaces, improving efficiency and safety while maintaining the traditional look. Some models distribute heat to multiple rooms.

Indicative costs:

- Air-to-air heat pump (split unit): **€800–€2,000 per unit**, plus installation.
- Air-to-water heat pump (heating + AQS tank): **€5,000–€12,000+**, depending on house size.
- Pellet stove or boiler: **€1,500–€8,000+** installed.
- Fireplace with heat recovery: **€1,000–€3,000** installed.

Expected impact:

40–70 % savings in heating energy compared to old electric or gas heaters; significant improvement in comfort and indoor air quality when combined with insulation.

Solar energy

What it does:

Uses the sun's energy to generate electricity or heat water, reducing dependence on fossil fuels and lowering bills.

Options:

- **Solar photovoltaic (PV):** Produces electricity for self-consumption; surplus energy can be injected into the grid or shared through Renewable Energy Communities (RECs).
- **Solar thermal:** Produces domestic hot water (AQS) and reduces the use of electricity or gas boilers.

Indicative costs:

- Solar PV (2–4 kWp): **€2,500–€6,000** installed.
- Solar thermal for AQS: **€1,500–€4,000** installed.

Expected impact:

20–50 % reduction in electricity bills for self-consumption PV; up to 70 % savings in annual AQS energy needs for solar thermal systems.

Lighting and appliances

What it does:

Reduces electricity consumption. Replace older equipment first.

Options:

- Replace old lighting with **LED lamps** (use warm white for comfort).
- Choose **A-class (or higher)** appliances, prioritising those with continuous consumption (refrigerators, freezers).
- Use **smart plugs or timers** to reduce standby consumption.

Indicative costs:

- LED bulbs: **€3–€15 each**.
- Efficient fridge/freezer: **€400–€1,000** depending on size and label.
- Smart plug: **€10–€30**.

Expected impact:

5–15 % reduction in total electricity use; better lighting quality and lower operating costs over time.

Ventilation and indoor air quality

What it does:

Proper ventilation ensures a continuous renewal of indoor air, removes excess moisture and pollutants (such as VOCs from finishes or mould spores), and maintains comfortable and healthy indoor temperatures and air quality. In well-insulated or airtight buildings (as many renovation projects produce), ventilation becomes even more critical to avoid problems such as condensation, mould growth, stale air, or indoor-air quality deterioration.

Options:

- **Simple-flow ventilation (extract only):** extracts stale air from bathrooms/kitchens and allows fresh air to enter passively through vents or natural openings.
- **Double-flow ventilation (balanced/recuperated):** A more advanced VMC system with both supply and exhaust ducts and a heat (or enthalpy) recovery unit that transfers heat from outgoing to incoming air—maintaining comfort while renewing air and reducing heat loss.

- **Hybrid or demand-controlled ventilation:** Systems that adjust ventilation rates based on humidity or CO_2 levels to optimise comfort and energy use.

Indicative costs:

- Supply + installation for simple extractors a house: **≈ 200-500** for basic systems.
- For a double-flow VMC with heat recovery in a typical single-family house: **≈ €2,000-€3,000**
- Note: These costs exclude extraordinary structural works (ducting, façades, acoustic insulation) which may raise the overall cost considerably.

Expected impact:

Installation of a VMC system in a renovated, insulated home can:

- Reduce the risk of mould, condensation and associated health issues.
- Improve air comfort, indoor humidity control, and indoor-air quality.
- When combined with insulation and airtightness, reduce heating/cooling energy losses by capturing and re-using heat in double-flow systems (reducing ventilation heat loss).

As part of the RENOVERTY project, detailed simulations were carried out for typical family houses in Vila Nova de Oliveirinha and Arzila using the DREEM model (Dynamic high-Resolution dEmand-sidE Management model). The results show the potential energy savings, investment costs and payback periods for key renovation measures.

Table 2: Assessment of the feasibility of individual implementation of various energy renovation measures for family houses in the Coimbra Region

	Investment Cost (€)	Lifespan (years)	Reduction of energy consumption (kWh/year)	Energy savings (%)	Payback period (year)
Exterior wall insulation	4,209	30	48 965.5	8.0	>lifetime
Double-glazed windows	3,357	30	3 830.6	6.3	>lifetime
Roof insulation	822	30	27 786.0	45.7	0.7
Boiler upgrade - gas	900	20	21 736.9	35.7	-
Boiler upgrade - biomass	2,500	20	14 747.5	24.2	4.6

Heat pump	3,000	20	48 625.6	79.9	2.2
Energy efficient light bulbs	50	23	277.1	0.5	1.8

In practice, roof insulation delivers a large reduction in use (≈46%) and pays back very quickly (under a year), so it's the first move for most houses. Efficient lighting is another quick win. A heat pump delivers deep savings (≈80%) with a short payback, in this example (≈2 years). Windows and external wall insulation improve comfort and reduce drafts, but on their own they take longer to pay back.

You should prioritise:

- **High impact first** (e.g., insulating the roof or walls, and replacing very poor windows).
- Then **systems** (heating, ventilation, lighting) to match the improved building.
- **Cosmetic changes** last (things that don't affect energy use).

Finally, sketch a simple timeline in phases that fits your urgency, budget and the timing of any grants or loans.

Table 3: Typical renovation phases and timing

Phase	What to do	Suggested timing
1. Preparation and advice	Gather documents, conduct an energy audit, contact municipality, Parish Council and OSS	1–2 months
2. Planning and design	Choose measures, obtain technical documentation and cost estimates.	2–3 months
3. Financing and application	Apply for available grants, secure co-financing.	1–3 months (depending on call deadlines)
4. Implementation	Carry out the works: insulation, heating system, renewables, supervision.	3–6 months
5. After renovation	Inspection, submission of final documents, commissioning and learning to use new systems.	1 month

In total, the process may take 6 months to 1.5 years, with potential delays due to bureaucracy, material shortages, and/or labour availability. However, remember that not everything must be done at once. A **phased renovation plan** helps you act now and prepare for later works as funds arrive.

Example of a phased plan

- **Phase 1 (0–6 months):** Repair leaks; basic air-tightness; LED bulbs; low-cost draught-proofing; EPC.
- **Phase 2 (6–18 months):** Roof insulation; critical wall areas; window/door replacements in most used rooms; basic ventilation.
- **Phase 3 (18–36 months):** Heating/DHW upgrade (e.g., heat pump or efficient biomass); complete wall insulation; remaining windows/doors; optional solar PV/thermal. Remember, **coordination matters.** If you plan solar, let the roofer know **before** insulating/waterproofing and prepare conduits in advance. Always integrate **ventilation** in the plan.

Who can help: municipalities and parish councils, one-stop shops/balcão energia, energy auditors

3.4. Step 4 - Secure money and support

Money is often the biggest hurdle that might prevent renovations from taking place, especially for vulnerable households, as up-front payments are often required prior to carrying out works. Check what help you can get before signing contracts or starting the works. There may be grants or vouchers (e.g., programmes like *1º Direito* or *energy-efficiency vouchers* when available), bank loans with reduced interest for green works, or community solutions through NGOs, parish councils or energy cooperatives.

Ask your Balcão Energia or energy agency about simple calculators that show expected energy savings, comfort gains and a rough payback time in plain terms.

Where to start

- Talk to your Balcão Energia, municipality, parish council and LAG to learn which calls are open now.
- Check **Fundo Ambiental** for open calls (Vales Eficiência, E-Lar status, any new residential efficiency calls).
- Check if you qualify as a vulnerable household through social services – there are dedicated programs or higher support levels can be unlocked.
- Ask your bank if low-interest loans are available for renovation works.

- Look for ESCO-type models that are repaid from savings (e.g. for PV installations)
- Prepare basic documents and get **two or three quotes** for the intended works.

Typical support types

Good news: Portugal has **national and local schemes** aimed at energy efficiency, with special emphasis on **vulnerable households**. You can often **combine** support sources.

Table 4: Types of funding

Type of support	How does it work	Learn more
Grants	The 1º Direito Programme aims to support the promotion of housing solutions for people living in substandard housing conditions who do not have the financial capacity to bear the cost of accessing adequate housing. Households submit their application through the municipality.	1º Direito
Energy Efficiency vouchers	Support scheme that provides vouchers worth up to €1,300 for low-income households to improve energy efficiency at home. The vouchers can be used to purchase efficient equipment such as windows, install insulation, efficient heating or cooling systems, solar water heaters, or renewable energy equipment (e.g. PV systems).	Look for open calls: Fundo Ambiental
Programa E-LAR	Support scheme for the replacement of old gas equipment / appliances with high efficiency electrical equipment	E-LAR
Tax incentives	Renovation works that are included in an Urban Rehabilitation Area (ARU) and that are object of an Urban Rehabilitation Operation (ORU) benefit from a reduced VAT rate of 6%. Ask your municipality if your building qualifies before beginning the works.	Check for eligibility here: Portal da Habitação
Zero/low interest loans	Currently, some banks offer personal loans with more attractive terms than general-purpose personal loans for renovation works or the installation of renewable energy production equipment.	CGD UCI Santander BancoCTT Montepio
Energy Service Companies (ESCOs)	Energy Service Companies (ESCOs) design, finance, and install energy systems, recovering costs through the savings achieved. In Portugal, they mostly focus on photovoltaic (PV) installations for households, offering options that reduce or share upfront investment.	APESE
Community solutions	By combining investment and sharing production, RECs help reduce individual energy costs and make access to renewables more	DGEG ADENE

	affordable, especially in rural or low-income areas. In Portugal, RECs can benefit from national and EU support programmes that promote collective self-consumption, local energy generation, and energy-efficiency measures. The Environmental Fund supports the creation of RECs through a dedicate scheme.	Coopérnico CleanWatts Fundo Ambiental

Practical tips

- If money is tight, start with **no-cost/low-cost** actions (e.g., blocking drafts, basic repairs, LED bulbs), while you prepare the larger works.
- If a call is not open **today**, prepare now (EPC, quotes, documents) to **apply quickly** when it opens.
- Ask installers if they can **help with the application**. Many do.
- Keep **copies** of every document and receipt.

Remember, energy renovation is a long-term investment. With available support and careful planning, your renovation can pay off quickly through lower monthly bills, increased comfort and higher property value.

Who can help: one-stop shops/balcão energia, municipalities and parish councils, central government programmes, LAGs, ESCOs, banks, solidarity institutions, cooperatives and associations.

3.5. Step 5 - Do the works

Once the planning is complete and the financing secured, the renovation phase begins. This is often the most visible and stressful moment of the process, but good organisation and clear communication can make it much smoother. The goal is to keep control of the works, ensure safety and quality, and minimise disruption for the household.

Choosing the right professionals is the foundation of a successful renovation. Before starting any works, take time to select qualified and reliable experts:

- **Architect/Engineer** to design solutions where structural or system changes are needed.
- **Certified installers** for insulation, windows/doors, heating/hot water, ventilation, or solar.

- **Works supervisor / project manager** (optional but useful for bigger works), to keep quality, cost and timing under control.

Whenever possible, hire professionals who are registered with recognised national bodies (e.g. Ordem dos Engenheiros, Ordem dos Arquitectos). Many energy agencies keep shortlists of certified installers or can advise on how to compare quotes and warranties (e.g. for window suppliers and installers, ADENE – Classe+). Local one-stop shops (OSS), municipalities, or energy agencies can help identify trustworthy professionals and clarify what qualifications are required for each type of intervention.

Always verify licences, references and written offers before you sign. Some firms provide turnkey services, which can simplify coordination.

The following table offers practical tips to help you stay organised, keep control of the works, and ensure your renovation runs smoothly, safely, and within budget.

Table 5: Helpful tips for carrying out your renovation

Topic	Helpful tips for homeowners
Preparing your home	• Clear and protect work areas; cover furniture and floors. • Store valuables safely and ensure access for workers and materials. • Inform neighbours of possible noise or dust in advance.
Staying organised	• Confirm the contract, timeline, and payment plan before starting. • Appoint one household member as the main contact with contractors. • Request regular updates • Keep all documents (permits, quotes, invoices, certificates) together in one folder.
Controlling costs	• Track expenses and payments throughout the works. • Request written explanations for any changes or extra works. • Keep a 10–15 % contingency budget for unforeseen expenses. • Ask your OSS or energy desk for guidance if issues arise.
Managing disruption	• Schedule noisy tasks during daytime hours. • Ask workers to use barriers or covers to limit dust. • Ventilate rooms daily. • Keep one clean, quiet room for rest and meals.

Who can help: trusted contractors and installers, community "middle actors" (firefighters' associations, cultural associations), parish council, and volunteers via NGOs.

3.6. Step 6 – Use, monitor and adjust

After the renovation, small habits and fine-tuning make a big difference on the overall performance and avoid bad surprises when the energy bills have to be paid.
Ask the installer to commission the systems properly (set thermostats and timers, check ventilation, and ensure solar thermal is correctly connected to your hot-water system). Then, keep an eye on your bills or use a simple meter to track consumption. If something looks off, adjust settings or ask for help. Share good practices at home: regular ventilation to avoid dampness, not overheating rooms, closing blinds at night in winter and during hot hours in summer, and using hot water wisely. This avoids waste and prevents the "rebound effect" (using more because it feels nicer).

Who can help: installers, Espaço/Balcão Energia, regional energy agencies, volunteers/NGOs.

3.7. Step 7 - Check results and share your story

Keep a simple record: before-and-after bills, indoor temperatures, and how the home feels. This helps show the comfort and value you gained and can be useful for future support or resale. Sharing your experience at local events or on community pages can inspire neighbours to start their own renovation, and communities often move faster when someone leads the way. Remember: this roadmap is flexible. Your OSS, municipality or NGO partners can help tailor it to your situation and local rules, especially for social housing or households facing severe challenges.

4. Problems you may face

Nobody likes surprises. Here are common issues that you may encounter during your renovation journey and how to avoid them.

Table 6: Analysis of possible risks associated with energy renovation (from the co-creation process)

	Risk	Solution	Who	How
Aministrative	**Administration feels complex**	Start early with document collection (ownership, ID, EPC, quotes). Contact the municipality to confirm required documentation, legal obligations, and timelines. Keep a simple folder with all renovation-related documents (ID, property papers, permits, quotes, invoices, communications).	Municipality; Contractor; OSS or municipal help desk	Contact municipal offices or OSS for guidance; coordinate with contractor; create a physical or digital folder to store all paperwork systematically.
	Unexpected delays	Agree on a detailed works plan that specifies what will be done, when, and by whom. Maintain regular communication with the contractor and monitor progress. Anticipate possible interruptions and adapt the schedule if needed.	Contractor	Request a clear timeline; follow up on milestones; maintain regular communication; plan flexibility for possible delays.
Social	**Low awareness and limited support**	Engage with local groups or community networks created through RENOVERTY, LAGs, or municipalities to exchange renovation experiences, share tools or resources, and learn from others who have completed similar projects.	Local associations; LAG; Municipality; OSS	Participate in local meetings; share lessons learned and best practices; pool small resources (e.g., transport, tools, expertise); use community events to inspire and support others.
	Dealing with stress and daily challenges	Plan ahead, stay informed, and ask for help when needed. Understand what will happen, when, and for how long. Keep communication open with contractors. Manage noise and disruption by	Contractor; Municipality; Parish council; LAG	Request clear schedule from technician; identify contact point for issues; ask municipality/LAG for mediation or

		scheduling tasks appropriately and informing neighbours.		assistance; plan quiet periods; notify neighbours of works.
Technical	**Unclear identification of renovation needs**	Request an **initial energy audit** carried out by a **certified professional** to identify priority renovation measures, estimate investment costs, and quantify expected energy savings and comfort improvements.	Homeowner; Certified energy auditor; OSS	Contact a qualified expert through the national certification system or your OSS; use the audit results to prioritise measures and plan financing according to the identified impacts.
	Limited understanding of renovation options	Request technical information and explanations from technicians or contractors. Access training and guidance materials developed by RENOVERTY and local partners.	Homeowner; Technician; Contractor; OSS or RENOVERTY partners	Ask contractors to explain proposed measures in simple terms; use RENOVERTY online training materials; consult OSS or help desks for tailored advice.
	Poor workmanship	Use trained and experienced professionals, ensure supervision at all stages. Consider independent supervision for larger works. Use compatible and high-quality materials. Plan renovation phases carefully to avoid rework.	Contractor; Supervisor/Technical expert	Verify contractor credentials; request references; include supervision in contract; check material specifications; plan all phases in advance.
	Old or traditional buildings	Check structural stability before starting. Use compatible materials (e.g., breathable renders, natural mortars). Consult municipal heritage services for classified buildings. Fix moisture issues before insulating, and ensure proper ventilation and vapour control layers.	Municipal technical or heritage department; Contractor; Architect	Conduct pre-renovation inspection; consult local authorities; select appropriate materials; repair leaks and drainage; maintain ventilation; integrate vapour control layers when insulating.
Financi	**Difficulty to secure funding**	Explore the financing options listed in **Step 4** and **Table 2** of this guide. Contact your **OSS** or	Municipality; OSS or help desk; REC; LAG	Review the financing schemes presented in Step 4/Table 2; ask OSS staff for guidance on eligibility and application.

		municipal help desk for updated information on national and regional incentives.		
		Consider joining or forming a **Renewable Energy Community (REC)** or participating in **aggregate purchases** coordinated by your municipality or your local homeowners association to reduce costs and increase access to funding opportunities.	Municipality; OSS or help desk; Local associations; REC; LAG	Engage with local REC initiatives or group purchases to benefit from shared investments and reduced prices.
	Unforeseen price changes	Request written quotes that clearly state validity periods. Sign a simple contract that fixes the scope, total price, and payment terms. Include a contingency budget (about 10–15%) to cover unexpected costs such as material price variations or small repairs.	Contractor	Compare at least two written quotes; check expiry dates; sign a written contract; keep a 10–15% reserve in the renovation budget.

5. Tools and Resources

Useful Contacts, tools and resources	What it does for you	How to access
Câmara Municipal de Coimbra	General guidance on administrative procedure (e.g. regulations, permits) and access to support schemes.	Praça 8 de maio, 3000-300 Coimbra geral@cm-coimbra.pt 239 857 500
União de Freguesias de Taveiro Ameal e Arzila	Support with paperwork, and liaising with the municipality to simplify licence requests and other administrative steps.	Rua Professor Guilherme Tomé 3045-503 - Taveiro 239 983 289 taveiroamealarzila@sapo.pt
CoimbraMaisFuturo	General support and guidance on how to carry out your renovation works.	Casa das Abóboras, Bencanta 3045-601 Coimbra 239 169 526 geral@coimbramaisfuturo.pt
Balcão único de energia (RENOVAR.Coimbra.pt)	One-stop help for vulnerable households: information, guidance, and support to apply for funding and organise works.	Mercado Municipal D. Pedro V / Praça 8 de Maio RENOVAR.Coimbra.pt
Certificação Energética dos Edifícios (ADENE)	Learn about Energy Performance Certificates; find qualified experts in your area	www.sce.pt
Renovar casa DECO PROteste	Advise on energy saving measures, implementation, regulations and financing.	renovarcasa.deco.proteste.pt
DECO – Gabinete de Aconselhamento de Energia (GAE)	Inform and help citizens to improve the energy efficiency of their homes, manage their consumption, understand how the energy market works, and make use of support mechanisms in situations of energy poverty.	You can book an appointment through: energia@deco.pt.

casA+ portal (ADENE)	Your home “dashboard”: record house details, get tailored renovation ideas, find installers and incentives.	portalcasamais.pt/
Renewable Energy Communities (RECs)	Join or start a community to share local solar and lower your bill.	Examples: Cleanwatts (community solutions) and Coopérnico (energy cooperative).

#RENOVERTY

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