

GUIDE

for Renewable Energy Sources
and Energy Efficiency
in Rural Tourism



GUIDE FOR RENEWABLE ENERGY SOURCES AND ENERGY EFFICIENCY IN RURAL TOURISM

Activity of the project: Energy Wise – Empowering Rural Tourism
through Renewable Energy and Energy Efficiency

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EXECUTIVE SUMMARY

Rural tourism in North Macedonia has strong potential for local development, but many facilities face challenges such as rising energy costs, aging buildings, inefficient equipment, seasonal operation, and increasing guest expectations. These issues affect both operating costs and the quality of service.

This guide was prepared to help owners and operators of rural tourism facilities better understand how energy is used in their businesses and how practical improvements can reduce costs, improve comfort, and strengthen competitiveness. It is intended for small rural tourism and hospitality providers in North Macedonia, such as rural households, room and apartment rental providers, holiday houses, holiday flats and tasting facilities.

CORE MESSAGE

Energy is not only a cost. It is an opportunity to improve comfort, reduce waste, protect local resources, and strengthen competitiveness.

The guide explains in a simple and practical way what energy efficiency and renewable energy mean for rural tourism businesses. It presents a step-by-step approach to improvement, from understanding current energy use and planning actions, to implementation, monitoring, and promotion of results.

It also includes a catalogue of practical measures, ranging from no-cost and low-cost actions to larger investments in building improvements, efficient systems, and renewable energy technologies. In addition, the guide provides an overview of financing opportunities in North Macedonia that may support such investments.

Overall, the guide encourages a gradual and realistic approach, showing that even small steps can help rural tourism businesses reduce energy use, lower costs, improve guest comfort, and build a more sustainable and competitive future.

HOW TO USE THIS GUIDE

The guide is organised in four practical parts. Part I explains why energy matters for rural tourism businesses. Part II presents the energy improvement journey. Part III summarises available financing options. Part IV provides a catalogue of practical measures that can be applied step by step.

GUIDE STRUCTURE

Understand energy use | Follow a clear journey
Explore finance | Select practical measures



PART I

UNDERSTANDING ENERGY IN YOUR BUSINESS

1. Why This Guide Exists?

Rural tourism creates opportunities for local development, but small providers often work with limited financial, technical, and human resources. Many businesses operate in older buildings that were not originally designed for modern comfort standards or efficient energy use.

Energy has a direct effect on profitability and guest satisfaction. A facility that loses heat in winter or overheats in summer spends more money while offering lower comfort. By contrast, a facility that controls energy use can reduce costs and improve the quality of the guest experience.

For many owners, the challenge is not a lack of interest, but lack of clear, practical information. Technical advice is often too complex, while financing information is fragmented. This guide translates the key ideas into simple steps that can be used by non-specialists.

2. Why Energy Matters for Your Business?

Energy is a fundamental part of every tourism business, even if it often goes unnoticed in daily operations. It is used to heat and cool rooms, provide hot water, power lighting, and run appliances. Because of this, energy has a direct impact on both your operating costs and the quality of service you offer to your guests.

ENERGY AND YOUR COSTS - For many rural tourism businesses, energy represents a significant share of monthly expenses. Inefficient buildings and outdated equipment can lead to unnecessary energy use, higher bills, and reduced profitability. Heat loss through walls, roofs, and windows, or inefficient heating and cooling systems, means that more energy is required just to maintain basic comfort.

GUEST COMFORT AND EXPERIENCE - At the same time, energy performance is closely linked to guest comfort. Visitors expect warm rooms in winter, cool spaces in summer, reliable hot water, and a pleasant indoor environment. If these conditions are not met, it can affect their overall experience and satisfaction. Even small improvements in insulation, or systems can significantly improve comfort and lead to better reviews and repeat visits.

COMPETITIVENESS AND MARKET DEMAND- Energy also plays an important role in how your business is perceived. More and more tourists are looking for environmentally responsible accommodation that take steps to reduce their impact. Using energy efficiently or introducing renewable energy solutions can strengthen your image, attract new types of guests, and increase your competitiveness in the market.

ENERGY PRICES AND RESILIENCE - Another important aspect is the rising and often unpredictable cost of energy. Businesses that rely heavily on inefficient energy use are more vulnerable to these changes. By improving efficiency and considering renewable energy options, you can reduce your dependence on external energy sources and better control your operating costs.

ENVIRONMENTAL RESPONSIBILITY - Finally, energy use is directly connected to the environment that rural tourism depends on. Reducing energy consumption and using cleaner energy sources helps protect these assets and supports the long-term sustainability of tourism in rural areas.

3. Challenges in the Rural Tourism Sector

- ✓ Older buildings with limited thermal comfort.
- ✓ Inefficient heating, cooling, hot water, kitchen, laundry, and lighting systems.
- ✓ Seasonal occupancy and irregular income make investment planning more difficult.
- ✓ Limited awareness of grants, loans, subsidies, and donor-supported opportunities. Less stable electricity supply in some rural areas.
- ✓ Limited time and technical knowledge to compare technologies, suppliers, and investment options.

4. Energy efficiency and renewable energy in simple words

Energy efficiency means using less energy to provide the same level of comfort and service. It is not about reducing quality or limiting how your business operates. Instead, it is about avoiding unnecessary energy waste and using energy in a smarter way. Renewable energy means using energy from natural sources that are continuously available, such as the sun, wind, air, water, geothermal or biomass.

MESSAGES

'The cheapest energy is the energy we don't use'

'Renewable energy is clean energy'

Unlike conventional energy sources, renewable energy is cleaner and can reduce dependence on external energy supply.

5. Three Pillars of a Sustainable Tourism Facility



Reduce Energy Waste

- ✓ Better building performance
- ✓ Efficient equipment and systems
- ✓ Good daily practices



Produce Clean Energy

- ✓ Solar PV and solar thermal
- ✓ Heat pumps or biomass
- ✓ Greater energy independence



Build a Green Identity

- ✓ Communicate your efforts
- ✓ Improve guest trust
- ✓ Strengthen market visibility

PART II

THE ENERGY IMPROVEMENT JOURNEY

Improving energy use in your business is not a one-time action, but a continuous process. It starts with understanding your current situation, continues with planning and implementing improvements, and evolves over time through monitoring, learning, and promotion.

SIX STEP ENERGY IMPROVEMENT JOURNEY

					
Initiate	Plan	Implement	Engage	Improve	Promote
Understand your energy use	Set priorities and prepare actions	Apply practical measures	Involve staff, family and guests	Monitor, maintain and optimize	Communicate your green identity give me nice icons for each

STEP 1 - INITIATE

GOAL - to understand your energy use and recognize where your money is going

KEY ACTIVITIES

- ✓ Review your energy bills
- ✓ Identify energy sources and major energy uses
- ✓ Assign responsibility

Start by reviewing electricity, heating fuel, and water bills for at least one year. Identify the main energy sources and the main energy users, such as heating, cooling, hot water, kitchen, laundry, lighting, and appliances. Assign one person to keep basic records and follow energy-related issues.

TIPS

- ✓ Keep all your energy bills in one place so you can easily compare them over time. Understanding your numbers gives control.
- ✓ Write down your main energy sources and costs—you may be surprised where most money is spent.
- ✓ Walk through your property and note where energy is used or wasted—this simple check can reveal a lot.
- ✓ Start simple—understanding your energy use is already a big step forward.

STEP 2 - PLAN

GOAL - to identify the best improvement options and prepare a clear, realistic action plan

KEY ACTIVITIES

- ✓ Assess the building and technical systems
- ✓ Define your baseline
- ✓ Identify improvement measures
- ✓ Set priorities and targets
- ✓ Consult experts and suppliers
- ✓ Explore financing options
- ✓ Prepare an action plan

Assess the condition of the building envelope, heating and cooling systems, hot water preparation, lighting, and equipment. Define a simple baseline, such as annual energy cost or kWh per square metre. Identify improvement options and prioritise actions according to cost, impact, and urgency. For this activity, help yourself using the catalogue of measures prepared specially for you and presented in Part IV. Because energy efficiency can involve technical decisions, it is often recommended to work with experts and partners, such as: **Energy experts or auditors, Local authorities and associations or Technology providers and suppliers.**

TIPS

- ✓ Start with measures that are low-cost but bring quick savings—these build confidence for bigger investments.
- ✓ Do not try to do everything at once—focus on a few priority actions first.
- ✓ Always compare investment cost with expected savings before making decisions.
- ✓ Ask for at least two offers when selecting technologies or suppliers.
- ✓ Check available grants early—some programs require planning in advance.

STEP 3- IMPLEMENT

GOAL - to apply energy-saving measures that reduce costs and improve comfort

KEY ACTIVITIES

- ✓ Start with simple measures
- ✓ Carry out bigger improvements
- ✓ Select the right technologies
- ✓ Ensure proper installation and use
- ✓ Involve staff or family members

After planning, the next step is to implement the selected measures. Start with simple actions such as LED lighting, sealing gaps, better temperature control, and proper use of equipment, then continue with larger improvements such as insulation, efficient heating and cooling systems, or renewable energy solutions. Correct installation, suitable technology choice, and involvement of staff or family members are essential to achieve real savings and better comfort.

TIPS

- ✓ Start with “quick wins” like LED lighting and better controls—they save energy immediately.
- ✓ Do not choose equipment based only on price—efficiency and reliability matter more in the long run.
- ✓ Make sure installation is done properly—even small mistakes can reduce performance.
- ✓ Ask suppliers to explain how to use and maintain the systems correctly.
- ✓ Involve everyone—small daily actions by staff or family can make a big difference.

STEP 4 – ENGAGE

GOAL - to ensure that people support and sustain energy improvements.

KEY ACTIVITIES

- ✓ Train staff or family members
- ✓ Encourage good daily practices
- ✓ Inform guests
- ✓ Create simple internal rules

Energy improvements depend on people as much as on technology. Staff, family members, and guests should be informed about simple daily practices, such as switching off unused equipment, using heating and cooling responsibly, and reducing unnecessary hot water use. Clear internal rules, small reminders, and participation in relevant trainings can help maintain good habits and support continuous improvement.

TIPS

- ✓ Lead by example—when owners follow good practices, others will too.
- ✓ Keep instructions simple—clear and easy rules are more likely to be followed.
- ✓ Use small reminders (stickers, signs) to encourage good habits.
- ✓ Inform guests in a positive way—focus on comfort and shared responsibility.
- ✓ Even small behaviour changes, repeated daily, can lead to significant savings.

STEP 5 – IMPROVE

GOAL - to ensure that energy improvements deliver results and continue performing well over time

KEY ACTIVITIES

- ✓ Monitor energy use
- ✓ Compare with your baseline
- ✓ Maintain systems regularly
- ✓ Adjust and optimize
- ✓ Keep simple records

Energy improvement should continue after implementation through regular monitoring and maintenance. Review energy bills, compare consumption with the baseline, and check whether the expected savings are achieved. Keep heating, cooling, hot water, and other systems well maintained, adjust settings when needed, and keep simple records of actions and results to support future decisions.

TIPS

- ✓ Check your energy bills regularly—small changes can reveal important trends.
- ✓ Do not forget maintenance—well-maintained systems perform better and last longer.
- ✓ Track your results simply—even a basic table can help you see progress.

STEP 6 - PROMOTE

GOAL - to use your energy improvements to strengthen your green identity and attract more guests

KEY ACTIVITIES

- ✓ Inform your guests
- ✓ Highlight your improvements
- ✓ Use sustainability in marketing
- ✓ Build a green identity
- ✓ Explore green certification and join relevant green tourism platforms

Energy improvements can also be used to strengthen the image and competitiveness of the business. Inform guests about practical actions taken, such as improved comfort, efficient systems, responsible resource use, or renewable energy. These efforts can be promoted through room information, booking platforms, websites, and social media, helping the facility build a clear green identity, increase guest trust, and improve market visibility.

As your business becomes more energy-efficient and environmentally responsible, you may also consider applying for relevant green certification schemes or joining green tourism platforms. These can help you communicate your efforts more clearly, increase trust, improve visibility, and attract guests who actively look for sustainable accommodation. Certification or platform membership can also strengthen your market position and support your long-term green identity.

Examples of green certification schemes and platforms that may be relevant for rural tourism providers include the following: **Green Key, Green Key, Good Travel Seal, Good Travel Guide, EU Ecolabel for Tourist Accommodation, Travelife or Ecobnb.**

TIPS

- ✓ Be honest and simple—guests value authentic efforts more than perfect solutions.
- ✓ Focus on benefits—comfort and experience are as important as sustainability.
- ✓ Use small messages—clear and friendly communication works best.

SHORT WELCOME MESSAGES

‘Comfort with care’

‘Thank you for staying in our energy-wise’

‘Better comfort, lower’ impact’



PART III

FINANCIAL INSTRUMENTS

1. Why financing matters for energy efficiency and renewable energy investments?

Energy efficiency and renewable energy investments usually reduce costs over time, but many measures require upfront financing. For small rural tourism businesses, this is often the main barrier.

Financing instruments can reduce the initial burden, spread investment costs over time, or add a grant element after successful implementation. The most suitable option depends on the type of applicant, investment size, eligibility criteria, available own contribution, and expected savings.

Because public calls and donor-supported programmes are often limited in time and budget, preparation is important. Businesses should keep basic documents ready, follow announcements, and prepare investment ideas in advance.

2. Types of financial instruments

Financial support for energy efficiency and renewable energy investments can take different forms, and each instrument is suited to different types of beneficiaries, projects, and investment sizes. Understanding the main options can help applicants choose the most appropriate solution and prepare more realistic investment plans.

GRANTS are one of the most attractive forms of support because they provide non-repayable funds. They are usually offered through public programmes, donor-funded projects, or special schemes, but they are often limited in availability and may require co-financing.

SUBSIDIES OR REIMBURSEMENT SCHEMES usually cover part of the investment cost after the measure has been implemented and verified. They can reduce the final cost of the investment, but beneficiaries still need to secure the initial funds.

LOANS are another important source of financing. These may be offered by commercial banks, development banks, or dedicated green credit lines, and can help spread the investment cost over time.

GUARANTEE SCHEMES help reduce the risk for lenders and can make it easier for applicants, especially small businesses, to access financing when they lack sufficient collateral.

BLENDED FINANCE combines different sources of support, such as grants and loans or public and private funds, and is often used for larger or more complex projects.

Another possible model is **energy performance-based financing**, where investments are repaid through achieved energy savings. Although more complex, this can be useful where upfront resources are limited.

In practice, beneficiaries may use one instrument alone or combine several sources of support. The best option depends on the type of applicant, investment size, own contribution, repayment capacity, and programme conditions.



3. Public support programmes in North Macedonia

Public support may be provided through national programmes, municipal calls, and business development instruments. Relevant measures may include replacement of inefficient heating systems, installation of renewable energy systems, improvement of building performance, and purchase of efficient technologies or equipment.

The Ministry of Energy, Mining and Mineral Resources is the main national institution for energy-related support and may announce programmes or public calls for cleaner heating, energy efficiency, renewable energy, and support for vulnerable energy consumers. At local level, municipalities and the City of Skopje may provide subsidies or reimbursement schemes, for example for efficient heating equipment or other household-level measures. For business-oriented support, tourism providers should also monitor INOVA – the Agency for Innovation, Scientific and Technological Development and Entrepreneurship, which is relevant for green business transformation, innovation, and sustainable investments by micro, small, and medium-sized enterprises. Rural tourism providers should also follow opportunities under the IPARD Programme, implemented through the Agency for Financial Support of Agriculture and Rural Development, especially where investments relate to rural tourism, farm diversification, business development, or modernization in rural areas.

Since public calls are usually limited in time, budget, and eligibility, businesses should regularly check announcements and prepare basic documentation in advance.

4. Donor and international financial support

Donor and IFI-backed instruments can be especially relevant because they may combine loans, grants, technical assistance, eligibility screening, or technology catalogues. In North Macedonia, these instruments are usually accessed through local partner banks, leasing companies, or implementing organisations.

- ✓ GEFF for residential buildings can support eligible household-level improvements and may include cashback after verification.
- ✓ GFF for SMEs can support businesses investing in energy efficiency, renewable energy, and green technologies through partner financial institutions.
- ✓ One-stop-shop and advisory initiatives can help beneficiaries understand renovation options and connect with experts, suppliers, municipalities, or financiers. For further information, please check the OSS Habitat project.
- ✓ Young Energy Europe can help companies train young employees as Energy Scouts to identify energy and resource saving opportunities.



5. Commercial financing and self-financing options

Tourism businesses can also use commercial financing or their own resources to invest in energy efficiency and renewable energy. This may include bank loans, leasing, supplier financing, or direct self-financing. These options are useful when public or donor support is not available, when co-financing is needed, or when the business wants to invest according to its own timeline. In practice, smaller measures may be financed from own funds, while larger investments such as insulation, heat pumps, photovoltaic systems, or wider renovation works may require loans, leasing, or a combination of several financing sources.

6. Practical tips and conclusion

Financial instruments can play a key role in helping tourism businesses in North Macedonia move from intention to implementation. While public support, donor-backed programmes, and commercial financing each have different advantages and limitations, together they create a broader set of investment opportunities. The most successful projects are usually those that are well prepared, financially realistic, and based on a good combination of technical solutions and suitable financing sources.

TIPS

- ✓ Start with a clear investment plan – Define what you want to improve, how much it will cost, and what benefits you expect in terms of energy savings, comfort, and business performance.
- ✓ Check different sources of support – Do not rely on only one option. Review public calls, donor-supported instruments, bank products, and your own financing possibilities.
- ✓ Verify eligibility conditions carefully – Before applying, make sure that your business type, building, and planned measure fit the conditions of financing product.
- ✓ Prepare documentation in advance – Collect ownership documents, offers, technical specifications, invoices, and other required materials early.
- ✓ Plan your own contribution – Most financing schemes cover part of the investment, so it is important to know in advance how the remaining share will be financed.
- ✓ Compare financing conditions – Look not only at the amount of support, but also at repayment conditions, grant elements, technical requirements, and application procedures.
- ✓ Combine instruments where possible – In many cases, the most effective approach is to combine own funds, loans, subsidies, or grant incentives.
- ✓ Focus on financially realistic measures – Give priority to investments that match your business capacity and can generate clear savings over time.
- ✓ Follow announcements regularly – Public calls and support programmes are often limited in time and budget, so staying informed is essential.
- ✓ Ask for expert advice when needed – For larger or more complex investments, professional technical and financial guidance can help you choose the right solution.

PART IV

CATALOGUE OF MEASURES

This catalogue presents measures that rural tourism providers can apply according to their financial capacity and technical readiness. The most practical approach is to start with no-cost and low-cost measures, then plan larger energy efficiency investments, and finally introduce renewable energy systems based on reduced and better-understood demand.

1. No-cost and behavioural measures

No-cost measures can be implemented immediately. They rely on better organisation, improved daily routines, and awareness among owners, staff, family members, and guests. Their effect depends on consistency.

1.1 Energy management and organization

- ✓ Appoint one person responsible for energy issues.
- ✓ Track monthly electricity, fuel, and water use.
- ✓ Compare consumption between seasons and occupancy levels.
- ✓ Identify major consumers: heating, cooling, hot water, lighting, appliances etc.
- ✓ Set simple reduction targets and follow results..

1.3 Guest engagement measures

- ✓ Inform guests about energy-saving practices in a positive way.
- ✓ Encourage towel and linen reuse.
- ✓ Explain thermostat or AC use clearly.
- ✓ Place simple reminders in rooms, bathrooms, and common areas.
- ✓ Use lids while cooking and match pan size to burner size.

1.2 Staff and household practices

- ✓ Switch off lights and equipment in unoccupied rooms.
- ✓ Use daylight during cleaning and preparation.
- ✓ Close windows and doors while heating or cooling is operating.
- ✓ Avoid standby consumption where possible.
- ✓ Report leaking taps, damaged seals, or abnormal energy use.

1.4 General no-cost operational measures

- ✓ Turn off outdoor lighting during the day.
- ✓ Avoid heating and cooling at the same time.
- ✓ Do not condition rarely used spaces.
- ✓ Use natural ventilation when outdoor conditions are suitable.
- ✓ Close curtains or blinds during hot summer periods.

2 Low-cost energy efficiency measures

Low-cost measures require limited financial input but often bring quick and visible results. They are suitable for facilities that are ready to move beyond behavioural improvements and introduce small technical upgrades that strengthen efficiency and comfort.

2.1 Building operation and control

- ✓ Label switches and controls.
- ✓ Install timers, programmable plugs, or simple sensors.
- ✓ Use room thermometers and humidity meters.
- ✓ Seal air leakage around windows and doors.
- ✓ Introduce zoning by turning off unused areas.

2.2 Guest rooms and common areas

- ✓ Check rooms after guest departure: lights off, windows closed, thermostat reset.
- ✓ Improve curtains, blinds, and summer shading routines.
- ✓ Use simple signage for proper thermostat and AC settings.

2.3 Kitchen and Laundry

- ✓ Run dishwashers and washing machines with full loads.
- ✓ Keep refrigerators away from heat sources.
- ✓ Defrost and maintain refrigerators and freezers.
- ✓ Use lids while cooking and match pan size to burner size.
- ✓ Air-dry laundry when possible and clean filters regularly.

2.4 Maintenance of systems

- ✓ Clean filters of AC and ventilation units.
- ✓ Service boilers, fan-coils, pumps, and ventilation systems.
- ✓ Check valves, thermostats, ducts, and pipe insulation.
- ✓ Reduce unnecessary domestic hot water temperature.

2.5 Lighting and Water-related measures with energy effect

- ✓ Replace old lamps with LED lighting.
- ✓ Install sensors in corridors, toilets, storage areas, and outdoor areas.
- ✓ Repair leaking taps and showers.
- ✓ Use water-saving showerheads and aerators.
- ✓ Use pool covers and timers for pool pumps where relevant.

3. Energy efficiency measures requiring higher financial investment

Higher-investment measures require more planning, technical design, procurement, and installation. They usually bring deeper and longer-lasting benefits, especially in older buildings with high heat losses, outdated systems, or rising energy expenses.

3.1. Thermal insulation of walls, roofs and floors

Thermal insulation is one of the most important measures for reducing heat losses in winter and overheating in summer. Roofs and ceilings are often priority areas, while external walls and ground floors should also be considered according to the building condition.

TIPS

- ✓ Roof and ceiling insulation
- ✓ External wall insulation
- ✓ Floor insulation
- ✓ Proper installation of insulation
- ✓ Reduction of thermal bridges
- ✓ Use of lighter roof colours or cooling roof coatings
- ✓ Use of lighter façade colours
- ✓ Shading of sun-exposed roof and wall surfaces
- ✓ Insulation of attic floors
- ✓ Integration with other renovation works

3.2. Replacement of windows and doors

Older windows and doors can cause heat losses, drafts, overheating, and poor comfort. Efficient glazing, good frames, airtight installation, and shading are all important.

TIPS

- ✓ Double or triple glazing
- ✓ Low-emissivity glazing
- ✓ Thermally insulated external doors
- ✓ Sealing of windows and doors
- ✓ Solar control films
- ✓ Acoustic insulation
- ✓ External shading

3.3. Upgrade of heating systems

Heating systems strongly influence comfort and operating costs. Upgrades may include replacing old boilers or stoves, improving distribution, installing controls, and zoning heated spaces.

TIPS

- ✓ Replacement of outdated boilers or stoves
- ✓ Proper sizing of the heating system
- ✓ Improvement of heat distribution
- ✓ Installation of efficient circulation pumps
- ✓ Use of thermostatic controls
- ✓ Zoning of heating
- ✓ Regular maintenance of the system

3.4. Upgrade of cooling systems

Cooling demand is increasing during summer seasons. Efficient cooling should combine good equipment with passive measures that reduce overheating.

TIPS

- ✓ Replacement of outdated cooling units
- ✓ Use of inverter technology
- ✓ Proper sizing of the cooling system
- ✓ Zoning of cooling
- ✓ Reasonable temperature settings
- ✓ Combination with shading measures
- ✓ Use of natural ventilation
- ✓ Regular maintenance of cooling equipment
- ✓ Reduction of internal heat gains
- ✓ Integration with building improvement

3.5. Heat pumps as an efficient solution for heating and cooling

Heat pumps can provide heating, cooling, and sometimes hot water. Air-source systems are often the most practical for small and medium rural tourism facilities, while ground- and water-source systems require more specific site conditions.

TIPS

- ✓ Air-source heat pumps
- ✓ Ground-source heat pumps
- ✓ Water-source heat pumps
- ✓ Heating and cooling in one system
- ✓ Domestic hot water support
- ✓ Best results in efficient buildings
- ✓ Compatibility with low-temperature systems
- ✓ Proper sizing of the system
- ✓ Consider climate conditions
- ✓ Professional design and installation

3.6. Improvement of ventilation systems

Ventilation is important for air quality, comfort, and healthy indoor conditions, but uncontrolled ventilation can increase heating and cooling losses. Rural tourism facilities should use natural ventilation carefully, improve fans and air distribution where needed, and consider heat-recovery systems in suitable spaces.

TIPS

- ✓ Controlled natural ventilation
- ✓ Ventilation according to room use
- ✓ Mechanical ventilation with heat recovery
- ✓ Efficient fans and equipment
- ✓ Proper air distribution
- ✓ Humidity control
- ✓ Regular maintenance
- ✓ Avoid excessive ventilation losses

3.7. Efficient lighting systems

Efficient lighting can reduce electricity costs while improving comfort, safety, and the overall guest experience. Rural tourism facilities should replace old lamps with LED lighting, improve lighting layout, and use sensors, timers, and daylight where possible. Special attention should be given to areas where lights operate for long periods, such as corridors, kitchens, bathrooms, reception areas, outdoor paths, and common spaces.

3.8. Replacement of inefficient appliances and equipment

Appliances and technical equipment can represent a large share of electricity use, especially in kitchens, laundry areas, guest rooms, reception, and wellness spaces. Replacing old and inefficient equipment with energy-efficient models can reduce operating costs, improve reliability, and increase comfort.

3.9. Integrated renovation approach

The strongest results are usually achieved when measures are planned together rather than individually. For example, if insulation is improved first, the required heating and cooling capacity becomes lower, which means that future HVAC systems can be smaller, more efficient, and less expensive to operate.

TIPS

- ✓ Replacement with LED lighting
- ✓ Efficient luminaires
- ✓ Daylight use
- ✓ Motion sensors
- ✓ Timers and automatic controls
- ✓ Zoning of lighting
- ✓ Lighting zoning in large rooms
- ✓ Dimming systems
- ✓ Outdoor lighting efficiency
- ✓ Reduction of unnecessary lighting
- ✓ Regular maintenance

TIPS

- ✓ Prioritisation of old equipment.
- ✓ High-efficiency models
- ✓ Kitchen equipment
- ✓ Laundry equipment
- ✓ Guest room equipment
- ✓ Efficient pumps and motors
- ✓ Noise and comfort
- ✓ Correct sizing
- ✓ Phased replacement
- ✓ Proper installation and settings
- ✓ Replacement at end of service life

For this reason, larger investments should ideally be considered as part of an integrated renovation approach. This allows the facility to improve building performance in a coordinated way and achieve better technical and financial results over the long term.

4. Renewable energy measures

Renewable energy systems help reduce dependence on external energy supply and can strengthen energy security in rural areas. They provide the best results after efficiency measures have reduced unnecessary demand.

4.1. Solar photovoltaic systems

Solar photovoltaic systems can help rural tourism facilities produce their own electricity for lighting, cooling, refrigeration, pumps, kitchen equipment, and other daily needs. They are especially suitable where roofs or open spaces are available and can reduce electricity bills, improve energy independence, and support operation in areas with unstable supply. Before installation, the facility should check solar exposure, roof orientation, shading, electricity demand, budget, and the applicable prosumer limits in North Macedonia, currently up to 10 kW for households and up to 70 kW for companies.

TIPS

- ✓ Assess solar exposure
- ✓ Check roof suitability
- ✓ Match the system to electricity demand
- ✓ Prioritise daytime loads
- ✓ Avoid unnecessary oversizing
- ✓ Consider current capacity thresholds
- ✓ Combine with efficient electricity use
- ✓ Consider battery storage where relevant
- ✓ Minimise shading
- ✓ Plan maintenance access
- ✓ Integrate with the building design

4.2. Solar thermal systems for hot water

Solar thermal systems can reduce the energy needed for domestic hot water in guest bathrooms, kitchens, laundry areas, wellness spaces, or pools. They are especially useful in facilities with regular or seasonal hot water demand, as solar production often matches periods of higher occupancy. Before installation, the facility should check solar exposure, roof orientation, shading, daily hot water needs, storage tank requirements.

TIPS

- ✓ Assess solar exposure
- ✓ Check roof suitability
- ✓ Match the system to hot water demand
- ✓ Use hot water storage tanks
- ✓ Prioritise high-demand areas
- ✓ Avoid unnecessary oversizing
- ✓ Insulate hot water pipes and storage tanks
- ✓ Integrate with existing systems.
- ✓ Minimise shading
- ✓ Plan maintenance access
- ✓ Combine with efficient hot water use

4.3. Biomass systems

Biomass systems can be a suitable renewable option for rural tourism facilities where wood, pellets, or other biomass fuels are locally available. They are mainly used for space heating and domestic hot water and can reduce dependence on conventional fuels, especially in buildings with high winter heating demand. Before choosing biomass, the facility should check fuel availability and quality, storage space, heating needs, and maintenance capacity. Modern biomass systems should be properly designed, installed, and combined with insulation, efficient windows, and good heating controls for best results.

TIPS

- ✓ Use reliable biomass supply
- ✓ Choose modern and efficient systems
- ✓ Ensure proper fuel storage
- ✓ Match the system to heating demand
- ✓ Consider available space
- ✓ Maintain the system regularly
- ✓ Pay attention to emissions
- ✓ Integrate with the existing heating system
- ✓ Combine with building improvements
- ✓ Assess operational capacity

4.4. Other renewable energy options

Other renewable energy options, such as small wind systems and geothermal solutions, may be considered where local conditions are suitable. These technologies are more site-specific than solar or biomass and require proper technical and economic assessment before investment. Small wind systems may be useful in open areas with stable wind, while geothermal solutions can provide efficient heating and cooling for facilities with long-term operation and suitable ground conditions. They should be considered as part of an integrated approach, preferably after energy demand has been reduced through energy efficiency measures.

5. Integration of renewable energy with energy efficiency measures

Renewable energy systems work best when they are planned together with energy efficiency measures. Rural tourism facilities should first reduce energy demand through insulation, efficient windows, lighting, controls, and upgraded technical systems, and then select renewable energy solutions according to the reduced and real needs of the building. This approach helps avoid oversized systems, improves cost-effectiveness, reduces operating costs, strengthens energy security, and supports better comfort and service quality.

TIPS

- ✓ **Reduce energy demand first** – Improve insulation, windows, doors, lighting, and system efficiency before sizing renewable energy systems.
- ✓ **Size renewable systems according to actual needs** – Renewable energy technologies should be selected based on the reduced and better-understood demand of the facility. Oversizing can increase costs without delivering proportional benefits.
- ✓ **Combine technical and operational improvements** – Renewable energy works best when supported by good energy management and efficient daily operation.
- ✓ **Consider seasonal use of the facility** – Renewable energy systems should reflect the occupancy pattern and seasonal demand of the tourism facility.
- ✓ **Improve energy security** – In areas with unstable electricity supply, combine efficiency measures with renewable energy to strengthen resilience.
- ✓ **Plan investments in phases** – If needed, first implement the most important efficiency measures and then introduce renewable energy solutions step by step.
- ✓ **Use an integrated design approach** – Building envelope improvements, technical systems, and renewable energy should be planned together wherever possible.
- ✓ **Check technical and financial feasibility together** – Good system selection depends on both engineering suitability and realistic economic assessment.

6. Indicative implementation pathway

Phase	Typical measures	Approximate effort	Expected benefit
Immediate	Bill review, switching off, guest reminders, basic routines	No cost	Awareness, quick savings, better control
1-3 months	LED lighting, sealing, sensors, aerators, maintenance	Low cost	Visible savings and better comfort
3-12 months	Insulation planning, window replacement, HVAC upgrade, appliance replacement	Medium to high	Deeper savings and improved service quality
12+ months	PV, solar thermal, heat pumps, biomass, integrated renovation	Investment project	Energy independence, resilience, green positioning

7. Seasonal operation and maintenance calendar

Rural tourism facilities often operate with strong seasonal differences. A simple calendar helps the owner prepare systems before peak periods and avoid inefficient operation during low occupancy. The calendar should be adapted to the local climate, business model, and occupancy pattern.

Period	What to check	Why it matters	Typical action
Before winter	Heating system, pipe insulation, seals, thermostats	Avoid high heating costs and comfort complaints	Service boilers/heat pumps, clean filters, seal gaps, test controls
During winter	Indoor temperatures, unused zones, fuel use	Prevent overheating and unnecessary fuel consumption	Use zoning, moderate setpoints, and weekly bill/fuel tracking
Before summer	Cooling units, shading, ventilation, roof exposure	Reduce overheating and electricity peaks	Clean AC units, prepare blinds/awnings, check natural ventilation routines
During summer	Cooling settings, curtains/blinds, hot water demand	Maintain comfort without excessive electricity use	Use reasonable setpoints, close blinds during hot periods, monitor peak use
Low season	Empty rooms, standby loads, maintenance planning	Avoid hidden consumption and prepare investments	Turn off unused equipment, collect offers, plan financing applications
Before public calls	Documents, offers, ownership/use rights, technical specifications	Improve chances of timely application	Prepare file with required documents and update offers



FINAL MESSAGES

Energy-smart rural tourism is not only about saving energy. It is about creating better conditions for guests, lowering unnecessary costs, improving the quality of service, and strengthening the long-term future of rural businesses.

For many tourism operators, the challenge may seem big at first. Limited budgets, older buildings, lack of time, and uncertainty about the right solutions can all make change feel difficult. But improvement does not need to happen all at once. Even small and affordable actions can bring visible results and create confidence for further steps.

This guide shows that energy efficiency and renewable energy are not reserved only for large hotels or large investors. They are also relevant and achievable for small rural tourism and hospitality providers in North Macedonia, such as rural households, room and apartment rental providers, holiday houses, holiday flats and tasting facilities.

The most important step is to begin. Start with what is realistic, improve gradually, seek advice when needed, and use the available support opportunities. Over time, these actions can reduce costs, improve comfort, strengthen your business image, and protect the natural environment on which rural tourism depends.

A more energy-efficient and sustainable rural tourism sector is built step by step — through informed decisions, practical measures, and commitment to long-term improvement. Every small change made today can contribute to a stronger, greener, and more competitive rural tourism offer tomorrow.