



LOGREENER

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PROMOTING GREEN LIVING AREAS



Local Strategic Plan for Energy Transition (LSPET+)

Output 2.1 – New/updated energy transition local plans drafted with the support of the project's toolkit and technical support

Technical Study and Full Funding Application and Plan of Energy-saving Measures for the Riba-roja de Túria (Aurora de Aragón).

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Composing Local Green Energy Transition LOGREENER

Project Mission: Promoting green living areas

Programme priority: Greener MED

Specific Objective RSO2.4: Promoting climate change adaptation and disaster risk prevention, resilience, taking into account eco-system based approaches

Partner in charge: PP2 MUSOL foundation

Partners involved: LP1 FVMP

WP2: Application of the integral toolkit to plan and deploy the local sustainable transition

A2.3: Engaging decision makers to promote the application of the sustainable energy transition local plans drafted with the project's toolkit.

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Introduction

LOGREENER serves as the overarching framework integrating complementary methodologies into the COMPOSE toolbox, providing the COMPOSE step-by-step methodology and practical tools that guides the entire local planning process, PRISMI for scenario-based modelling, and LOCAL4GREEN for financial mechanisms.

The Sustainable Energy Planning Toolbox (COMPOSE toolbox) provides the methodological foundation of this process, ensuring that each phase of the local plan- from problem identification to actions monitoring- follows a coherent structure.

This plan provides a replicable and structured approach to support municipalities in developing their own energy transition pathways, guided by the step-by-step COMPOSE holistic methodology.

In Riba-roja de Túria, Valencia, Spain, the LOGREENER toolkit has been applied by the municipality with the support of the partner MUSOL, in collaboration with the lead partner FVMP.

Riba-roja de Túria was heavily affected by the 2024 DANA floods, and the purpose of the application of the toolkit in this associated receiver municipality had to be changed during the project implementation. Initially, the LOGREENER toolkit was supposed to be used in the framework of the municipality's initiatives as a signatory of the Covenant of Mayors for Climate and Energy and as a registered actor in the Carbon Footprint Register of the Spanish Ministry for Ecological Transition. However, the 2024 DANA floods affected the municipality, and resources were diverted to the reconstruction process. This was both a challenge and an opportunity: a challenge because funding for local energy transition was redirected to other purposes, and an opportunity because the project could contribute to integrating energy transition into the post-DANA reconstruction process.

The LOGREENER project supported Riba-roja de Túria in identifying funding opportunities to include energy transition in the post-DANA reconstruction process,

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as well as in applying short-term energy-saving measures in municipal buildings. In this sense, the tools of the LOGREENER toolkit that were mainly used are: Step 4, Creating local partnerships/Funding instruments; Step 1.2, Estimating the local RES and EE potential (Energy Efficiency section); Step 3.1, RES or EE measures planning (Useful Resources section, Energy Efficiency); and Step A, Empowering local skills and policies – Training workshops and materials (Energy Efficiency section).

Setting the Scene (Local challenge/problem to solve, baseline)

This section presents the local context, baseline situation, and key energy and climate challenges faced by the municipality.

It also summarizes the main findings from the LOGREENER readiness assessment (Activity A2.1).

To be completed: provide qualitative and quantitative data on energy use, renewable potential, socio-economic context, and key local challenges (you may check [Step 1 “Choosing the problem”](#) of COMPOSE methodology, in order to lay the foundation for targeted planning actions).

After the October 2024 DANA floods, several municipal buildings in Riba-roja de Túria were heavily affected, and the municipality (LOGREENER associated partner and receiver municipality) asked the project to modify the planned application of the toolkit and to focus instead on topics related to funding the energy transition within the framework of the post-DANA reconstruction process. This was intended to avoid the reconstruction urgency jeopardising the local energy transition agenda. This became the new priority, instead of updating the SECAP within the framework of the Covenant of Mayors, as originally planned at the project preparation stage.

The partners MUSOL and FVMP considered that these requirements were not only acceptable but could also increase the impact of the project and the toolkit, as they would contribute to the municipality's response to the major challenges of sustainable post-DANA reconstruction. Once this change of focus was agreed, MUSOL and FVMP adapted the planned training approach targeting local stakeholders, as duly described in Deliverable D.2.3.1. In parallel, MUSOL worked with the municipality of Riba-roja de Túria to identify the specific neighbourhood or area where the toolkit could add value to planning a sustainable reconstruction that included energy transition. For this purpose, the contents of Step 4 – Creating local partnerships/Funding instruments of the toolkit were used by MUSOL staff.

A large municipal building was selected as the main focus of the intervention, considering its high energy consumption, the fact that it had been affected by the floods, its intensive use by citizens, and that it was not covered by other

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reconstruction projects or plans. This building is the Municipal Cultural Centre and Auditorium of Riba-roja de Túria (39.540686° N, -0.570545° W), which hosts the dance and music school and has a high number of daily users.

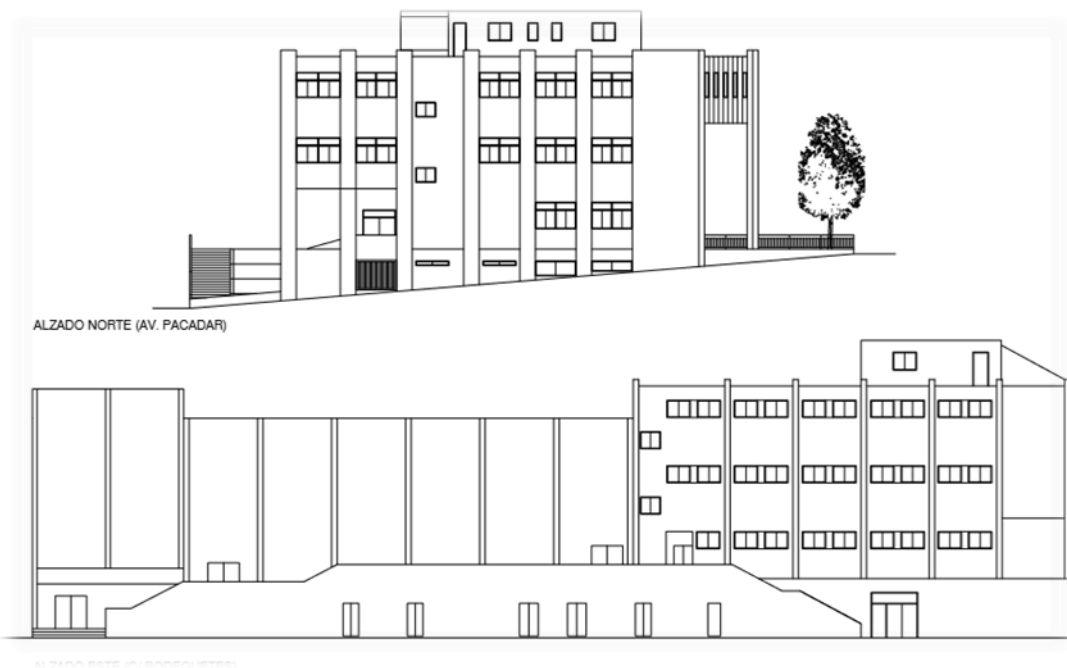


Image 1

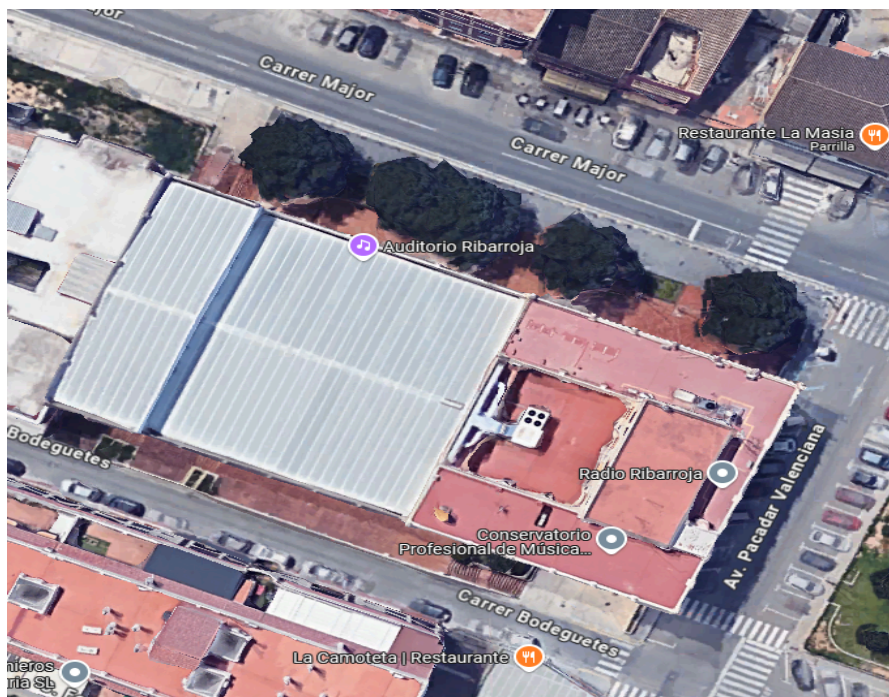


Image 2

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The process of applying the toolkit involved several visits and meetings, as well as an intensive exchange of information regarding the building, its use, and related aspects. The process can be divided into three main parts.

First, the training of local stakeholders on funding the local energy transition within the framework of the post-DANA reconstruction process. This part is fully described in Deliverable D.2.3.1.

The second part is the assessment and definition of the priority measures to be implemented at the Municipal Cultural Centre and Auditorium of Riba-roja de Túria. The assessment is summarised below in this section. These measures are described in a ready-to-use funding plan proposal, drafted in collaboration with the municipality and delivered to it. This constitutes the first part of the plan produced by MUSOL and FVMP as Output 2.1 and is summarised in the section “Local Partnerships (financing, ownership/roles/responsibilities, policy measures)” of this document.

The third part stems from the priority measures previously identified. Thanks to budgetary savings, MUSOL has been able to implement concrete project measures to support the energy transition in the municipal building, particularly those related to energy-saving habits and practices. This constitutes the second part of the plan produced by MUSOL and FVMP as Output 2.1 and is summarised in the section “Capacity Building – Community Awareness/Engagement” of this document.

Summary of the assessment of the Municipal Cultural Centre and Auditorium of Riba-roja de Túria.

Due to the different activities carried out in the building, its use is varied and covers a large part of the weekly schedule. The auditorium is mainly used at weekends, the classroom areas are used on weekday afternoons, and the third floor (exclusively dedicated to the radio station) is used in the mornings and afternoons. Therefore, although a continuous energy consumption may be assumed, most of it is concentrated during the teaching hours of both conservatories.

Since the main objective of the study is to improve the building's energy efficiency, with the consequent reduction in energy consumption and the associated carbon dioxide emissions, the analysis focuses on reducing the building's energy needs from three perspectives: the use of renewable energy for self-consumption; the reduction of energy demand through improvements to the building envelope; and the reduction of demand through the implementation of good user habits.

The building under study is located in the municipality of Riba-roja de Túria, specifically at Calle Mayor No. 135. It can be divided into two completed sections and a third section currently under construction.

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Image 3

As shown in Image 3, the building is divided into three parts: the red section consists of four floors housing the music and dance classrooms and the municipal radio facilities; the blue section is the auditorium, which includes a lobby, the seating area and stage, and the dressing rooms at the rear; and finally, the green section, which is under construction, will become part of the building's current uses and will include facilities for classroom purposes. This last section, given its status at the time of writing this report, is excluded from the analysis.

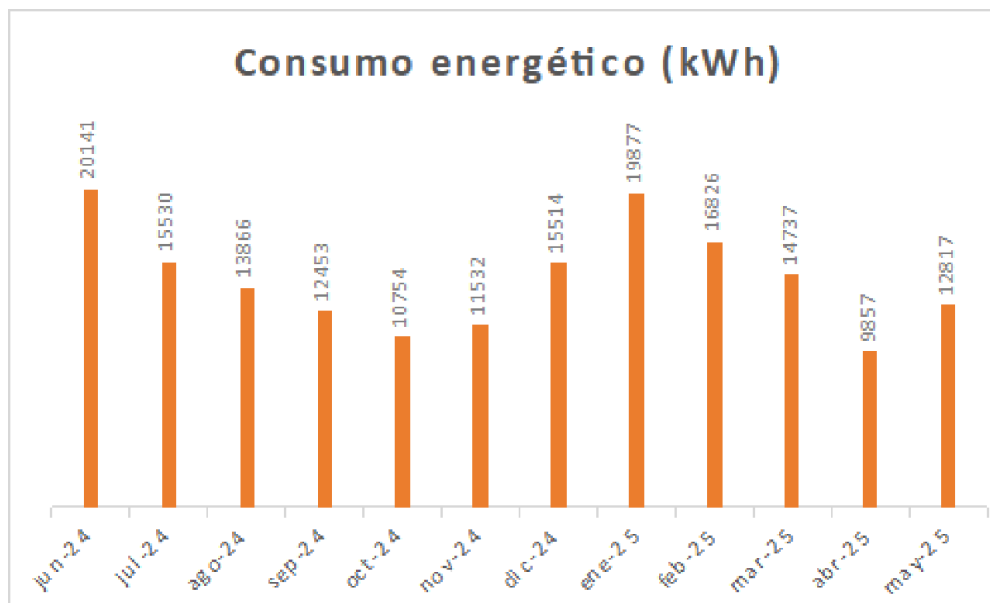
As can be seen in Image 3, the building has external façades facing three different streets. However, access is possible from only two of them: Calle Mayor and Calle Bodeguetes. These streets are located at different levels, with a difference of one floor. As a result, in the classroom area (red section), the ground floor is accessible only from Calle Bodeguetes, which creates ventilation problems due to the lack of an exit at the opposite end of the building.

For temperature regulation, a ducted air-conditioning system is installed to climate-control the auditorium seating area. This system is used sporadically, as it operates only on days when events or rehearsals take place in the auditorium. In the classroom area, each room is equipped with one or more split-type air-conditioning units, so usage is individual and depends on each classroom's specific schedule.

Regarding the building envelope, this analysis considers only the windows, of which there are two types: PVC windows with airtight seals and noise reduction features, and sliding aluminium windows.

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To estimate the building's energy needs and, consequently, the size of the potential photovoltaic installation, an analysis of one full year of electricity consumption was carried out, with the results presented in Graph 1. Since, as mentioned above, consumption is concentrated mainly in the afternoon due to the building's educational activities, it is assumed that, in a battery-free installation as proposed below, energy self-consumption will be lower and therefore must be adjusted to realistic self-consumption conditions.



Graph 1

Forming the Local Action Group (Stakeholder mapping, commitment, mobilization, vision)

The entire process of applying the LOGREENER toolkit and involving local stakeholders is fully described in Deliverable D.2.3.1. However, the main steps carried out between December 2024 and March 2026 can be summarised as follows.

Between December 2024 and May 2025, the partner MUSOL, with the support of FVMP, held three meetings and maintained permanent communication by email and phone with municipal staff, both political and technical. This process enabled MUSOL to agree with the municipality on which neighbourhood and, subsequently, which specific block should be prioritised according to the previously mentioned criteria. The main criteria considered were: high energy consumption, the fact that it had been affected by the floods, its intensive use by citizens, and the fact that it was not covered by other reconstruction projects or plans.

Once the LOGREENER toolkit was published in May 2025 by the partner TUC-Resel, MUSOL was ready to start its application in the selected building (the Municipal Cultural Centre and Auditorium of Riba-roja de Túria) and to involve the relevant stakeholders.

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Stakeholder identification was carried out in collaboration with municipal staff and included:

- the municipality (technical staff and the councilman in charge of the relevant area), as the owner of the building and manager of the services provided to citizens in this building;
- the teaching staff, as the largest group of workers using the building and due to their influence on students' habits at the music and dance school;
- the students, as the main users of the services provided by the music and dance school;
- the caretaking staff, as the group with the greatest influence on maintenance and daily operation of the building;
- the radio station staff, as the group with the greatest influence in terms of awareness raising; and
- the parents' association, as those responsible for students' behavior and as a main group of indirect users.

Between June 2025 and December 2025, all stakeholders were intensively involved in the process and formed the local action group, in line with the co-creation-based approach planned in the project, despite their limited availability, especially for joint workshops, due to very different working schedules and overall availability. For instance, the caretaking staff was available in the mornings, while lessons were held in the afternoons, meaning that teachers, students, and parents could not attend morning events. The project adapted to these circumstances by implementing an online survey to maximise the collection of stakeholder inputs, as well as three workshops and several ad hoc visits to the building to address specific topics and meet staff who were otherwise difficult to reach.

In particular, in addition to several technical visits and bilateral meetings held between June and September 2025, on 16 October 2025 the results of the technical assessment of the building were shared in a formal meeting, enabling stakeholders to agree on the main measures that were ultimately proposed (see actions summarised in the sections "Local Partnerships" and "Capacity Building – Community Awareness/Engagement" of this document). Once it was also agreed to further develop the energy-saving habits component, joint participatory workshops were held on 17 November 2025 and 1 December 2025 with stakeholders, as well as with the participation of MUSOL and FVMP, to co-design the concrete energy-saving habits to be implemented. The agreed measures were illustrated in posters and other communication materials to facilitate their dissemination by the municipality.



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Throughout the process, MUSOL relied on the support of engineering and technical staff and facilitation support from the companies Trelat and AeioLuz. Furthermore, the process was documented with audiovisuals that were later used to produce one of the peer-to-peer learning video (deliverable D.1.3.2), with the support of the company Alma Rural - Alba Martínez.

Between January and March 2026, collaboration mainly focused on the municipality of Riba-roja de Túria, with continuous communication by email and phone in order to validate the adoption of the plan by the municipality, which was approved by the local authority.

Local Energy Planning (PRISMI Approach: Scenarios of Energy System Development, supporting design tools)

Not applicable.

Local Partnerships (financing, ownership/roles/responsibilities, policy measures)

At the beginning of the process, LOCAL4GREEN measures were considered. Thanks also to the popularisation of the local green fiscal policies promoted by the LOCAL4GREEN and LOCAL4GREEN PLUS projects (Interreg MED 2014-2020), the municipality of Riba-roja de Túria had already adopted most of the tax and fee modifications to promote renewable energy sources. Therefore, these fiscal policies were validated but were not the subject of further work within LOGREENER. Furthermore, the building selected for the application of the LOGREENER toolkit was a municipal building, so fiscal incentives would not have been effective in promoting energy improvements in this type of building. Since the municipality's main concern remained the funding of the building's improvement, MUSOL worked with the municipality to prepare a sound financing plan, using section "Step 4, Creating local partnerships/Funding instruments" of the toolkit as well as local funding opportunities.

In particular, a funding opportunity provided by the Valencian regional government was selected and a clear plan to improve the energy transition in the Cultural Centre and Auditorium of Riba-roja de Túria was drafted. According to the results of the assessment summarised in the section "Setting the Scene" of this document, the following main actions were included in the plan, that we named "Technical study and full funding application and plan of energy-saving measures for the Riba-roja de Túria auditorium".

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1) It is proposed to install a photovoltaic system to supply the building's own electricity consumption and thus reduce its demand from the power grid. In this way, direct consumption of renewable energy is promoted within a decentralised model, while at the same time reducing the economic cost of the building's electricity supply. Since, as mentioned above, energy consumption is mainly concentrated in the afternoon due to the building's educational activities, it is assumed that, in a battery-free installation as proposed, energy utilisation will be lower and will therefore need to be adjusted to realistic self-consumption conditions.

To calculate the installation potential, the "IGN Solar" tool developed by the Spanish National Geographic Institute is used. Regarding the location of the installation, Image 2 shows how it is adapted to the surface of the fourth floor that is exposed outdoors, with panels installed on currently unused walkable areas. It should be noted that this initial installation represents an approach to self-consumption and could be expanded once the new part of the building (green section) is completed. The self-consumption simulation according to the calculation variables of the IGN Solar tool is presented in Image 3.

Based on the data shown in Graph 1, the building's total annual electricity consumption is 173,904 kWh. The proposed installation of approximately 32 kWp would therefore ensure the production of around 32% of the total electricity demand.

Therefore, given the building's consumption profile, a large share of the generated electricity could be self-consumed, optimising the reduction of surplus energy fed into the grid and, consequently, shortening the payback period of the investment required to implement the installation.

2) As mentioned above, the building has two types of windows. Some of them are the original ones, made of aluminium with single glazing and sliding frames, while others have recently been replaced with airtight PVC windows with thermal break and noise reduction features. All the replaced windows are located on the west side of the building, facing Calle Bodeguetes.

To improve the building's insulation and, consequently, reduce its energy demand to achieve adequate thermal comfort, it is recommended to replace the original windows and adapt them to the technical characteristics of those already installed.

The reduction in energy consumption resulting from window replacement depends mainly on the thermal transmittance value of each type. The following approximate values are assumed: 6 W/m²K and 1.4 W/m²K, with the former corresponding to the currently predominant windows, namely the aluminium sliding ones.

Therefore, a reduction in heat loss through window transmission of approximately 75% can be estimated. It should be noted that this figure refers exclusively to transmission losses through the windows. Consequently, the reduction in total



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heating consumption will be lower and will depend on the relative contribution of windows to the building's overall heat losses and on the efficiency of the thermal system.

3) Within this set of proposals, two actions are envisaged: the installation of a thermostat in each classroom and the development of a participatory process involving all groups that use the building.

This process aims to engage all user groups of the facility in analysing potential improvements to the building and establishing operational protocols based on real data regarding space heating and cooling. In this way, an analysis can be carried out using primary data that reflects actual needs, based on the experience of users.

The objective of installing thermostats is to provide added value to this process by supplying real-time information on classroom conditions, as each room is equipped with individual split-type air-conditioning units that are currently operated according to the perceived thermal comfort of teachers and students.

According to this plan, a specific funding application has been drafted for a call of the Valencian regional government, covering the part 1 (photovoltaic system). All related documentation is attached (Spanish documentation). As well, for the part 3 of the plan, MUSOL took in charge this part and developed a participatory process for establishing energy saving protocol, that is summarised in the section "Capacity building" of this document.

Implementation (technical documentation/procedures, timeplan/milestones)

Implementation Phases

Phase	Description	Period	Output
1	Submitting the funding plan.	2026	Funding for PV obtained.
2	Developing the participatory process to co-design the energy saving protocol	2025 (last trimester)	Energy saving protocol.
3	Implementing the energy saving protocol.	2026 (1 st semester)	Energy saving starts.
4	PV installation	2027 (1 st semester)	PV

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Phase	Description	Period	Output
5	Windows replacement	2027 (1 st semester)	Windows replacement
6	Installation of a thermostat in each classroom	2027 (1 st semester)	A thermostat in each classroom

Capacity Building – Community Awareness/Engagement

As explained above, the part 3 of the plan was developed within the project in order to increase the impact of the initiative with the co-design and implementation of some short term measures.

The participatory process involved all the stakeholders of the Cultural Centre and Auditorium of Riba-roja de Túria, as fully described in the deliverable D.2.3.1 and summarised in the section “Forming the Local Action Group” of this document. The results of the participatory process are an energy saving protocol, co-designed by the stakeholders and validated by the municipality. The main actions that were agreed with the stakeholders and included in a pack of communication materials are the following (full protocol attached in Spanish).

M1. USE OF ELEVATOR

Need

The elevator is currently not in operation, but when it is, it represents a problem because it is used indiscriminately. This leads to high energy consumption for the building, which could easily be avoided by using it only when necessary.

Description

Establish a protocol for the use of the elevator. Limit its use to necessary cases, which are considered to be:

Transporting heavy materials or instruments

Reduced mobility

Elderly people

Reminder poster for each floor

Low: printing of posters

High

Material produced

Level of investment

Implementation Relevance

Dependence on Third Parties

No

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**M2. CLASSROOM SHUTDOWN AND ENERGY-EFFICIENT USE****Need**

The same classroom may be used by several teachers during the same afternoon, which dilutes responsibility for switching off lights, air conditioning, and electronic equipment. In some cases, caretaking staff must switch off classroom equipment at the end of the day, resulting in energy consumption during hours when the room is not in use.

Description

Each teacher is responsible for switching off lights, air conditioning, and electronic equipment at the end of their class. They must also check that windows are closed and, if it is the last class of the day, that blinds are lowered.

This responsibility may only be waived if the next teacher arrives in the classroom before the previous one leaves, allowing for a direct handover.

The caretaking team will be responsible for maintaining a monitoring sheet, which will be completed at the end of each teaching day.

Material produced

Reminder poster for each classroom

Level of investment

Low: printing of posters

Implementation Relevance

High

Dependence on Third Parties

No

M3. CLASSROOM HEATING AND COOLING**Need**

Classroom air conditioning is provided individually through split-type units. Since the building has three different orientations and various types of window enclosures, the comfort requirements of each classroom vary, making it difficult to standardise temperature settings.

The designated teacher is responsible for controlling the classroom



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Description	temperature using the thermostat on the split-unit remote control.
	When leaving the classroom, the teacher is also responsible for switching off the unit. The designated teacher is responsible for controlling the classroom temperature using the thermostat on the split-unit remote control.
	When leaving the classroom, the teacher is also responsible for switching off the unit.
Material produced	Reminder poster for each classroom with references to energy saving
Level of investment	Low: printing of posters
Implementation Relevance	High
Dependence on Third Parties	No

The plan has been produced together with posters and other awareness-raising materials. The protocol and the materials are attached (available only in Spanish).

Setting Performance Indicators

According to the typology of actions included in the “Technical study and full funding application and plan of energy-saving measures for the Riba-roja de Túria auditorium”, the following indicators are expected to be accomplished once completed the plan execution:

Indicator	Baseline	Target (2030)	Source
PV production as a share of total electricity demand.	0%	32%	EnergyPLAN / Local data

Data collection will be carried out by the municipal staff comparing energy consumption and data of the PV production.

Annexes

1 Full technical study and full funding application and plan of energy-saving measures for the Riba-roja de Túria auditorium (in local languages).

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