

Solar panels in rural area

Installation of solar panels for green electricity production

LOWER SECONDARY SCHOOL



Resources

HUMAN

TIME

COSTS

What was the intervention about?

The PV panel installation was planned and carried out, similar to the intervention (RM-DS01-IN01) at Nicolae Bălcescu School in Drăgășani. However, this took place in a rural setting, which differs significantly from urban areas in Romania, especially in terms of community knowledge and attitudes. As in Drăgășani, solar thermal panels were initially proposed to provide hot water, but technical issues—like limited summer use and antifreeze needs in winter—led to a shift toward photovoltaic panels, offering better flexibility and year-round use.

Similarly to Dragasani, an interface was installed to connect the school’s electrical system to the public grid, and prosumer status was obtained by submitting technical documentation, securing the necessary approvals, and coordinating with the electricity provider. A smartphone application was implemented to track electricity consumption and production at the school level. To facilitate

the understanding on the solar energy and to communicate the results of the intervention large posters were produced and displayed throughout the school. The targeted audience consists of students, staff, parents, and visitors. Additionally, the ECF4CLIM team developed educational materials focused on solar energy and energy conservation in the context of climate change.

A common material was produced for Dragasani and Sercaia schools by integrating the feedback received from the discussions with the students and teachers. The material is uploaded in the ECF4CLIM web-site (<https://ecf4clim.eu/materials-from-demonstration-sites/>).

The finalized educational materials now serve as a foundational resource for teachers to develop interdisciplinary lessons on sustainability. Communication and dissemination activities were also conducted to promote the replication of this intervention in other schools.

Challenges

- The solar panel project at School was successful, but offered valuable lessons for other rural schools:
- » **Funding:** Despite the modest €5,000 cost, securing funds was challenging. Rural schools rely on local authorities or external grants. Early planning and well-prepared applications are crucial.
 - » **Technical Needs:** Expertise was needed to assess the roof, orient the panels, and manage permits—tasks beyond school staff, requiring specialists.
 - » **Project Management:** Clear contracts outlining responsibilities, timelines, and quality standards are essential. External support from inspectorates or local experts is highly recommended.
 - » **Educational Use:** Real learning requires more than observing installation. Locally relevant teaching materials should integrate solar energy into subjects like science and geography.
 - » **Monitoring Data:** Solar system data is a powerful teaching tool. In rural areas, making it accessible—via posters or displays—can enhance student interest in energy and sustainability.

Sustainability competences in place in the intervention



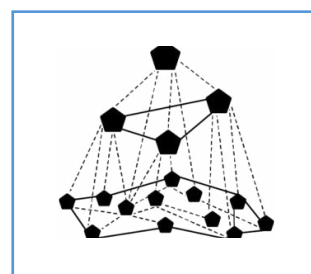
Engagement

- » Switching from a thermal system to PVs showed that the school is open to new, cleaner technologies—even in a rural area with fewer resources.
- » Teachers, students, and staff took part in activities, displays, and lessons that made them think more about their impact on nature.
- » These experiences encouraged real conversations, both in school and at home, about how to protect the environment.
- » The project helped the school become a local example of how rural communities can take action for a greener future.



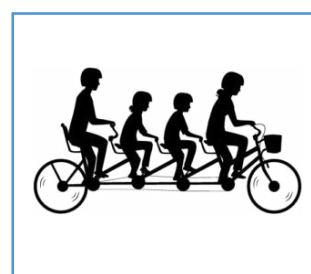
Change

- » The solar project at Şercaia School gave students and teachers a clear picture of what a cleaner, more self-reliant future could look like.
- » Using real-time energy monitoring, they could actually see the benefits of switching to solar power.
- » The project inspired new lessons that combined different subjects and encouraged students to imagine how renewable energy could become a normal part of life—even in a rural setting.
- » These activities helped students see that they can make a difference and be part of building a more sustainable community.



Connections

- » The intervention showed how rural communities can manage the real-life challenges of putting sustainability into practice.
- » The school adjusted its plans to fit local conditions—like dealing with seasonal changes, limited resources, and maintenance needs—which led to practical and lasting solar energy solutions.
- » Students and staff explored how different systems are connected, such as energy use, climate, and natural resources.
- » Through hands-on activities and tracking energy data, they saw how local choices can have wider effects.



Action

- » The project at Şercaia School turned ideas into real action.
- » The school installed solar panels, became a prosumer, and used monitoring tools to track energy use—showing a strong commitment to sustainability.
- » At the same time, students started making greener choices in their daily lives and worked together to solve problems.
- » They also helped spread the word through school activities and campaigns, showing that even small rural schools can lead by example and inspire others to do the same.

Analytical framework

Individual Competences

The implementation of the solar panel intervention at Şercaia School went beyond technical improvements, becoming a meaningful learning experience that helped shape important individual competences among participants, including responsibility, critical thinking, communication, initiative, and practical skill-building. These outcomes not only benefit the participants personally but also contribute to creating a more sustainable and informed future generation.

- » **Personal Responsibility and Environmental Awareness** – In a community shaped by tradition, the intervention introduced new perspectives on sustainability. Despite limited initial knowledge, students showed strong motivation to learn about solar energy, quickly developing relevant competences.
- » **Practical Skills** – The rural context enabled hands-on learning. Students connected solar concepts to farming, home energy use, and local infrastructure, making skills directly applicable.
- » **Critical Thinking** – Students gained the ability to reflect on local challenges like wood heating and limited infrastructure, considering how renewable energy could address them.
- » **Communication Skills** – The project gave students a chance to express their views on environmental issues, boosting confidence in school and community dialogue.
- » **Proactive Behavior** – Students began practicing and promoting sustainable habits at home, showing the school's role in spreading change.
- » **Problem-Solving Confidence** – Limited resources encouraged creative thinking. The project has built students' resilience and adaptability—key for rural sustainability.

Collective Competences

The solar panel intervention at Şercaia School, in a rural setting, became a strong platform for building collective competences through shared experiences and teamwork. As a central part of community life, the school used the project to strengthen social and organizational skills like collaboration, shared decision-making, inclusive communication, and joint problem-solving—key to rural resilience and sustainability.

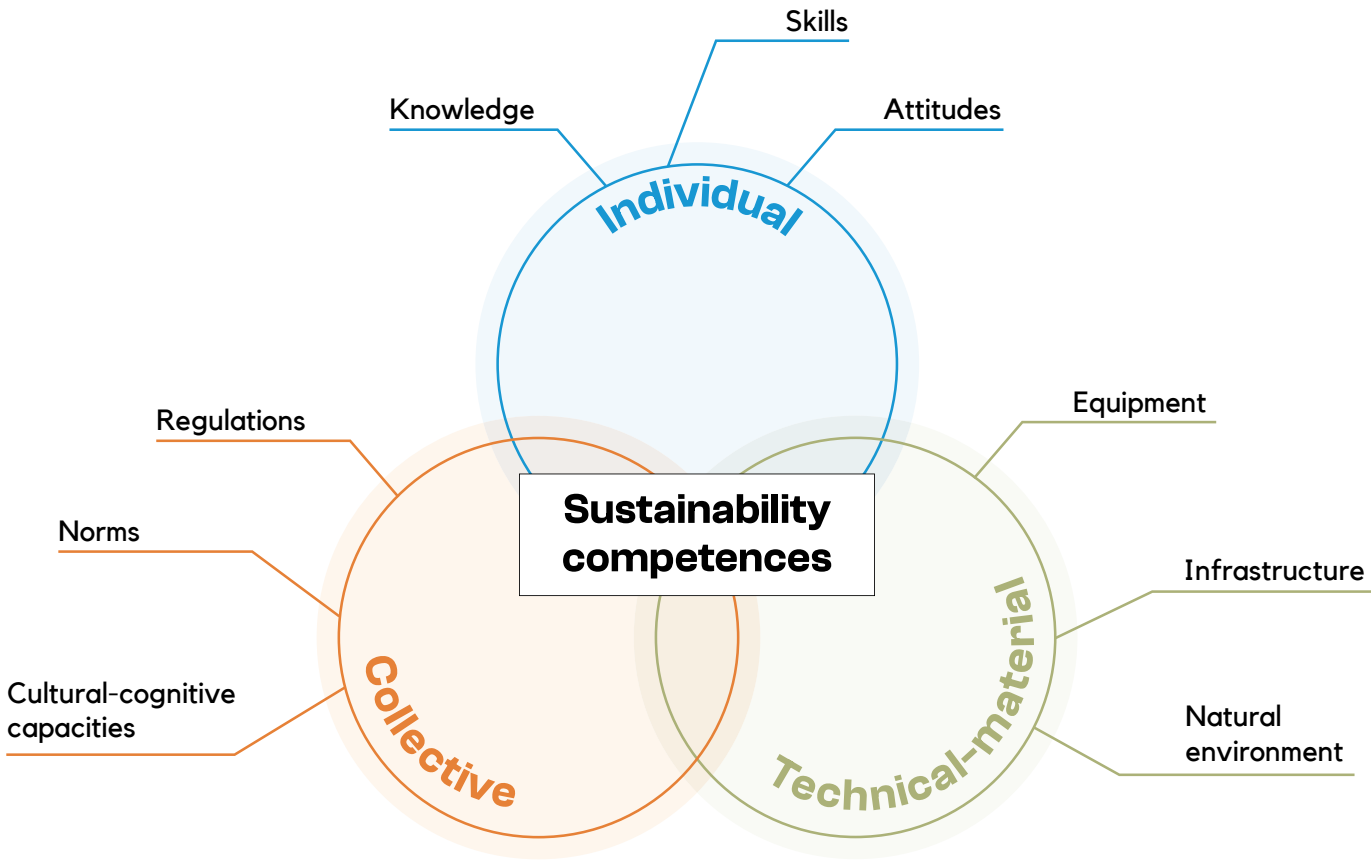
- » **Teamwork and Cooperation** – Students and staff worked together naturally in group settings, with the project adding new layers of coordination and goal-setting.
- » **Shared Planning** – Participatory planning methods enhanced informal decision-making traditions, promoting ownership and shared leadership.
- » **Inclusive Communication** – Structured dialogue encouraged participation from all voices, improving mutual respect and community unity.
- » **Problem-Solving** – Facing limited resources, participants used local knowledge to co-create practical, context-aware solutions.
- » **Environmental Goals** – The focus on sustainability felt tangible, aligning with everyday rural life through actions like home energy saving and awareness-raising.
- » **Role Flexibility and Peer Support** – Students took on various roles, with peer learning enhancing skills and creating a supportive, empowering environment.

Analytical framework

Technical-material Competences

The solar panel intervention at Şercaia School, located in a rural area, provided a highly relevant and accessible context for developing environmental and technical-material competences among students and staff. In a setting where hands-on, practical engagement often plays a central role in learning, the project not only involved the installation of solar panels but also created opportunities for deepening understanding of sustainability principles in ways that resonated with local realities. These competences—ranging from technical understanding to resource awareness and environmental stewardship—helped nurture a more ecologically conscious school culture and empowered participants to become active contributors to rural sustainability.

- » **Understanding Renewable Energy** – Students gained practical knowledge of solar panel function, linking it to local issues like wood use and low energy efficiency. The intervention filled a key knowledge gap, showing how solar energy reduces both school and community carbon footprints.
- » **Energy Awareness** – In a setting where resources are manually managed, students adopted conservation habits like turning off lights or using daylight—often sharing these practices at home.
- » **Data Literacy** – Working with solar data helped students grasp real-time energy use. Despite varying digital skills, hands-on tasks like meter reading built foundational environmental monitoring skills.
- » **Pollution Awareness** – The project deepened students’ connection to nature through activities like waste sorting and local clean-ups, turning abstract pollution issues into concrete, visible concerns.
- » **Sustainable Habits** – The rural context supported daily sustainable practices. Students reduced plastic use, reused materials, and cared for school green spaces, modeling environmental responsibility in their community.



Additional information

