



Project No.: NWE 827

Project acronym: ENERGE

Project Title: Energizing Education to Reduce Greenhouse Gas Emissions

Priority Axis 2 Low Carbon

Programme Priority Specific Objective: SO2: To facilitate the implementation of low-carbon, energy and climate protection strategies to reduce GHG emissions in NWE

Starting date of project: 10th January 2019

Duration: 52 months

D.LT.3.2 – ENERGE Methodology - Final Version

Organisation Name of Partner Leading the Deliverable: LU		
Version 1	Due Date	Mai 2023
	Submission Date	Mai 2023

Dissemination Level		
PU	Public	<input checked="" type="checkbox"/>
CO	Confidential, only for members of the consortium (including the Programme Managing Authority)	<input type="checkbox"/>

Document History

History			
Version	Date	Partner	Comment
1	03/2023	LU	Initial draft
2	04/2023	LU	Reviewed draft
3	05/2023	LU	Final version

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Table of Contents

1.0 Introduction	6
1.1 Work Package LT Objectives	6
1.2 Role of Deliverable D.LT.3.2	7
1.3 Relationship with other activities in project	7
1.4 Approach to the Development of D.LT.3.2.....	7
2.0 ENERGE Methodology.....	7
2.1 ENERGE Learning Community and ENERGE Club	9
2.1.1 ENERGE Learning Community	9
2.1.2 ENERGE Club (EC)	10
2.2 Environment Readiness	11
2.3 Preparation	12
2.3.1 Greengage Platform.....	14
2.3.2 ENERGE Educational Modules.....	15
2.3.3 ENERGE Building Stock Audit Methodology	16
2.4 Strategy and Actions	16
2.4.1 Targets.....	17
2.4.2 Key Performance Indicators (KPIs)	17
2.4.3 Actions.....	17
2.4.4 Monitoring Plan	18
2.5 Implement, Monitor, Evaluate and Adapt.....	18
3.0 ENERGE Best Practices & Examples	19
3.1 ENERGE Learning Community and ENERGE Club	20
3.2 Environment Readiness	21
3.3 Preparation	22
3.2.1 Greengage Platform.....	24
3.2.2 ENERGE Educational Modules.....	25
3.3.3 ENERGE Building Stock Audit Methodology	27
3.4 Strategy and Actions	27
3.4.1 Targets.....	27
3.4.2 Key Performance Indicators (KPIs)	28
3.4.3 Actions.....	28
3.4.4 Monitoring Plan	30
3.5 Implement, Monitor, Evaluate and Adapt.....	33
4.0 Conclusion	33
5.0 Opportunities and implications for ENERGE	33
Appendix	34

1 - List for checking ENERGE Learning Community readiness34

1.0 Introduction

Climate change is caused by the increasing concentrations of Green-House Gases (GHG) and is one of the greatest challenges of our times. It is also known that, even though many strategies are already available to address such a challenge, to reach targets with a sustainable and long-lasting effect, general solutions need to be made more context specific. The ENERGE project, that initially aimed to achieve a 15% reduction in primary energy consumption at the demonstration site schools over the project period, saw a negative impact on typical energy use profiles, due to COVID-19 related interventions. However, from the interaction with the thirteen demonstration schools, ENERGE engaged with administrations, teachers, students and maintenance staff (entire school ecosystem), bringing awareness on the topic of energy efficiency and the role of the community in the characterization of the challenge and identification of suitable solutions.

The ENERGE Methodology, developed based on the acquired experience from the interaction with the demonstration schools, and the lessons from previous project deliverables, proposes to address the energy and other sustainability-related challenges by establishing a so-called ENERGE Learning Community. It aims to enable secondary schools to analyse their environment, understand their challenges in a contextualized approach and adapt solutions to their needs, by providing a step-by-step approach, materials, tools and experiential learning activities to support the process.

1.1 Work Package LT Objectives

The goal of Work Package Long Term (WP LT) is to maximise the long-term impacts of the project and ensuring the reductions in carbon emissions and energy consumption delivered in the project can (i) be maintained (further improved) in the demonstration schools (ii) be implemented in schools across each region in the study (& potentially beyond) and (iii) empower future consumers/decision makers (today's students) through their interaction with it in schools. The activities in this WP focus on four key areas:

- Develop validated business and exploitation plans for each region (exploitation plans in each region may differ) and the arrangements for IP developed/validated in the project. This will define the "go to market" process the roles of public and private sector stakeholders in long term exploitation & strategies for widespread uptake of the ENERGE outputs.
- Engage key stakeholders to validate business & exploitation plans.
- Develop educational & training modules for schools, sectoral agencies & stakeholders involved in exploiting ENERGE.
- Define how ENERGE is implemented in schools. This will focus on technical aspects of implementing ENERGE across schools in the regions.

1.2 Role of Deliverable D.LT.3.2

The role of deliverable D.LT.3.2 is to build on D.LT.3.1 and other deliverables, and provide a final methodology developed based on the lessons learned from the implementation of the previous deliverables during the ENERGE Project.

The ENERGE Methodology aims to provide post-primary schools with tools to implement a ENERGE Learning Community to develop resilience skills to overcome sustainability-related challenges, by using a web-based platform to support the interaction with the school community, combining educational activities with technical and sociological approaches.

1.3 Relationship with other activities in project

Deliverable D.LT.3.2 exists within Activity 3 in WPLT. This deliverable relates to the activities from WPT1, WPT2, WPT3 and WPLT. It aims to gather the outcomes of the previous deliverables connecting it in such a way to propose a sound methodology that can be widely applied in secondary schools aiming to address sustainability-related challenges.

1.4 Approach to the Development of D.LT.3.2

The approach taken towards the development of D.LT.3.2 was advance from the developments of the first version D.LT.3.1, that correlated the previous project deliverables in order to stablish a methodology that can be easily replicated in other high schools aiming to create a resilient environment allowing to address challenges.

This deliverable considers the establishment of the ENERGE Alliance, proposed on D.LT.4.2, to promote the ENERGE Learning Community concept and disseminate the ENERGE solution after the end of the ENERGE project. It assumes that through the communication activities of the ENERGE Alliance, the ENERGE Methodology will be exposed and made available to educational authorities, headmasters and teachers across Europe.

2.0 ENERGE Methodology

The ENERGE Methodology addresses the need to stablish low-cost solutions enabling long-term resource efficiency in schools and reduced greenhouse gas (GHG) emissions. It proposes to use the ENERGE Learning Community concept to raise awareness among the school ecosystem, preparing the environment to address sustainability-related challenges. The concept is to provide the necessary structure and support for a group of stakeholders to meet regularly, learn and work collaboratively, to define and implement an intervention strategy, while creating a resilient community, able to understand and engage with the process.

The ENERGE Methodology is a 5-step process, as follows:

1. A group of stakeholders with a common challenge in the school should establish a ENERGE Club (EC). The EC is responsible for leading the ENERGE Learning Community, the interaction with the rest of the school. Building a learning community requires the common will to tackle a specific challenge, but it also needs the space and availability, as the process takes time and requires effort.
2. Step 2 involves checking the environment readiness for implementation of the ENERGE Learning Community, and preparing the school ecosystem to engage in the next phases.
3. Step 3 contextualizes the challenge, both on the technical and sociological frameworks, preparing the school for defining and implementing a intervention strategy. In this phase, participation of the community is essential to provide a clear picture.
4. The intervention strategy is defined in Step 4. It is characterized by a clear target, that can only be reasonable when established based on the context. It is composed by a series of actions to reach the target, that must be defined based on the school's available resources. Additionally, it needs performance indicators, necessary to evaluate the actions. For these indicators to be engaging, they need to be defined accordingly to the school's reality. Finally, the strategy requires a monitoring strategy, tailored to the school's infrastructure, to provide the needed data to be compared to the indicators, allowing to check the effectiveness of the actions, and the gap to reach the target.
5. The final, and 5th step, is the continuous process of implementating, monitoring, evaluating and adaptating the strategy to enable the school to reach the defined target. In this step, the monitored data needs to be compared to the performance indicators, to evaluate the actions. This is the opportunity for the ENERGE Learning Community to learn from the previous steps, and develop resilience skills to adapt the process to reach the common target.

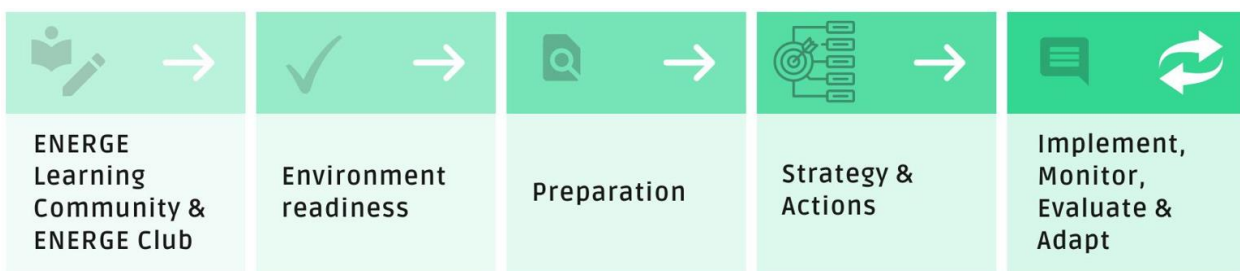


Figure 1: ENERGE Methodology 5-step flowchart

This methodology was developed under the assumption that the ENERGE Alliance reaches out to one person, most likely a teacher, that is interested on addressing sustainability-related challenges, and that this person will start the process within the school. This assumption may vary between schools but in the experience of the ENERGE project to date this is the most likely route. However, due to the energy crisis, in some countries, the institutions itself are starting to look for new approaches to address energy and sustainability related challenges.

2.1 ENERGE Learning Community and ENERGE Club

Learning communities are designed to facilitate regular meetings and collaborative work among individuals with a shared objective. The ENERGE Methodology is built upon this concept, with the ENERGE Club (EC) serving as the management group responsible for organizing and implementing the process needed to achieve the group's common goal. While the ENERGE Club (EC) is not a fixed group, it is comprised of stakeholders who are united by their commitment to this objective. This Club plays a crucial role in establishing guidelines and rules, and ensuring continuity in the process. As the community grows and evolves over time, the EC may also evolve, yet its importance in providing structure and leadership remains unchanged.

The ENERGE Methodology was developed as part of the larger ENERGE project, with input from partners and teachers in demonstration schools. Teachers play a vital role in schools as they are responsible for connecting the institution with students and transferring knowledge. Therefore, the ENERGE Methodology recognizes the importance of teachers as a driving force in the process of creating a sustainable school environment.

The methodology begins with the formation of the ENERGE Learning Community, which consists of the initial ENERGE Club, composed of teachers, students, and other school staff. This group works together to define a common objective and establish the initial rules for their collaboration. They then assess the environment, interact with other stakeholders, and engage the wider community to promote sustainable practices.

2.1.1 ENERGE Learning Community

The ENERGE Learning Community concept, is built on three pillars: Technical, Social and Educational. These pillars are combined with activities proposed by the project in three layers: Collaboration, Knowledge and Action. It aims to provide the schools with societal and technical knowledge and resilience skills to face the challenges.

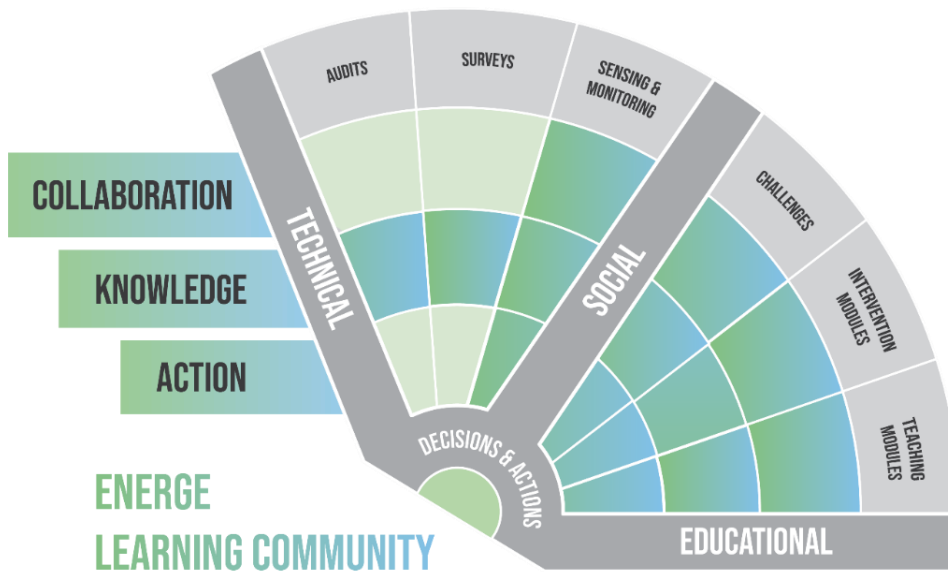


Figure 2: ENERGE Learning Community concept

The ENERGE Learning Community concept aims to create a resilient school community, that can address sustainability-related challenges. This process requires a leading group, composed by school's stakeholders, that in this methodology is called the ENERGE Club (EC). Ideally, the Club would comprise representatives from all groups, such as board of management or directors, teachers, students, maintenance staff, facility manager, concierges, cleaning services, building administration, parents and any other group that might play a role in the decision making.

2.1.2 ENERGE Club (EC)

The ENERGE Club (EC) is responsible for planning and implementation the ENERGE Learning Community, as well as ensuring public engagement in their school. However, the level of involvement and responsibility may differ between members.

Members	Bord of management of directors	Teachers	Pupils	Admin/Maint staff	Cleaning services	Building owner	Parents	Others
Activites								
ENERGE Learning Community & ENERGE Club	Kick-off meeting & periodical follow-up							
Environment readiness		Stakeholder assessment						
Preparation		Greengage						
		Educational Modules						
		Building Audit						
Strategy & Actions		Proposition						
		Validation						
Implement, Monitor & Evauate		Implement & Monitor						
		Evaluate						

Figure 3: ENERGE Club (EC) – suggestion on composition and levels of responsibility

As a first step, the ENERGE Club (EC) needs to define its terms of reference which will include its main goals and the conditions for members to participate. A clear timeline must be defined so members know their time of contribution and can plan the activities accordingly. It is also important to stablish ways to assure the continuity of the activities even when the ENERGE Club (EC) members changes.

The ENERGE Club (EC) needs to set a schedule of general meetings to monitor activities, ensure that all members are aware of the situation and enable the group to exchange ideas to jointly find solutions to the challenges posed during the process.

To ensure the success of this methodology, it is crucial to keep the ENERGE Club motivated and engaged. This presents a significant challenge that must be addressed through careful planning and strategy. Additionally, the Club should develop a plan for its renewal and ensure a smooth transition to maintain the group's momentum and effectiveness.

Interaction to involve the rest of the school community is essential to allow engagement and contribution to the process. These interactions must happen from the very beginning with periodical follow-ups, defined in a clear chronogram to ensure consistency and regularity.

2.2 Environment Readiness

Implementing the ENERGE Methodology and stablishing a ENERGE Learning Community in a school requires the engagement of the different stakeholders. This process might imply changes

of school's activities and operational procedures, which is why it is essential to check the environment readiness for three spheres:

- Organizational
- Economical
- Technological

Checking the organizational readiness demands the ENERGE Club to identify internal and external stakeholders, and at least one contact point for each institution. It is necessary to identify the level of awareness of each stakeholder in relation to the challenge to be addressed. The Club needs to identify what is already being done in this regard, and check for possibilities to link activities.

As mentioned before, going through the process implementing this methodology requires dedicated people, sometimes external consultancy or even infrastructure investment. Therefore, before starting, it is important to identify the available resources, to plan accordingly.

Certain devices used for monitoring and communication might require specific connectivity systems, and checking the compatibility with the school technical installations and network is important when defining the strategy and selecting equipment.

In this context, **Appendix 1** encompasses a questionnaire tailored to assess the readiness of the environment discussed earlier. The questionnaire aids in evaluating the stakeholders' readiness and provides indicators for assessing organizational, economic, and technical aspects.

If the ENERGE Club concludes that the environment is not yet prepared to tackle the challenge, they can rely on the chapter on **Best Practices**. This chapter provides essential references and guidance to assist them in preparing the school for the upcoming initiatives.

2.3 Preparation

The ENERGE Learning Community concept aims to provide the school with the capacity to overcome sustainability-related challenges that can be imposed by internal or external actors. They may come from regulatory frameworks or the desire to change a certain scenario. Regardless of the origin, they can all be addressed by this methodology once the challenges are identified, and the environment is ready for the process.

But the challenge must be contextualised in order to find solutions. This step is characterised by the analysis of the school environment, considering:

- Social;
- Educational aspects;
- Technical & operational.

Understanding the social context of the school is a prerequisite for planning tailor-made activities and to effectively reach the public. In general, teachers have a good overview and thus are an important basis for a more detailed analysis. Therefore, the ENERGE Club (EC) should consider a meeting with all interested teachers from different disciplines to integrate their input even before planning the subsequent activities. Furthermore, personal meeting with teachers and other stakeholders is always a good opportunity to disseminate the project and engage with the community.

In the framework of the ENERGE Project, the Greengage platform was developed to allow interaction with the community. Greengage is expected to work as a tool to support the ENERGE Club (EC) to increase their own awareness and knowledge, track how ENERGE is changing the schools approach to environmental issues, enable analysis of the changing social contexts in the school and help track the energy and environmental data gathered. The punctual, presential activities are needed to start the process and keep the motivation, but the web-based platform provides the constant exchange with the community. Regular communication is important to keep the school community informed and ensure continuing motivation.

Through the platform, the ENERGE Club (EC) can invite the rest of the community to give their contribution to contextualize the challenge, as well as to learn more about it. ENERGE Educational Modules were developed during the project to support teachers on introducing basic concepts necessary to understand the challenge. These activities are available for schools on the ENERGE website. Their applicability in the school environment can be tested through the Greengage Platform, by presenting the concept, checking the level of knowledge and the interest of pupils on the subject.

The analysis of the social context in the school provides an important opportunity not only to engage, but also to educate others, i.e. apply the “learning by doing” approach. If teachers and students get involved in these processes, it opens the door to connect with the curricula in a broader manner. Thus, it provides the community with valuable knowledge around the different challenges. The communities increasing awareness of environmental and energy issues will not only improve the school environment, but also bring these concepts home and establish their new habits and concepts too.

For the technical and operational aspects, it is necessary to collect data regarding the school building, its technical installations, its operational modes and management strategies related to the addressed challenge. This data needs to be compared to regional benchmarks, allowing the school to identify the easily attainable opportunities to address the challenge and improve the school environment.

The ENERGE Learning Community can guide the internal contextualization of the problem, led by the ENERGE Club (EC). Alternatively, the school can require support from technical experts.

2.3.1 Greengage Platform

The Greengage Platform was developed as a crucial component of the ENERGE Project, with the aim of providing a web-based platform that caters to the needs of various stakeholders in the school ecosystem. This platform was developed based on inputs from students and is accessible through displays and tablets, enabling the ENERGE Club (EC) to regularly engage with the school community. By using the Greengage platform, the ENERGE Club (EC) can solicit feedback on specific subjects and evaluate the applicability of materials and activities. Furthermore, the platform serves as a robust tool to disseminate information related to the challenges faced by the school ecosystem, increasing awareness and promoting engagement within the community. In summary, the Greengage platform is an essential tool for facilitating interaction and communication within the ENERGE Learning Community.

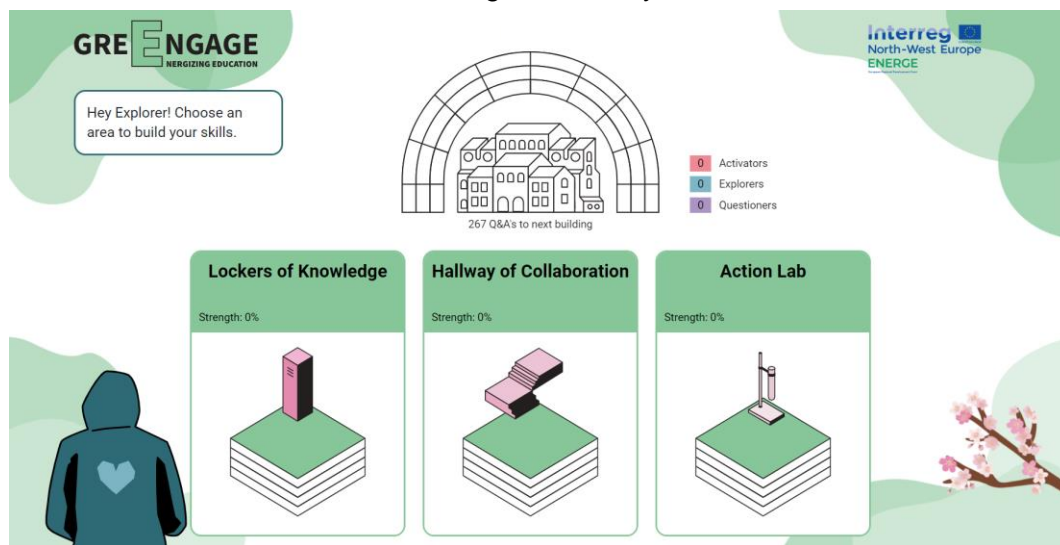


Figure 4: Greengage platform

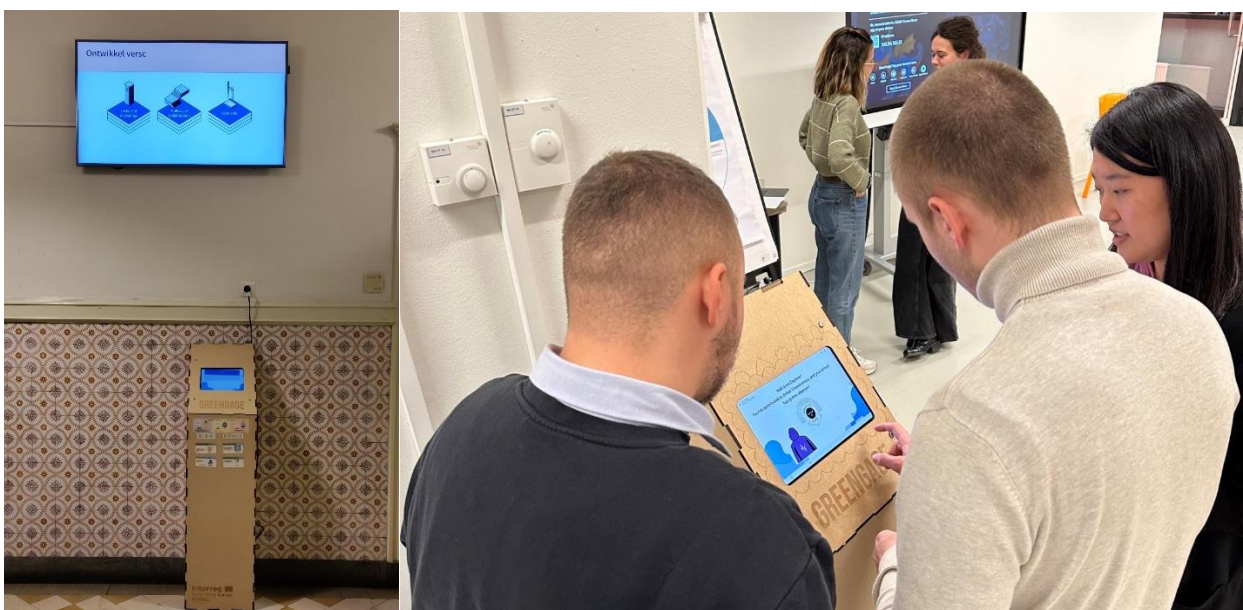
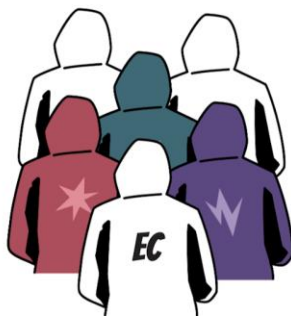


Figure 5: Greengage concept

The Greengage platform can support the ENERGE Club (EC) on evaluating the social environment readiness. Through this tool, questions regarding the challenge can help to evaluate the level of awareness, as well as the possibility to engage the community in this endeavour. The EC can also use it in the following step, to sensitize the public and involve them in the ENERGE Learning Community and on the application of the ENERGE Methodology.

Few of you are already working on making your school stronger: the ENERGE Committee (EC). Wanna help them?



Combine your powers to make your school strong and save energy! The E-lemints are there to guide you in this quest!!

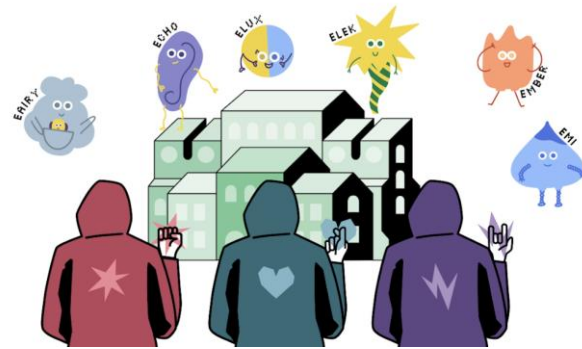


Figure 6: Greengage platform – Introduction

The Greengage Platform serves as a tool to support the ENERGE Club (EC) to develop the ENERGE Learning Community at the school. It is a channel to prepare the community to address the specific challenges. It allows the community to give their inputs and support the contextualization of the challenge in technical, operational and a social way.

2.3.2 ENERGE Educational Modules

As learning environments, schools offer a valuable opportunity to interact and engage with the community through educational activities that relate to the challenge at hand. This approach can be a powerful way of preparing teachers and students for the process of implementing the ENERGE Learning Community, while also creating the resilient environment necessary for collaborative goal achievement. By leveraging educational activities that are relevant to the challenge, schools can effectively involve the broader community in the process, and equip both teachers and students with the skills and knowledge needed to succeed.

This step presents a valuable opportunity to engage with other stakeholders and collaborate with institutions addressing similar challenges. While materials can be developed, they can also be obtained through the ENERGE Alliance, as presented in the **Best Practices** chapter, as well as other projects. By working together with other organizations, the ENERGE Learning Community can leverage shared resources and expertise, and foster a sense of collective responsibility for achieving its goals. This approach can be particularly effective when tackling complex challenges that require a multifaceted, cross-sectoral response.

2.3.3 ENERGE Building Stock Audit Methodology

At this stage, the school is actively engaged, and initial discussions are underway with the community. It is now crucial to gain a comprehensive understanding of the school's technical installations and operational procedures, including working hours and building usage. The ENERGE Club needs to assess the school environment to establish the foundation for an effective intervention strategy.

By comprehending how the school's buildings are used, analyzing technical installations and their management, opportunities for future interventions can be identified and contextualized. This understanding allows the ENERGE Club to compare these practices against local benchmarks and pinpoint favorable opportunities to address the challenge.

Moreover, examining how the school and its buildings are managed helps identify potential areas for adaptation to address the specific challenge. It also indicates the need for further analysis to develop a robust intervention strategy.

During this phase, it is crucial to involve the school community for a comprehensive and representative understanding. Additionally, identifying local benchmarks is essential to enable effective comparisons. If the local results fall below the benchmarks, it suggests that small changes can yield significant impact. Whereas, if the local results surpass the benchmarks, it usually indicates that higher efforts are required for making improvements. This information supports the decision-making process in determining the areas to focus on for subsequent activities.

The **Best Practices** chapter showcases examples of this step and demonstrates their influence on the overall process.

2.4 Strategy and Actions

The implementation of strategies can be a challenge if the different actors affected are not involved in the process. Therefore, the ENERGE Methodology proposes the use of the ENERGE Learning Community, through the Greengage platform, to include the school ecosystem, and to invite people to participate in identifying and contextualizing the issue, in order to allow the definition of a joint and effective solution. This means that the school community should be invited to participate in the multiple steps involved in defining a strategy and its actions to address a challenge.

The intervention strategy to address a specific challenge, is to be developed by the ENERGE Learning Community, from the inputs of the Context Analysis, done by the ENERGE Club, using the Greengage platform. It should follow the structure presented below:

- Define clear targets;
- Define key performance indicators;
- Define actions to reach these targets;
- Define a monitoring plan, to both identify opportunities to address the challenge and that allows to evaluate the effectiveness of the actions.

An effective Intervention Strategy should establish a clear, ambitious, but still achievable and measurable target and its related key performance indicators (KPIs), allowing the evaluation of the evolution of the process. To achieve these goals, specific and feasible actions should be proposed and implemented, followed by the definition of a monitoring and control plan, allowing the Strategy to be permanently assessed and adjusted.

2.4.1 Targets

In addressing a certain challenge at a school, it is essential to establish targets that define the desired outcomes or objectives to be achieved. A target serves as a clear and measurable goal that guides efforts and actions towards a specific purpose. Targets can be either imposed by the challenge itself, indicating the desired outcome, or they can be defined based on the available resources and capabilities of the school. By identifying targets, we create a framework for planning and implementation, allowing us to focus our efforts and allocate resources effectively. Targets provide a sense of direction, helping to align activities and measure progress towards addressing the challenge. They also provide a basis for evaluation, enabling us to assess the effectiveness of strategies and interventions. In summary, identifying targets is crucial as it the base to define a roadmap and measurable objectives, ensuring a structured approach in tackling challenges at a school.

2.4.2 Key Performance Indicators (KPIs)

A key performance indicator (KPI) is a quantifiable metric used to assess and measure the performance and progress of specific objectives or goals related to a certain challenge at a school. KPIs provide a tangible and measurable way to track the success or effectiveness of initiatives and interventions. The KPI definition is a multi-stage, iterative and highly collaborative process, involving key stakeholders and integrating physical, technological, sociological, educational and behavioural aspects. By identifying KPIs, the ENERGE Club establish clear benchmarks against which progress can be measured, allowing them to monitor the impact and effectiveness of our efforts. KPIs help in objectively evaluating the performance of different strategies, interventions, or initiatives, enabling informed decision-making and adjustments as necessary.

2.4.3 Actions

Considering that the school community is already aware of the challenge, and its target, in the context of their environment, it holds the necessary information to start planning actions. Based on the contextualization and the interactive activities, workshops and lectures the ENERGE Club (EC) get inputs and suggestions from the stakeholders, that should be included in the list of Actions.

From all these references, it is possible to establish a set of Actions to achieve the challenge's Target. Reminding that during the intervention process, the results from ongoing monitoring will allow to evaluate the effectiveness of the activities and eventually indicate new ones.

2.4.4 Monitoring Plan

The Monitoring Plan should be defined based on the information obtained during the Context Analysis, to allow the comparison to KPIs and to assess the effectiveness of the intervention activities.

The Monitoring Plan must contain a detailed description of the parameters to be measured, the definition of the technical specifications of devices, as well as their location and periodicity of the monitoring. The correct evaluation of the acquired data in the respective time interval must be analysed versus the objectives of the Monitoring Plan.

Once the monitoring system is installed the Greengage Platform also provides the possibility for the school community to interact with the done measurements. It allows students to understand the impact of different actions and how to achieve the targets. The current step of Implementation and Monitoring is essential to analyse the effectiveness of the strategy and to provide the ENERGE Club (EC) and the school community with information to discard actions with no impact and to identify new ones to be applied. A permanent feed-back control is proposed to achieve the final objective. In this phase, the involvement of the different actors is essential to build a successful and appealing strategy. This can be done initially through the Greengage platform, to check the suitability of activities and materials, but it is also important to organize activities and workshops where the school community works together.

For this phase, there's again the possibility to do only with internal resources, based on references from similar activities, nevertheless it can also be managed by the ENERGE Learning Community. In this context, the ENERGE Club leads the process, proposing activities to involve the rest of the community. Alternatively, the same process can be done with the support of ENERGE experts, contributing with their experience to accelerate the results. This is a rich learning opportunity to enhance resilience.

2.5 Implement, Monitor, Evaluate and Adapt

During this step, the strategy is implemented, monitored, and adapted to enable the school to achieve its defined targets. Monitored data is compared to performance indicators to evaluate actions, providing an opportunity for the ENERGE Learning Community to learn from previous steps and develop resilience skills to adapt the process to reach the common target.

Following implementation, the monitoring, analysis of indicators, and interaction with the school community should provide information to evaluate actions that lead to a continuous feedback control process. This process involves regularly measuring actual values and making adjustments to ensure that desired reference values are achieved, and targets are met. To assess the progress of the process, the ENERGE Club should define a survey that is conducted prior to the start and repeated periodically to track its evolution.

This ongoing improvement phase is crucial for periodically adapting the strategy through a learning process that enhances the effectiveness of actions. It also serves as a source of lessons

learned that should be carefully analysed and discussed by the ENERGE Learning Community. This step is essential for developing resilience skills in the school environment, which are necessary for addressing future challenges.

In this step the school is acting as a living laboratory, providing a rich opportunity for experiential learning, for the entire school community. The record of these activities, including efforts with no results, provide the necessary background to go beyond and reach the target. It enhances the resilience of the environment and allow replicability in households.

3.0 ENERGE Best Practices & Examples

During the ENERGE Project activities on social, technical and educational fields were developed within the 13 demonstration schools, seeking to sensitize stakeholders and develop an educational framework to address the challenge of reducing their primary energy consumption without major renovation.

With this very interactive-based method, the ENERGE project was greatly impacted by the pandemic, confirming the need for a group of people inside the school wanting to push it forward, from different groups and decision levels. The crisis also proven the need for a way to communicate beyond presential activities. It showed the entire world, but specially this project, that it is essential to use the new technologies to interact, engage and bring people from different countries closer, to share and achieve new goals together. Besides, the activities realized with the demonstrations showed that even though they were all secondary schools, it was a very heterogenous environment, demanding activities to be adapted.

In this context, the concept of using a learning community to reach the target on primary energy savings allows the schools to learn while addressing the challenge. The ENERGE Learning Community needs a leading body, particularly at the beginning, to define the objectives, and the working rules. In the ENERGE project, this group was called the ENERGE Club. Each school had their own Club, that was for the link with the project.

The importance to involving as many stakeholders as possible in the ENERGE Learning Community and the ENERGE Club was identified during the project. To address a challenge such as reaching energy savings through operational and behavioural adjustments, it is necessary to involve many spheres in the institution. The ENERGE project showed that the sooner the different players are supporting the project, the better and faster are the results. Checking the environment readiness requires identifying, contacting, and advising the stakeholders, on the plans, is essential to reach the goals. Making them aware and checking what is already in place, might allow the link with other initiatives, besides promoting a space of cooperation.

From co-design sessions with the ENERGE Clubs from the demonstration schools, the Greengage platform was developed as a tool to support dissemination and engaging activities with the rest of the school ecosystem. It allows the ENERGE Learning Community to interact with

the community to participate on the process, while providing them a space to follow and evaluate the progress, besides learning basic concepts, that can be replicated at home. The platform is displayed in public places at school, with interactive stations. At the same time, it offers the students the possibility to access it by their own devices, which provides an expansion of the impact area.

Within the framework of the project, the partners proposed activities for the pilot schools, seeking to contextualise the challenge. It started with a collection of general data about the institutions, followed by a sociological and behavioural study with the school community, and technical analysis of the installations. This contextualization proved to be an essential step to define actions tailored to each specific environment. In the ENERGE project, the Greengage platform proposed a game to reach different profiles in the community. The game was composed by questions that would allow to check compatibility and applicability of different activities, providing the ENERGE Learning Community to adapt actions to the environment.

The contextualisation of the ENERGE project's specific target, allowed to define Key Performance Indicators (KPI), actions and a monitoring plan adapted to the schools' environment. These elements composed the intervention strategy. The strategy must be implemented, and while the process evolves, it is important to evaluate, re-contextualize and adapt it. This stage enables continuous learning and supports the development of resilience skills within the ENERGE Learning Community and in the whole school environment.

3.1 ENERGE Learning Community and ENERGE Club

At the beginning of the ENERGE Project, each school defined an ENERGE Club (EC), that would be responsible for interacting with the project partners, participating on the different proposed activities, and on disseminating the information on the school environment, working as a sort of ambassadors.

The experience showed that, the ENERGE Learning Community can be initiated by one person, i.e. a teacher that is interested on addressing a challenge, such as reducing the primary energy consumption. However, to be able to develop and implement a strategy that reaches the school community, establishing an ENERGE Club (EC), including representatives from different groups in the community, has proven to be of great value. This Club may use interaction activities such as workshops, fairs, and tools like the Greengage platform, to interact and engage with the rest of the community.

In the ENERGE project, the ENERGE Club was typically composed by 1 to 2 teachers and around 5 students. This methodology, suggests a broader approach for the ENERGE Club (EC), involving other stakeholders, based on the experience acquired during the project time. Many activities showed that the engagement of players from different spheres, leads to higher levels of support, and thus effectiveness of the activities.



Figure 7: ENERGE Club – Cookstown High School

The ENERGE project also showed the importance of a clear definition the dedicated time, tasks and responsibilities of the members. This leads to a better development of activities. It allows the collaborators to plan and search for necessary resources.

In certain schools, the ENERGE Club undergoes changes over the course of the project, which may be due to factors such as students completing their studies or teachers transitioning to other schools. Additionally, people's interests may shift over time. To maintain a motivated group, it is important to establish a chronogram that allows for renewal without losing the historical context. Recording activities is also essential to the learning process and enables the ENERGE Learning Community to continue evolving over time while staying true to its original goals.

3.2 Environment Readiness

Based on the lessons learned from the ENERGE Project, it is recommended that the ENERGE Club, responsible for implementing the ENERGE Methodology in their secondary school, take the time to understand the process and best practices, as well as evaluate the necessary resources and readiness of the environment. This includes identifying key stakeholders, assessing their openness to get involved, and determining if the necessary resources are available. If the evaluation reveals that the environment is not yet ready for the process, the best practices outlined in this section can provide insight into the steps that need to be taken before implementation can begin. By taking these preparatory measures, schools can help to ensure a successful and effective implementation of the ENERGE Methodology.

As a key component of the deliverable DT1.1.1 – Demonstration Site Assessment and Analysis, the ENERGE site managers identified general information pertaining to the ownership, management, and governance of the demonstration schools. This step is crucial for determining the readiness of the environment for implementation of the ENERGE Methodology. By collecting this information, it is possible to identify the primary stakeholders and contact points, which is vital for ensuring effective communication and collaboration throughout the implementation process.

The ENERGE site managers identified various types of ownership and management systems for the demonstration schools, including national ownership in Luxembourg, regional ownership in France, and local ownership in the Netherlands and Germany. The responsibility for school maintenance varies between schools, with some schools being responsible for their own maintenance, while others have specialized technical agencies and technicians for maintenance. Challenges in school maintenance and infrastructure include lack of financing, difficulty in seeking funding, and finding proper architects and enterprises for the operation of infrastructure.

The D.T.1.3 – Stakeholder Assessment, Behavioural and Attitudinal Strategy emphasizes various essential techniques for conducting stakeholder analysis, including: (a) stakeholder identification and classification through basic stakeholder assessment; (b) assessment of the focal system boundary; (c) formation of an internal working group, as well as stakeholder selection and recruitment via project-related ENERGE Clubs; (d) identification of stakeholder influence through the use of the power versus interest grid exercise; (e) stakeholder assessment survey; and (f) stakeholder engagement through role-playing techniques and group model building using Systems Practice.

3.3 Preparation

In the framework of the ENERGE project, partners conducted a comprehensive analysis of the context of the 13 demonstration schools, taking into account various factors such as social and behavioral, technical and operational, and educational aspects. This contextualization was carried out through a range of activities within the WP T1 Pre-Intervention Analysis, Baseline, and Stakeholder Engagement. The partners worked collaboratively to gather and analyze data from various sources, including stakeholders, to gain a deeper understanding of the specific needs and challenges facing each school. The findings from this analysis served as the foundation for the development and implementation of customized interventions that were tailored to each school's unique context and circumstances.

A checklist of parameters within multiple categories, such as general school information, occupancy, ownership and governance, building and classroom details, energy consumption, was defined on the D.T1.1.1 - Demonstration Site Assessment and Analysis and used to assess each demonstration site. It allowed not only to establish a baseline for measuring future project progress, but also to provide context regarding the buildings, community and usage modes.

In addition to identifying the school ecosystem and adjacent systems, the stakeholder assessment and attitudinal strategy conducted by ENERGE partners through D.T.1.3 also included a qualitative analysis of the stakeholders' perspectives, needs, and expectations. It aimed to

provided insights into the barriers and facilitators for implementing energy efficiency measures in schools and informed the development of a behavioural and attitudinal strategy to engage and motivate stakeholders. The survey performed in eleven high schools in six different EU countries further supported the development of the strategy by investigating the effectiveness of energy-saving campaigns and education programs on students' behaviours and attitudes towards energy consumption. By targeting pupils with these campaigns and programs, they learn energy-saving principles that they can apply not only at school but also at home, thus extending the impact of the ENERGE project beyond the school environment.

Based on the results of the sociological studies questionnaire, it can be inferred that providing students with the opportunity to practice energy conservation methods in their classroom can increase their confidence in their ability to conserve energy. This practical experience can serve as a stepping stone for implementing these methods on a larger scale, such as in their homes.



Figure 8: Qualitative sociological surveys of the ENERGE project

Deliverable D.T.1.4.2, titled "Post-Primary School Building Stock Audit Methodology," played a crucial role in identifying the areas with the most potential for energy savings within the demonstration schools. The methodology developed in this deliverable allowed for a detailed analysis of energy consumption in each school, including a breakdown of consumption by type. By comparing these consumption patterns with local benchmarks, areas for improvement were identified, and a strategy was developed to target those areas with the most significant potential for savings with relatively lower levels of investment or effort.

Developing an effective energy efficiency approach requires a thorough understanding of the current condition of a building, which can be achieved through an energy audit. To ensure consistency across all schools, a standard strategy for conducting energy audits must be established, which should include historical data and ongoing measurements. The audit involves determining the flow of energy through the building and analyzing the distribution and loss of energy during its transformation from various sources to the final consumers. Involving the school community in this process is essential to promoting engagement, experiential learning, and a more comprehensive understanding of the school's energy consumption patterns.

3.2.1 Greengage Platform

Through co-design sessions with students from demonstration schools, the Greengage Platform was specifically designed to meet their needs and requirements. As a result, it is a highly adaptable tool that allows for effective contextualization, information sharing, and evaluation of its applicability in their environment. Additionally, the platform serves as a means of disseminating fundamental concepts related to the challenge topic. During the monitoring phase, it enables the community to understand the impact of their actions and adjust their strategies accordingly.



Figure 9: Greengage platform co-design sessions

The Greengage platform has undergone changes and evolved based on user feedback and input from ENERGE Clubs. The latest version is designed to cater to diverse student profiles and serves as a communication channel for the school community, not limited to specific subjects but any challenges that the learning community may want to address.



Figure 10: Greengage platform being tested at the demonstration sites

In addition to facilitating interaction through the greenpoints and project tablets, the ENERGE project also sought to promote student engagement and ownership of the project through the distribution of QR codes. By providing students with access to the Greengage platform on their own tablets, they were able to more easily explore and engage with the project's resources, activities, and educational materials outside of the classroom. This approach was taken to not only encourage students to take a more active role in their own learning but also help to promote a culture of sustainability that extend beyond the school environment and into their daily lives. Through these efforts, the ENERGE project aimed to create a more holistic and comprehensive approach to environmental education that empowered students to make positive changes both in and outside of the classroom.

3.2.2 ENERGE Educational Modules

To ensure the success of future interventions that could potentially affect their environment, it is crucial for both students and teachers to possess a basic understanding of the subject matter. In order to achieve this goal, the ENERGE project established a teacher network, which was tasked with developing and testing educational modules aimed at providing students with essential knowledge of energy-related topics. The program's effectiveness and acceptability were evaluated by testing the modules in class. The knowledge gained from these activities would not only enable students to support energy-saving practices in their school environment but also promote the application of these practices in their homes.

The ENERGE teacher network was established In April 2020 to facilitate teachers and schools to sharing ideas for teaching Energy topics and support communication and collaboration across the ENERGE regions. Currently, the Network includes 19 teachers from 11 partner schools across six countries: France, Germany, Ireland, Luxembourg, Northern Ireland and the Netherlands. The focus of ENERGE teacher network are described over five phases (2020-2022).



PHASE 1: September 2019– May 2020

The first teacher network meeting was held on the 28th of May 2020. Educational opportunities for ENERGE across the interregional education models, formal and non-formal curricula were shared. The ENERGE Energy Literacy Framework was presented. Teachers were invited to contribute to the shared database of teaching and learning activities. The Home Energy Monitoring Tool was piloted by teachers in Ireland, Northern Ireland, and Germany.

Home monitoring tool piloted by teachers

Energy Literacy Characteristics (Framework)	
C1:	Students have a grounded understanding of the science and how energy is harnessed and used to power human activity.
C2:	Students understand the impact that energy production and consumption have on all spheres of our environment and society.
C3:	Students are sensitive to the need for energy conservation and the need to develop alternatives to fossil fuel-based energy resources.
C4:	Students are cognisant of the impact of personal energy-related decisions and actions on the global community; and
C5:	Students strive to make choices and decisions that reflect these attitudes with respect energy resource development and energy consumption

PHASE 2: January 2020 – October 2021

The second teacher network meeting was held on the 28th of September 2020. Teachers provided feedback on the alignment of the ENERGE framework with their subject curricula. The ENERGE Module Design Process was presented along with a timeline for future Teacher Network activities. Teachers engaged in Activity Sharing Sessions in October 2020 and teachers from France and Northern Ireland contributed 12 activities included in ENERGE Units.

Teachers share activities

ENERGE Units/Activities

1: My Energy Diary	7 activities
2: My Energy footprint	6 activities
3: Heat Transfer	9 activities
4: Testing a Module Building	3 activities
5: Energy Efficiency at School	3 activities
6: Global Warming	6 activities
7: Energy Generation	6 activities
8: Wind Energy	4 activities
9: Solar Energy	4 activities

PHASE 3: November 2020 – December 2021

The fourth teacher network meeting was held Tuesday 27th of April 2021. An overview of 9 sub-units (3 modules) were shared with members and teachers were invited to pilot activities with their students. The piloting of activities is ongoing up to end of 2021.

Teachers select activities to pilot

PHASE 4 March 2021 – December 2021

This phase will focus on reviewing feedback from teachers on piloting ENERGE activities and finalising the ENERGE Framework, Units and activities. The network members will discuss strategies (1 per region) for achieving ENERGE long term-objectives and a network meeting will be held in for May 2021.

Teachers provide feedback

PHASE 5 April 2021 – June 2022

The final phase will focus on the implementation of ENERGE framework and strategies in teacher education programmes in each region. Implementation Strategies will be developed with a regional focus and highlight cross-border collaboration. Meetings will be held with schools and governing bodies to discuss how the ENERGE framework, units and activities can be embedded in school curricula and activities. In April, the teacher network began to identify key stakeholders for engagement across the 6 ENERGE regions.

Achieving long-term ENERGE goals

Teacher Network Timeline Phases

PHASE 1	Exploration of opportunities for ENERGE in post-primary level education
PHASE 2	Design of ENERGE Framework and ENERGE Units.
PHASE 3	Development and piloting of ENERGE units & Activities
PHASE 4	Finalisation of ENERGE Framework, Units and activities
PHASE 5	Modules and Training Programme: Implementation Strategies (long term)

Figure 11: ENERGE Teacher network



Figure 12: Educational modules being presented to pupils

3.3.3 ENERGE Building Stock Audit Methodology

The School Building Stock Audit Methodology was applied to the pilot schools in the framework of ENERGE project and the results were compared to the local benchmarks. In each pilot school, a different level of the energy audit was performed, according to the available data. The energy audits were done starting from a visit, followed by documentation analysis, benchmarks definition, measurements, and analysis of the operational modes.

The specific primary energy consumption was calculated and from the comparison with local benchmarks, the subsequent steps were defined. Thermal models of the schools' buildings were done to check the energy distribution within the schools, while electric meters were used to identify the electricity consumption distribution within the buildings. These information supported the decision on where to focus energy savings strategies at these demonstration schools. Deliverable 4.2 – School Building Audit Methodology provides the steps done at the demonstration schools and the conclusions.

3.4 Strategy and Actions

3.4.1 Targets

Initially, the ENERGE project aimed to achieve a minimum of 15% reduction in total energy consumption at the demonstration site schools over the project period. However, COVID-19 responses, such as school closures and the need for increased ventilation procedures (such as opening windows) upon schools' return, affected typical energy use profiles and prevented ENERGE from achieving this goal.

The ENERGE project established its target prior to contextualization, which proved to be an effective approach for providing clarity and driving progress from the outset. However, as the objective was introduced from outside the schools, it sometimes posed a challenge. While schools

generally agreed with the objective, during the pandemic, reducing energy consumption and GHG emissions were not always their top priority.

Nevertheless, during the energy crisis of 2022, schools and institutional bodies prioritized the reduction of energy consumption. This resulted in increased efforts from the ENERGE project and greater interest, involvement, and support from stakeholders at different levels. It has been demonstrated that when the school community shows interest, the process becomes significantly more powerful and effective.

3.4.2 Key Performance Indicators (KPIs)

The report in Deliverable DT2.1.3 contains insights from key informant interviews with school-based stakeholders, such as principals and teachers. The report also includes a platform for gathering data on key performance indicators (KPIs) and a tool for visualizing KPIs as energy use/CO₂ emission tracking reports for all project schools. These reports aim to help school executives make informed decisions on energy savings. After analyzing the data and consulting with project partners and other stakeholders, a final list of KPIs was created. These KPIs align with the school building stock audit methodology, project energy use improvement strategies, and the Greengage platform for monitoring indoor environmental quality and energy consumption in project schools. Supporting materials are available in the appendices of the report.

3.4.3 Actions

The package of actions was formulated based on the previous steps taken. In addition to raising awareness and engaging stakeholders, the educational approach played a critical role in disseminating knowledge, promoting replicability, and fostering cooperation. It is essential to involve the pupils in this process to promote experiential learning. By building a foundation of basic knowledge through educational modules, the school community was better equipped to participate in defining and implementing energy-saving actions.

The ENERGE framework created a pack of teaching and learning teams and actions managing individual and societal energy efficiency attention. A pack of 3 modules with nine teaching and learning units consisting of 49 actions was designed. Each of the units is prepared to handle all five Energy characteristics (C1-C5), as well as advance the use of the student-centered pedagogies determined that contain:

- Problem and inquiry-based learning
- Design Engineering
- Community service action projects
- Gamification

The modules are as follows:

1. My energy efficiency: Focuses on personal energy consumption, the student's relationship with energy, and its impact on the environment.

2. Energy Efficiency at School: This module deals with heat transfer in buildings, energy consumption at school, and its environmental influence.
3. Sourcing & Protecting Energy: This module negotiates with the greenhouse effect, global energy systems, and the emission of GHGs.

To foster a sense of belonging and engage the school community in the D.T.3.1 - Carbon Reduction Intervention Strategy, a workshop was designed where demonstration schools could collaborate in defining the intervention strategy. To estimate the impact of the interventions, a series of steps were outlined, and the Intervention Strategy documents, including the catalog and description template, were created. However, these documents are subject to modification once the schools are exposed to the intervention, and the school stakeholders, including teachers, management, staff, and students, will make the necessary changes during the intervention selection workshops held in each demonstration school. The primary objective of these workshops is to assist schools in selecting and designing interventions that can be implemented for a specific period of time.

During the energy audit, the energy consumption of the demonstration schools was evaluated in relation to local benchmarks, which helped identify buildings that consumed more energy than the average. Excellent opportunities for energy savings are presented by these buildings. Major energy consumers can be identified by studying detailed consumption by type of use, which are also targeted opportunities for energy savings. Significant savings can be achieved by analysing technical installations and operational modes without significantly affecting user routines.

The energy audit outputs were shared with the school community, enhancing engagement and the feeling of belonging, while proposing an educational experience, by making the people more aware of energy consumption benchmarks for buildings. The ENERGE Learning Community shared with the rest of the school their findings, indicating the opportunities expected to have a good impact, to be investigated and planned.

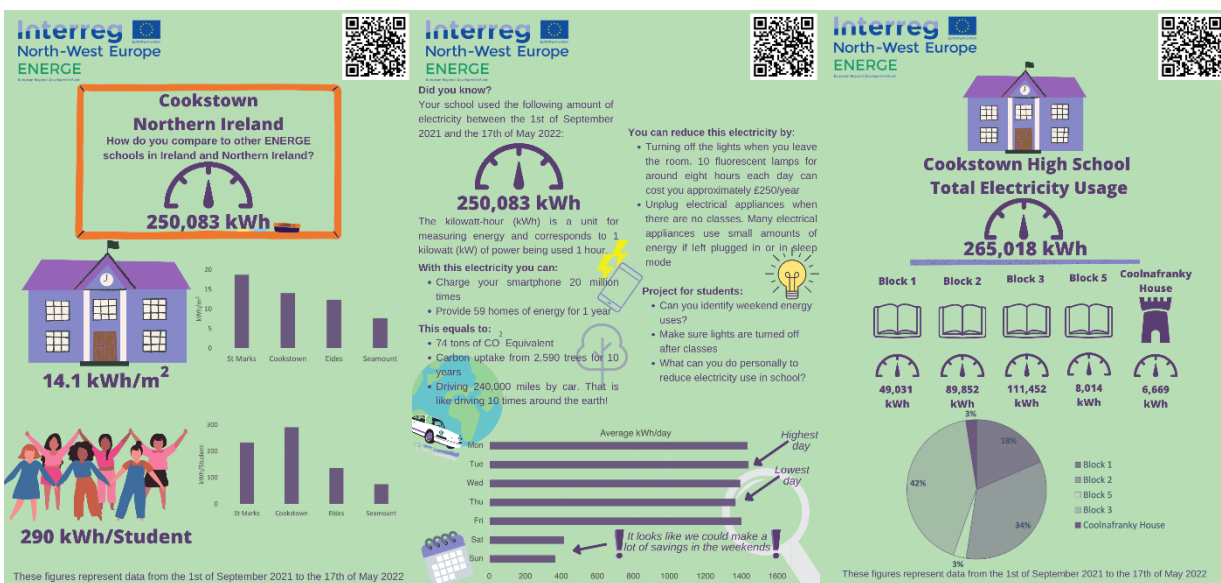


Figure 13: Example of energy consumption analysis shared with the broader public

The ENERGE framework suggests minor intervention measures to address thermal issues in older buildings. Firstly, activities should be redistributed to concentrate usage in one area during off-peak hours. Targeted refurbishment measures can then be taken, such as insulating radiator niches, repairing or replacing radiator valves, and equipping external sunblind and stores with electric drives for easier use. Renewing window seals or adopting physical movable barriers can also prevent air drafts. Lighting can be modernized to improve efficiency. For rooms with mechanical ventilation, a CO₂ meter can activate/deactivate the system to avoid energy consumption in unoccupied rooms. Finally, passive cooling measures can be used during heatwaves in summer.

3.4.4 Monitoring Plan

The ENERGE project's monitoring plan was designed to measure energy consumption accurately. The project analysed energy bills and employed a strategic placement of electric meters to ensure accurate readings of specific parts of the buildings. To maintain comfort levels of operation during the reduced mode, comfort sensors were installed in strategic locations within the school. The deliverable D.T.2.2 – Meter and Sensor Installation presents the details on the equipment and the conditions to be respected for the installation.

The electrical meter measures the electrical energy by the means of 9 currents sensors from 1 to 2000 amps. This device is associated with a Sigfox metering transmitter.



Figure 14: (a) Electrical meter; (b) Associated transmitter; (c) Setup example

The current measurement is carried out by a current clamp sensor that snaps around the electrical wires. The type of sensor is chosen according to the intensity of the current to be measured:

- Rogowski coil from 100 to 2000 A (consumption of the entire school);
- Standard size current clamp from 20 to 200 A (consumption of the entire building);
- Miniature size current clamp from 10 to 100 A (a floor or a classroom);
- Mini-transformer with output voltage.

According to the D.T.2.2 – Meter and Sensor Installation, each pilot school has two sets of electric meters, that should be placed as follows:

- Install one meter at a point to measure the total electricity consumption of the school. At this location it may be possible to also monitor sub-sections of the building using the other channels on the meter;

- It is recommended to install a second meter to measure electricity loads at specific locations of the school, which will be covered by an indoor climate sensor;
- Based measurements and qualitative data gathering (e.g. a busy classroom or a classroom with substantial electrical equipment). As such, meter measurement is coupled with sensor measurements and qualitative data.
- Measuring electricity loads includes monitoring the lighting circuits, the electrical plugs' circuit and the electric heating circuit (if the building has electric heaters).

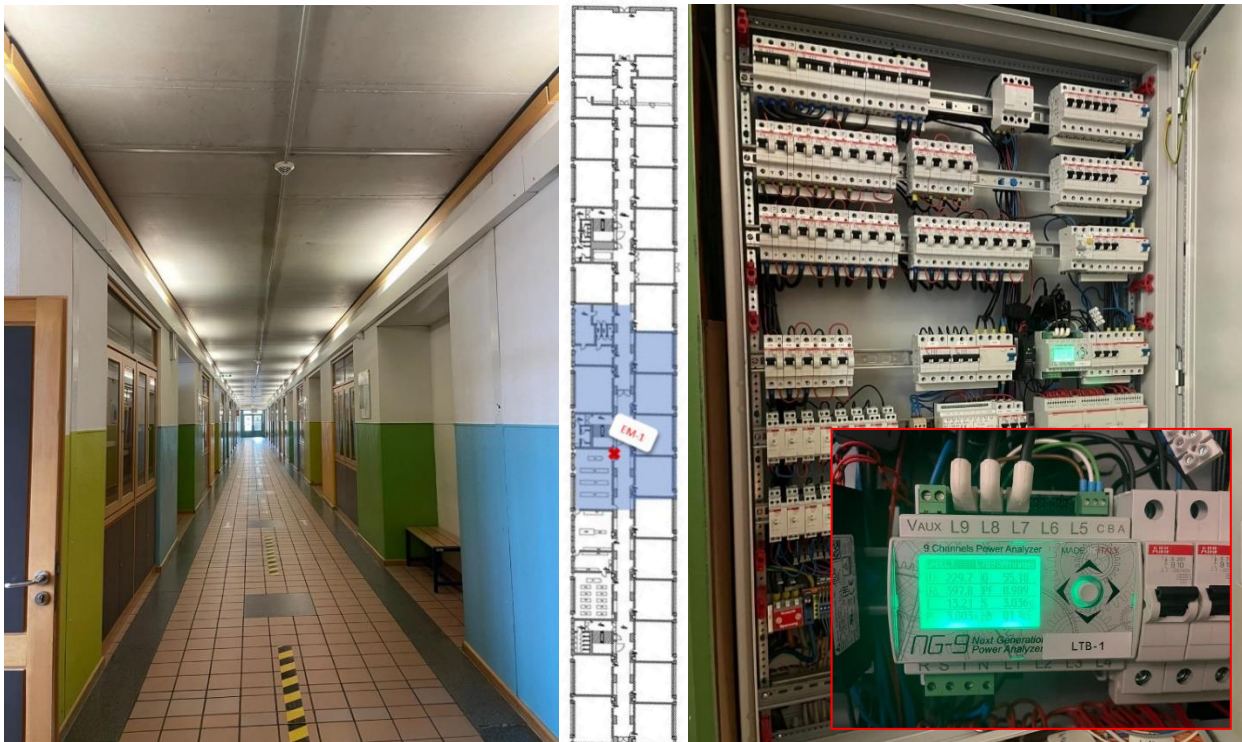


Figure 15: (a) Demonstration school; (b) School's plan showing the measure area; (c) Cabinet with electric meter installed; (d) Electric meter– Example

The comfort monitoring was done using the sensor box developed by Elsys. It includes the following components:

- Sensors: humidity, temperature, CO₂, light, movement and sound.
- Communication component: LoRa radio module
- LED feedback: Network Connection detected

Sensor [unit]	Accuracy	Resolution
temperature [°C]	+/- 0.5°C	0.1°C
relative humidity [%]	+/- 2%	0.1%
CO ₂ [ppm]	+/- 45ppm	1 ppm
light [lux]		
movement		5 Mt x 90 degrees
Sound [db]	+/- 5db	1db



Figure 16: Comfort parameters measurements accuracy and resolution

According to the D.T.2.2 – Meter and Sensor Installation each pilot school has 4 sets of comfort sensors, 3 measuring temperature, relative humidity, CO₂, light and movement, and 1 measuring temperature, relative humidity, sound, light and movement. The sensors should be placed according to the following:

- Closed or closable regions should have 1 climate sensor, including CO₂ for small areas and sound-level for larger regions with a higher number of people;
- Sensors should better be placed out of normal reach;
- Climate sensors should be placed at a height of 1.5 to 2.5 meters, and at least 0.5 but preferably 1 meter or more below the ceiling;
- Climate sensors should be placed vertically (on a wall) unless measuring light conditions is its primary aspect;
- Climate sensors should be placed in such a way that there is free airflow around the sensor but no cold or warm draughts (not close to doors, vents, heaters, etc);
- Climate sensors should not be placed in free view of powerful infra-red sources (sun, infra-red heaters);
- If measuring light trends is important, sensors should not be placed in direct (nor in strong reflections of direct) sun-light;
- Climate sensors with sound-level meters should not be placed close to equipment generating noise;
- Occupancy sensor should be placed under a desk. The sensor should be about half a meter from the normal sitting position. The side eye of the sensor should be directed towards the normal sitting position.

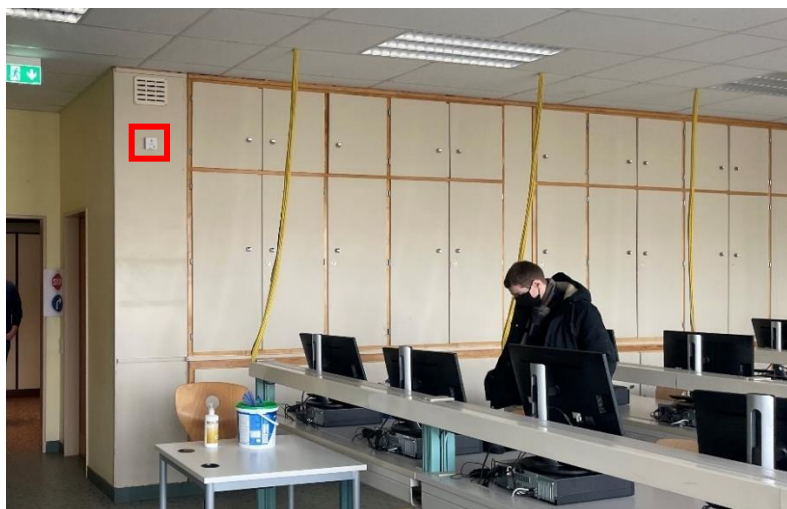


Figure 17: Comfort sensor installed in a classroom

All the data collected is recorded and transmitted to a live platform through the Greengage platform. This platform allows the schools to track the evolution of their consumption and comfort levels. The approach is designed to ensure consistent and proper monitoring of energy consumption and indoor conditions like temperature, humidity, noise levels, and lighting.

In addition to monitoring, the ENERGE project also conducts a qualitative study on students and staff members' perceptions of the indoor climate. This study aims to provide insight into how the indoor environment affects learning outcomes and well-being.

3.5 Implement, Monitor, Evaluate and Adapt

After defining the intervention strategy and specifying the actions, the next step is to proceed with their implementation. This is where the monitoring system plays a crucial role by providing valuable feedback on the effectiveness of the actions taken. By evaluating the results of the previous steps, it becomes easier to plan and execute the next steps. This iterative process ensures that the intervention strategy is optimized for maximum impact, and that the desired outcomes are achieved.

As previously mentioned, the ENERGE project was heavily impacted by COVID-19 safety measures. During winter 2021, more rooms were utilized to reduce the number of pupils per classroom, and ventilation rates were increased significantly to prevent the virus from spreading within the buildings. The monitoring of energy consumption data revealed that, despite the higher energy consumption resulting from excessive ventilation, the comfort levels decreased.

In 2022, as a response to the reduction in COVID-19 infections and the ongoing energy crisis, the ENERGE project adopted reduced operational modes which resulted in a significant reduction in energy consumption. Despite the milder winter, some buildings still experienced lower comfort levels, highlighting the need for further analysis of reduced operational modes, adapted to each building's specific characteristics. This can be combined with minor renovations proposed earlier to enhance energy efficiency and ensure optimal comfort levels.

4.0 Conclusion

The ENERGE Methodology's final version was developed based on previous deliverables of the ENERGE Project, which drew upon partners' experiences and lessons learned. The methodology emphasizes the importance of establishing a Learning Community to enhance the resilience skills of the school ecosystem. The idea is to enable schools to identify challenges and adapt references to their context to define effective, tailored solutions. To facilitate this, the web-based platform Greengage is used, which allows for strong interaction with the school community, enabling contextualization and analysis, and opening a communication channel for stakeholders to actively participate in the definition of the intervention strategy, from target definition to actions needed to achieve them.

5.0 Opportunities and implications for ENERGE

In this final phase of the project, the ENERGE Methodology represents the opportunity for future exploitation of the outcomes of the project through the ENERGE Alliance. This final version was characterized by an intense exchange with the partners and the Final Version is the opportunity to propose a sound and useful strategy, interesting for schools willing to address sustainability-related challenges, by strengthen their resilience skills.

Appendix

1 - List for checking ENERGE Learning Community readiness

	YES	NO
Organisational		
School management has publicly shown support for the creation of an ENERGE Learning Community.		
There is a champion who can publicly advocate for the continuation of the ENERGE Learning Community.		
School's maintenance staff is willing to support the ENERGE Club with challenge-related interventions.		
School's administrative staff willing to support the ENERGE Club with challenge-related interventions.		
Implementation of a learning community is in line with organisational, regional and education system goals.		
Your school has a positive relationship with parents, relevant departments, agencies and/or service providers in the wider community.		
Economic		
There is budget available for the challenge-related interventions.		
If no budget is available, potential funding sources have been identified.		
An analysis has been done of the funding needed to maintain the Learning Community.		
Technical		
The ENERGE Club can access to the school's energy & water consumption data.		
The ENERGE Club can access to energy & water billing data.		
The ENERGE Club can access information about the technical installations of the school.		
The ENERGE Club can access to indoor-climate data (if available).		
The school has an intranet or extranet in place, accessible for all staff and students.		
The ENERGE Club can install monitoring devices		
The ENERGE Club can use the school's network		