

D.T3.5.3 CRITERIA FOR MONITORING RESULTS OF THE ENERGY SAVING PLAN

Version 01
01.03.2019

Edited by PP4 KSSENA





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ABSTRACT

Deliverable D.T3.5.3 Criteria for monitoring results of the energy saving plan is a technical document in which we will describe the monitoring system based on the approach Plan - Do - Check - Act (PDCA).

The energy management system - EMS, enables schools to achieve the set goals and take actions as needed to improve its energy performance. The EMS encourage and remind all actively involved to constantly improve and actively monitor the progress to reach the goal of maximum energy savings potentials. The PDCA approach is a four-step model for achieving greater results. Just as a circle has no end, the PDCA approach should be repeated again and again for continuous improvement.



1. PLAN

First steps in PDCA approach are to conduct the energy review and establish the energy baseline, energy performance indicators, objectives, targets and action plans that will deliver results which will improve energy performance. These data and evaluations form the basis of the following improvement processes. They also make it possible to identify potentials for improvement of energy efficiency.

Energy baseline

To set the baseline year it is recommended to collect the energy consumption for three years or at least for one whole year. It is necessary to verify that no major measures have been implemented on the building system, during the defined period, because such data is not correct (example: replacement of energy carrier for heating). In case that the three years data are not available, it is required to collect the data that extends for at least one year to account for the effects of outdoor temperatures in all seasons.

This kind of data can be easily collected from smart metering systems. When becoming a “Smart school” the investment in smart meters is mandatory. *(For more, read D.T3.5.2 Joint methodology for monitoring results)*

Objectives and targets in action plan

Objectives and targets are set after we conduct the energy review in the action plan. It should include:

- Designation of responsibility
- Time frame by which individual targets are to be achieved
- A statement of the method of verifying the results

Action plans shall be documented and updated at defined intervals.

We have defined the energy baseline, objectives and targets in the D.T1.6.1 Energy guardian smart school management plan.



2. DO

Next step is based on prepared action plan and other outputs resulting from the planning process. The designated energy teams can now start with implementation and operation of action plan.

Firstly, you should ensure that all persons that will be working in energy team has received or have the appropriate education, trainings, skills and experiences for the implementation of measures. If not, you should organize the educational trainings and workshops for preparing them for work. In Energy@school project our energy teams are represented by senior and junior energy guardians.

Energy team should be familiarized with:

- their roles, responsibilities in achieving the targets and objectives,
- the benefits of improved energy efficiency in their school since that is the best motivation to get them to do the work,
- how their activities and behaviour change contribute to the achievement of energy objectives and targets.

Communication

Internal communication is essential to managing change. It keeps the team updated of implemented activities, measures, incentives and successes, which strengthens commitment, motivation and participation.

Design

When the school is considering of buying new and modified equipment, which can have a significant impact on its energy performance, it shall consider the energy efficiency improvement opportunities.

3. CHECK

The third step is to verify the results obtained from the action plan. The action plan that was implemented in the “Do” phase must continually be checked to ensure that the measures are effective and whether the defined objectives were achieved or not. The results can now be compared to the previously-established objectives in action plan. Collecting the data and preparing reports will give us the sufficient information for defining new measures and actions if necessary.

Every school involved in Energy@school project has successfully prepared the action plan D.T1.6.1 Energy guardian smart school management plan. In this step you have to make an energy review of your building so you can compare the data of past year to the data of baseline (defined in D.T1.6.1). Also check which of planned measures were actually implemented in the past year.

When calculating the achieved results there are many factors to take into account:

- Has the number of pupils and school staff changed in comparisons to baseline year? (This can affect the use of electricity in your school.)
- Were there any major measures implemented on the school systems that weren't planned in action plan?
- Did the school bought new, more energy efficient equipment for offices or kitchen?
- You have to consider about impact that measures implemented from the action plan has.
- Number of temperature degree day has a significant impact on difference in thermal energy use.

All of these factors above have to be taken into account when you would like to represent the achieved objectives and targets. It is rather complex process to define the affect of organizational measures on achieved results.

4. ACT

In the final step “Act” the measurements are broken down in reports. These form the basis for further improvement and shows the possibilities for more energy savings. After all the steps, you can start with the first step of the PDCA approach again to keep the continuous improvement of the energy efficiency in your school. Best way is to upgrade and improve the previous version of D.T1.61 EGSSMP and start the implementation phase again.

As you will see by now it is always better to set the objectives and targets that are easily achievable to get even greater motivation for energy team and to all that are considering joining.



5. Implementing Plan - Do - Check - Act approach

PLAN

We have prepared energy action plan for each school involved in the D.T1.6.1 Energy guardian smart school management plan.

DO

Step do was implemented with measures and through trainings for Senior and Junior energy guardians, educational workshops, cultural campaigns, other activities etc.

CHECK

In the step check we have to make an overview of successfully implemented measures and actions in previous year. Here you describe all successfully implemented measures and if any significant change has occurred in last period. Prepare a list for each involved school.

ACT

In the step act we have to update the energy action plan with new measures. Here you can describe if during the previous year you have encounter an opportunity to implement measures to achieve more saving. Describe if you have any measures or significant changes planned for the next year.



6. CONCLUSIONS

The PDCA approach can be implemented in a number of actions, whether in educational routines or other school related activities such as planning, implementing, measuring and promoting continuous improvement.

The benefits that PDCA approach brings to the school:

- reliability and effectiveness in the execution of activities,
- process optimization,
- continuous improvement,
- best practices in the school routine,
- cost reductions,
- detailed and accurate vision of the process in which it is inserted,
- team productivity and cooperation,
- it is possible to understand that the PDCA cycle is a basic but very efficient tool when it comes to solving problems in school.

The PDCA approach is good tool that will support you when becoming a “Energy smart school”. It will help you achieve the set objectives and targets and improve the energy efficiency in school and raise awareness on use of renewable energy sources in school, at home and in world.



7. MONITORING REPORT

7.1. PP1 - UNIONE DEI COMUNI DELLA BASSA ROMAGNA IT

IMPLEMENTED MEASURES AND ACTIVITIES			
ITALY - 3. Primary School Fusignano (RA)			
CATEGORY heating/ electricity)	TITLE OF THE MEASURE	WHO PARTICIPATED?	Was the measure provided in the context of E@S project?
Heating and electricity	Installed energy smart meters	Expert, Senior energy guardian	Yes
Heating	Temperature check	Teachers are responsibility for checking the temperature in the class.	Yes
Electricity	Check the light	A student has the task of checking that lights are turned off when leaving the classroom for recreation. A student is in charge of checking that lights are off when leaving the classroom to go to the canteen A student has the task of preventing that the lights are turned off when leaving the room to go home	Yes
Electricity	Check the electrical boiler	A student has the task of checking that boilers are turned off before the weekend and before the holiday. In negative case, teachers (SEG) need to be advised.	Yes
Electricity	Check the informatics room	A student has the task of checking that computer room switches are turned off to avoid even consumption in standby when the classroom is not used over the weekend and holidays.	Yes
MEASURES TO BE IMPLEMENTED			
ITALY - 3. Primary School Fusignano (RA)			
CATEGORY heating/electricity)	TITLE OF THE MEASURE	WHO WILL PARTICIPATE?	Did you decide for the measure based on Energy@school activities?
Heating and electricity	Installed energy smart meters	Expert, Senior energy guardian	Yes
Heating	Temperature check	Teachers are responsibility for checking the temperature in the class.	Yes
Electricity	Check the light	A student has the task of checking that lights are turned off when leaving the classroom for recreation.	Yes



		A student is in charge of checking that lights are off when leaving the classroom to go to the canteen A student has the task of preventing that the lights are turned off when leaving the room to go home	
Electricity	Check the electrical boiler	A student has the task of checking that boilers are turned off before the weekend and before the holiday. In negative case, teachers (SEG) need to be advised.	Yes
Electricity	Check the informatics room	A student has the task of checking that computer room switches are turned off to avoid even consumption in standby when the classroom is not used over the weekend and holidays.	Yes

IMPLEMENTED MEASURES AND ACTIVITIES

ITALY - Secondary school Luigi Eraldi - Fusignano (RA)

CATEGORY heating/electricity)	TITLE OF THE MEASURE	WHO PARTICIPATED?	Was the measure provided in the context of E@S project?
Heating and electricity	Installed energy smart meters	Expert, Senior energy guardian	Yes
Heating	Temperature check	Teachers are responsibility for checking the temperature in the class.	Yes
Electricity	Check the light	A student has the task of checking that lights are turned off when leaving the classroom for recreation. A student is in charge of checking that lights are off when leaving the classroom to go to the canteen A student has the task of preventing that the lights are turned off when leaving the room to go home	Yes
Electricity	Check the electrical boiler	A student has the task of checking that boilers are turned off before the weekend and before the holiday. In negative case, teachers (SEG) need to be advised.	Yes
Electricity	Check the informatics room	A student has the task of checking that computer room switches are turned off to avoid even consumption in standby when the classroom is not used over the weekend and holidays.	Yes
Electricity	Check the PV production	Check the daily and weekly electric production of the PV system and share with the daily and weekly estimated electric consumption.	Yes



MEASURES TO BE IMPLEMENTED			
ITALY - Secondary school Luigi Eraldi - Fusignano (RA)			
CATEGORY heating/electricity)	TITLE OF THE MEASURE	WHO WILL PARTICIPATE?	Did you decide for the measure based on Energy@school activities?
Heating and electricity	Installed energy smart meters	Expert, Senior energy guardian	Yes
Heating	Temperature check	Teachers are responsibility for checking the temperature in the class.	Yes
Electricity	Check the light	A student has the task of checking that lights are turned off when leaving the classroom for recreation. A student is in charge of checking that lights are off when leaving the classroom to go to the canteen A student has the task of preventing that the lights are turned off when leaving the room to go home	Yes
Electricity	Check the electrical boiler	A student has the task of checking that boilers are turned off before the weekend and before the holiday. In negative case, teachers (SEG) need to be advised.	Yes
Electricity	Check the informatics room	A student has the task of checking that computer room switches are turned off to avoid even consumption in standby when the classroom is not used over the weekend and holidays.	Yes
Electricity	Check the PV production	Check the daily and weekly electric production of the PV system and share with the daily and weekly estimated electric consumption.	Yes
Electricity	Replacement of remaining old lighting with LED lighting	Expert, Senior energy guardian	Yes
Heating	Replacement of remaining inefficient thermostatic valves	Expert, Senior energy guardian	Yes



IMPLEMENTED MEASURES AND ACTIVITIES

ITALY - 3. Primary school Il Cerchio - Fusignano (RA)

CATEGORY heating/electricity)	TITLE OF THE MEASURE	WHO PARTICIPATED?	Was the measure provided in the context of E@S project?
Heating and electricity	Installed energy smart meters	Expert, Senior energy guardian	Yes
Heating	Temperature check	Teachers are responsibility for checking the temperature in the class.	Yes
Electricity	Check the light	A student has the task of checking that lights are turned off when leaving the classroom for recreation. A student is in charge of checking that lights are off when leaving the classroom to go to the canteen A student has the task of preventing that the lights are turned off when leaving the room to go home	Yes
Electricity	Check the electrical boiler	A student has the task of checking that boilers are turned off before the weekend and before the holiday. In negative case, teachers (SEG) need to be advised.	Yes
Electricity	Check the informatics room	A student has the task of checking that computer room switches are turned off to avoid even consumption in standby when the classroom is not used over the weekend and holidays.	Yes

MEASURES TO BE IMPLEMENTED

ITALY - 3. Primary school Il Cerchio - Fusignano (RA)

CATEGORY heating/electricity)	TITLE OF THE MEASURE	WHO WILL PARTICIPATE?	Did you decide for the measure based on Energy@school activities?
Heating and electricity	Installed energy smart meters	Expert, Senior energy guardian	Yes
Heating	Temperature check	Teachers are responsibility for checking the temperature in the class.	Yes
Electricity	Check the light	A student has the task of checking that lights are turned off when leaving the classroom for recreation. A student is in charge of checking that lights are off when leaving the classroom to go to the canteen A student has the task of preventing that the lights are turned off when leaving the room to go home	Yes



Electricity	Check the electrical boiler	A student has the task of checking that boilers are turned off before the weekend and before the holiday. In negative case, teachers (SEG) need to be advised.	Yes
Electricity	Check the informatics room	A student has the task of checking that computer room switches are turned off to avoid even consumption in standby when the classroom is not used over the weekend and holidays.	Yes



7.2. PP2 - MIASTO BYDGOSZCZ - PL

IMPLEMENTED MEASURES AND ACTIVITIES			
POLAND - Zespół Szkół nr 12 im. Jana III Sobieskiego, Bydgoszcz			
POLAND - Zespół Szkół Budowlanych im. Jurija Gagarina, Bydgoszcz			
POLAND - Zespół Szkół Mechanicznych Nr 2 im. Tytusa Maksymiliana Hubera, Bydgoszcz			
POLAND - Szkoła Podstawowa Nr 65 z Oddziałami Integracyjnymi i Sportowymi im. Czesława Tańskiego, Bydgoszcz			
POLAND - Zespół Szkół Medycznych im. E. Warmińskiego, Bydgoszcz			
CATEGORY (heating/electricity)	TITLE OF THE MEASURE	WHO PARTICIPATED?	Was the measure provided in the context of E@S project?
Electricity	Installed energy smart meter	External Expert, Municipality	Yes
Heating	Installed energy smart meter	External Expert, Municipality	Yes
Heating and electricity	Installed sensors	External Expert, Municipality	Yes
Heating	Installed 30 thermostatic valves	External Expert, Municipality	Yes
Electricity	50 Led lamps installed	External Expert, Municipality	Yes
Heating and electricity	Tablet to monitor energy usage and to use the E@S app	Municipality, Senior and junior energy guardians	Yes
Heating and electricity	Laptop to overview and control system of internal energy usage	Expert, Senior energy guardian	Yes
Heating	System for automatic control of temperature depending on internal and external conditions	External Expert, Municipality	Yes
Heating and electricity	Training on energy usage	Expert, Senior and junior energy guardians	Yes
Heating and electricity	Training on E@S app	Expert, Senior and junior energy guardians	Yes
Heating and electricity	Campaigns on climate change and energy savings	Municipality, Senior and junior energy guardians, other pupils	Yes
Heating and electricity	Study visit to places with exemplary energy saving and RES solutions	Expert, Senior and junior energy guardians	Yes
Heating and electricity	Implementation of the E@S game	Senior and junior energy guardians	Yes
Heating and electricity	Improving energy status of classrooms through solving ghosts	Senior and junior energy guardians	Yes
Heating	Adjustment of temperatures to heat comfort zones	Senior and junior energy guardians	Yes



IMPLEMENTED MEASURES AND ACTIVITIES			
POLAND - Zespół Szkół Ogólnokształcących Nr 4 im. Kazimierza Wielkiego, Bydgoszcz			
POLAND - Zespół Szkół Samochodowych, Bydgoszcz			
CATEGORY heating/electricity)	TITLE OF THE MEASURE	WHO PARTICIPATED?	Was the measure provided in the context of E@S project?
Electricity	Installed energy smart meter	External Expert, Municipality	Yes
Heating	Installed energy smart meter	External Expert, Municipality	Yes
Heating and electricity	Installed sensors	External Expert, Municipality	Yes
Heating	Installed 30 thermostatic valves	External Expert, Municipality	Yes
Electricity	50 Led lamps installed	External Expert, Municipality	Yes
Electricity	Solar lantern	External Expert, Municipality	Yes
Heating and electricity	Tablet to monitor energy usage and to use the E@S app	Municipality, Senior and junior energy guardians	Yes
Heating and electricity	Laptop to overview and control system of internal energy usage	Expert, Senior energy guardian	Yes
Heating	System for automatic control of temperature depending on internal and external conditions	External Expert, Municipality	Yes
Heating and electricity	Training on energy usage	Expert, Senior and junior energy guardians	Yes
Heating and electricity	Training on E@S app	Expert, Senior and junior energy guardians	Yes
Heating and electricity	Campaigns on climate change and energy savings	Municipality, Senior and junior energy guardians, other pupils	Yes
Heating and electricity	Study visit to places with exemplary energy saving and RES solutions	Expert, Senior and junior energy guardians	Yes
Heating and electricity	Implementation of the E@S game	Senior and junior energy guardians	Yes
Heating and electricity	Improving energy status of classrooms through solving ghosts	Senior and junior energy guardians	Yes
Heating	Adjustment of temperatures to heat comfort zones	Senior and junior energy guardians	Yes



MEASURES TO BE IMPLEMENTED			
POLAND - Zespół Szkół Budowlanych im. Jurija Gagarina, Bydgoszcz			
POLAND - Zespół Szkół Mechanicznych Nr 2 im. Tytusa Maksymiliana Hubera, Bydgoszcz			
CATEGORY heating/electricity)	TITLE OF THE MEASURE	WHO WILL PARTICIPATE?	Did you decide for the measure based on Energy@school activities?
Heating and electricity	Complex thermal rehabilitation of the school buildings	Municipality	No
Electricity	Replacement of old lighting with LED lighting	Expert, Municipality	Yes
Heating	Replacement of remaining inefficient thermostatic valves	Expert, Municipality	Yes
Electricity and Heating	Earth and Energy days	Municipality, Senior and junior energy guardians, pupils	Yes (partially - some activities would be implemented anyway)
Electricity and Heating	Trainings on energy efficiency	Expert, Municipality, Senior and junior energy guardians, pupils	Yes
Electricity and Heating	Awareness raising campaign	Senior and junior energy guardians, pupils, parents	Yes (partially - some activities would be implemented anyway)
Electricity and Heating	Pilot action on energy efficiency at home	Senior and junior energy guardians, pupils, parents	Yes
Electricity and Heating	Control and adjustment of energy usage at school	Senior and junior energy guardians	Yes
Electricity	Installation of PV modules - DEPENDS ON AVAILABLE RESOURCES	Municipality	Yes (partially - some activities would be implemented anyway)
Heating	Installation of remote heat control system - DEPENDS ON AVAILABLE RESOURCES	Municipality	Yes (partially - some activities would be implemented anyway)



MEASURES TO BE IMPLEMENTED

POLAND - Szkoła Podstawowa Nr 65 z Oddziałami Integracyjnymi i Sportowymi im. Czesława Tańskiego, Bydgoszcz

POLAND - Zespół Szkół Medycznych im. E. Warmińskiego, Bydgoszcz

POLAND - Zespół Szkół Samochodowych, Bydgoszcz

POLAND - Zespół Szkół Ogólnokształcących Nr 4 im. Kazimierza Wielkiego, Bydgoszcz

POLAND - Zespół Szkół nr 12 im. Jana III Sobieskiego, Bydgoszcz

CATEGORY heating/electricity)	TITLE OF THE MEASURE	WHO WILL PARTICIPATE?	Did you decide for the measure based on Energy@school activities?
Electricity	Replacement of old lighting with LED lighting	Expert, Municipality	Yes
Heating	Replacement of remaining inefficient thermostatic valves	Expert, Municipality	Yes
Electricity and Heating	Earth and Energy days	Municipality, Senior and junior energy guardians, pupils	Yes (partially - some activities would be implemented anyway)
Electricity and Heating	Trainings on energy efficiency	Expert, Municipality, Senior and junior energy guardians, pupils	Yes
Electricity and Heating	Awareness raising campaign	Senior and junior energy guardians, pupils, parents	Yes (partially - some activities would be implemented anyway)
Electricity and Heating	Pilot action on energy efficiency at home	Senior and junior energy guardians, pupils, parents	Yes
Electricity and Heating	Control and adjustment of energy usage at school	Senior and junior energy guardians	Yes
Electricity	Installation of PV modules - DEPENDS ON AVAILABLE RESOURCES	Municipality	Yes (partially - some activities would be implemented anyway)
Heating	Installation of remote heat control system - DEPENDS ON AVAILABLE RESOURCES	Municipality	Yes (partially - some activities would be implemented anyway)



7.3. PP5 - GRAD KARLOVAC

IMPLEMENTED MEASURES AND ACTIVITIES			
Croatia - PP5. Primary school Braca Seljan			
CATEGORY heating/electricity)	TITLE OF THE MEASURE	WHO PARTICIPATED?	Was the measure provided in the context of E@S project?
Heating and electricity	Installed energy smart meters	Expert, Senior energy guardian	Yes
Electricity	Part of old lighting will be replaced with LED lighting	Expert, Senior energy guardian	Yes
Heating and electricity	Raised awareness among pupils with cultural campaigns	Senior and junior energy guardians	Yes
Heating and electricity	VEGTP and CECE trainings	Senior energy guardians, municipality employees	Yes
Heating	Installed thermostatic valves	Expert, Senior energy guardian	Yes
MEASURES TO BE IMPLEMENTED			
Croatia - PP5. Primary school Braca Seljan			
CATEGORY heating/electricity)	TITLE OF THE MEASURE	WHO WILL PARTICIPATE?	Did you decide for the measure based on Energy@school activities?
Electricity	Replacement of remaining old lighting with LED lighting	Expert, Senior energy guardian	Yes
Heating	Envelope	Expert	Yes



IMPLEMENTED MEASURES AND ACTIVITIES			
Croatia - PP5. Primary school Dubovac			
CATEGORY heating/electricity)	TITLE OF THE MEASURE	WHO PARTICIPATED?	Was the measure provided in the context of E@S project?
Heating and electricity	Installed energy smart meters	Expert, Senior energy guardian	Yes
Electricity	Part of old lighting will be replaced with LED lighting	Expert, Senior energy guardian	Yes
Heating and electricity	Raised awareness among pupils with cultural campaigns	Senior and junior energy guardians	Yes
Heating and electricity	VEGTP and CEGE trainings	Senior energy guardians, municipality employees	Yes
Heating	Installed thermostatic valves	Expert, Senior energy guardian	Yes
Heating	Refurbished envelope and energy efficient windows	Expert	No
MEASURES TO BE IMPLEMENTED			
SLOVENIA - 3. Primary school Dubovac			
CATEGORY heating/electricity)	TITLE OF THE MEASURE	WHO WILL PARTICIPATE?	Did you decide for the measure based on Energy@school activities?
Electricity	Replacement of remaining old lighting with LED lighting	Expert, Senior energy guardian	Yes
Heating	Envelope, Energy efficient windows	Expert	Yes



IMPLEMENTED MEASURES AND ACTIVITIES			
Croatia - PP5. Primary school Mahicno			
CATEGORY heating/electricity)	TITLE OF THE MEASURE	WHO PARTICIPATED?	Was the measure provided in the context of E@S project?
Heating and electricity	Installed energy smart meters	Expert, Senior energy guardian	Yes
Electricity	Part of old lighting will be replaced with LED lighting	Expert, Senior energy guardian	Yes
Heating and electricity	Raised awareness among pupils with cultural campaigns	Senior and junior energy guardians	Yes
Heating and electricity	VEGTP and CECE trainings	Senior energy guardians, municipality employees	Yes
Heating	Installed thermostatic valves	Expert, Senior energy guardian	Yes
MEASURES TO BE IMPLEMENTED			
SLOVENIA - 3. Primary school Mahicno			
CATEGORY heating/electricity)	TITLE OF THE MEASURE	WHO WILL PARTICIPATE?	Did you decide for the measure based on Energy@school activities?
Electricity	Replacement of remaining old lighting with LED lighting	Expert, Senior energy guardian	Yes



IMPLEMENTED MEASURES AND ACTIVITIES			
Croatia - PP5. Primary school Recica			
CATEGORY heating/electricity)	TITLE OF THE MEASURE	WHO PARTICIPATED?	Was the measure provided in the context of E@S project?
Heating and electricity	Installed energy smart meters	Expert, Senior energy guardian	Yes
Electricity	Part of old lighting will be replaced with LED lighting	Expert, Senior energy guardian	Yes
Heating and electricity	Raised awareness among pupils with cultural campaigns	Senior and junior energy guardians	Yes
Heating and electricity	VEGTP and CECE trainings	Senior energy guardians, municipality employees	Yes
Heating	Installed thermostatic valves	Expert, Senior energy guardian	Yes
MEASURES TO BE IMPLEMENTED			
SLOVENIA - 3. Primary school Recica			
CATEGORY heating/electricity)	TITLE OF THE MEASURE	WHO WILL PARTICIPATE?	Did you decide for the measure based on Energy@school activities?
Electricity	Replacement of remaining old lighting with LED lighting	Expert, Senior energy guardian	Yes



IMPLEMENTED MEASURES AND ACTIVITIES			
Croatia - PP5. Primary school Svarca			
CATEGORY heating/electricity)	TITLE OF THE MEASURE	WHO PARTICIPATED?	Was the measure provided in the context of E@S project?
Heating and electricity	Installed energy smart meters	Expert, Senior energy guardian	Yes
Electricity	Part of old lighting will be replaced with LED lighting	Expert, Senior energy guardian	Yes
Heating and electricity	Raised awareness among pupils with cultural campaigns	Senior and junior energy guardians	Yes
Heating and electricity	VEGTP and CECE trainings	Senior energy guardians, municipality employees	Yes
Heating	Installed thermostatic valves	Expert, Senior energy guardian	Yes
Heating	Refurbished envelope and installed energy efficient windows	Expert	No
MEASURES TO BE IMPLEMENTED			
CATEGORY heating/electricity)	TITLE OF THE MEASURE	WHO WILL PARTICIPATE?	Did you decide for the measure based on Energy@school activities?
Electricity	Replacement of remaining old lighting with LED lighting	Expert, Senior energy guardian	Yes



7.4. PP7 - SNOLZOK MEGYEI JOGÚ VÁROS ÖNKORMÁNYZATA - HU

IMPLEMENTED MEASURES AND ACTIVITIES			
HUNGARY - Kodály Zoltán Elementary-music Primary School, Szolnok			
CATEGORY (heating/electricity)	TITLE OF THE MEASURE	WHO PARTICIPATED?	Was the measure provided in the context of E@S project?
Heating and electricity	Installed energy smart meters	Expert, Senior energy guardian	Yes
Heating	Replacing a part of the thermostatic radiator valves	Expert	Yes
Heating and electricity	Raised awareness among pupils with cultural campaigns	Senior and junior energy guardians	Yes
Heating and electricity	VEGTP and CEGE trainings	Senior energy guardians, municipality employees	Yes
Heating and electricity	JEG trainings	Junior energy guardians, Senior energy guardians,	Yes
Electricity	At the end of the last education lesson, a team look at the lights, faucets that have been turned off and locked everywhere.	Junior energy guardians,	Yes
MEASURES TO BE IMPLEMENTED			
HUNGARY - Kodály Zoltán Elementary-music Primary School, Szolnok			
CATEGORY (heating/electricity)	TITLE OF THE MEASURE	WHO WILL PARTICIPATE?	Did you decide for the measure based on Energy@school activities?
Electricity	In the case of the need to replace electric consumers, they would have to purchase energy-efficient and energy-efficient consumers at the time they were purchased.	Operator, Senior energy guardian	Yes
Heating	Replacement of remaining inefficient thermostatic valves	Expert, Senior energy guardian	Yes
Heating and electricity	In order to maintain an environmentally conscious attitude, students and teachers are involved in related events	Senior and junior energy guardians	Yes
Heating and electricity	Continuous monitoring of tender support options for renewable energy sources	Operator	Yes



IMPLEMENTED MEASURES AND ACTIVITIES			
HUNGARY - Primary School in Liget street Preparatory Skills Special Vocational School and EGYMI, Szolnok			
CATEGORY (heating/electricity)	TITLE OF THE MEASURE	WHO PARTICIPATED?	Was the measure provided in the context of E@S project?
Heating and electricity	Installed energy smart meters	Expert, Senior energy guardian	Yes
Heating	Replacing a part of the thermostatic radiator valves	Expert	Yes
Heating and electricity	Raised awareness among pupils with cultural campaigns	Senior and junior energy guardians	Yes
Heating and electricity	VEGTP and CECE trainings	Senior energy guardians, municipality employees	Yes
Heating and electricity	JEG trainings	Junior energy guardians, Senior energy guardians,	Yes
Electricity	At the end of the last education lesson, a team look at the lights, faucets that have been turned off and locked everywhere.	Junior energy guardians,	Yes
MEASURES TO BE IMPLEMENTED			
HUNGARY - Primary School in Liget street, Preparatory Skills Special Vocational School and EGYMI, Szolnok			
CATEGORY (heating/electricity)	TITLE OF THE MEASURE	WHO WILL PARTICIPATE?	Did you decide for the measure based on Energy@school activities?
Electricity	In the case of the need to replace electric consumers, they would have to purchase energy-efficient and energy-efficient consumers at the time they were purchased.	Operator, Senior energy guardian	Yes
Heating	Replacement of remaining inefficient thermostatic valves	Expert, Senior energy guardian	Yes
Heating and electricity	In order to maintain an environmentally conscious attitude, students and teachers are involved in related events	Senior and junior energy guardians	Yes
Heating and electricity	Continuous monitoring of tender support options for renewable energy sources	Operator	Yes
Heating and electricity	In the study created in the pilot project, the implementation of energy investments in case of availability of resources is proposed	Operator	Yes



IMPLEMENTED MEASURES AND ACTIVITIES			
HUNGARY - Technical School of Petőfi Sándor School, Secondary School, Szolnok			
CATEGORY (heating/electricity)	TITLE OF THE MEASURE	WHO PARTICIPATED?	Was the measure provided in the context of E@S project?
Heating and electricity	Installed energy smart meters	Expert, Senior energy guardian	Yes
Heating	Replacing a part of the thermostatic radiator valves	Expert	Yes
Electricity	Installing solar panels	Expert	No
Heating and electricity	Raised awareness among pupils with cultural campaigns	Senior and junior energy guardians	Yes
Heating and electricity	VEGTP and CEGE trainings	Senior energy guardians, municipality employees	Yes
Heating and electricity	JEG trainings	Junior energy guardians, Senior energy guardians,	Yes
Electricity	At the end of the last education lesson, a team look at the lights, faucets that have been turned off and locked everywhere.	Junior energy guardians,	Yes
MEASURES TO BE IMPLEMENTED			
HUNGARY - Technical School of Petőfi Sándor School, Secondary School, Szolnok			
CATEGORY (heating/electricity)	TITLE OF THE MEASURE	WHO WILL PARTICIPATE?	Did you decide for the measure based on Energy@school activities?
Electricity	In the case of the need to replace electric consumers, they would have to purchase energy-efficient and energy-efficient consumers at the time they were purchased.	Operator, Senior energy guardian	Yes
Heating	Replacement of remaining inefficient thermostatic valves	Expert, Senior energy guardian	Yes
Heating and electricity	In order to maintain an environmentally conscious attitude, students and teachers are involved in related events	Senior and junior energy guardians	Yes
Heating and electricity	Continuous tracking and recording of savings data due to installed solar panels, investment of savings funds into further energy efficiency steps	Senior and junior energy guardians, Operator	Yes



IMPLEMENTED MEASURES AND ACTIVITIES			
HUNGARY - II. Rákóczi Ferenc Bilingual Primary School, Szolnok			
CATEGORY heating/electricity)	TITLE OF THE MEASURE	WHO PARTICIPATED?	Was the measure provided in the context of E@S project?
Heating and electricity	Installed energy smart meters	Expert, Senior energy guardian	Yes
Heating and electricity	Raised awareness among pupils with cultural campaigns	Senior and junior energy guardians	Yes
Heating and electricity	VEGTP and CEGE trainings	Senior energy guardians, municipality employees	Yes
Heating and electricity	JEG trainings	Junior energy guardians, Senior energy guardians,	Yes
Electricity	At the end of the last education lesson, a team look at the lights, faucets that have been turned off and locked everywhere.	Junior energy guardians,	Yes
MEASURES TO BE IMPLEMENTED			
HUNGARY - II. Rákóczi Ferenc Bilingual Primary School, Szolnok			
CATEGORY heating/electricity)	TITLE OF THE MEASURE	WHO WILL PARTICIPATE?	Did you decide for the measure based on Energy@school activities?
Electricity	In the case of the need to replace electric consumers, they would have to purchase energy-efficient and energy-efficient consumers at the time they were purchased.	Operator, Senior energy guardian	Yes
Heating	At the end of the teaching time, minimize the performance of the convectors.	Senior and junior energy guardians	Yes
Heating and electricity	In order to maintain an environmentally conscious attitude, students and teachers are involved in related events	Senior and junior energy guardians	Yes
Heating and electricity	Continuous monitoring of tender support options for renewable energy sources	Operator	Yes
Heating and electricity	In the study created in the pilot project, the implementation of energy investments in case of availability of resources is proposed	Operator	Yes



IMPLEMENTED MEASURES AND ACTIVITIES			
HUNGARY - Széchenyi Sports Primary School, Szolnok			
CATEGORY (heating/electricity)	TITLE OF THE MEASURE	WHO PARTICIPATED?	Was the measure provided in the context of E@S project?
Heating and electricity	Installed energy smart meters	Expert, Senior energy guardian	Yes
Heating	Replacing a part of the thermostatic radiator valves	Expert	Yes
Heating	External thermal insulation	Expert	No
Electricity	Installing solar panels	Expert	No
Heating and electricity	Raised awareness among pupils with cultural campaigns	Senior and junior energy guardians	Yes
Heating and electricity	VEGTP and CECE trainings	Senior energy guardians, municipality employees	Yes
Heating and electricity	JEG trainings	Junior energy guardians, Senior energy guardians,	Yes
Electricity	At the end of the last education lesson, a team look at the lights, faucets that have been turned off and locked everywhere.	Junior energy guardians,	Yes
MEASURES TO BE IMPLEMENTED			
HUNGARY - II. Rákóczi Ferenc Bilingual Primary School, Szolnok			
CATEGORY (heating/electricity)	TITLE OF THE MEASURE	WHO WILL PARTICIPATE?	Did you decide for the measure based on Energy@school activities?
Electricity	In the case of the need to replace electric consumers, they would have to purchase energy-efficient and energy-efficient consumers at the time they were purchased.	Operator, Senior energy guardian	Yes
Heating	At the end of the teaching time, minimize the performance of the convectors.	Senior and junior energy guardians	Yes
Heating and electricity	In order to maintain an environmentally conscious attitude, students and teachers are involved in related events	Senior and junior energy guardians	Yes
Heating and electricity	Continuous monitoring of tender support options for renewable energy sources	Operator	Yes
Heating and electricity	In the study created in the pilot project, the implementation of energy investments in case of availability of resources is proposed	Operator	Yes



7.5. PP8 - ÚJSZILVÁS KÖSÉG ÖNKORMÁNYZATA - HU

IMPLEMENTED MEASURES AND ACTIVITIES			
HUNGARY - Tápiószőlős - Újszilvás Calvinistic Primary School and Kindergarten - It is a member institution of Újszilvás			
CATEGORY heating/electricity)	TITLE OF THE MEASURE	WHO PARTICIPATED?	Was the measure provided in the context of E@S project?
Heating and electricity	Installed energy smart meters	Expert, Senior energy guardian	Yes
Heating	Replacing a part of the thermostatic radiator valves	Expert	Yes
Heating and electricity	Raised awareness among pupils with cultural campaigns	Senior and junior energy guardians	Yes
Heating and electricity	VEGTP and CEGE trainings	Senior energy guardians, municipality employees	Yes
Heating and electricity	JEG trainings	Junior energy guardians, Senior energy guardians,	Yes
Electricity	At the end of the last education lesson, a team look at the lights, faucets that have been turned off and locked everywhere.	Junior energy guardians,	Yes
MEASURES TO BE IMPLEMENTED			
CATEGORY heating/electricity)	TITLE OF THE MEASURE	WHO WILL PARTICIPATE?	Did you decide for the measure based on Energy@School activities?
Electricity	In the case of the need to replace electric consumers, they would have to purchase energy-efficient and energy-efficient consumers at the time they were purchased.	Operator, Senior energy guardian	Yes
Heating and electricity	In order to maintain an environmentally conscious attitude, students and teachers are involved in related events	Senior and junior energy guardians	Yes
Ventilation, air conditioning	Building and installing an automated system Continuous monitoring of tender support options for renewable energy sources Operator	Operator, Senior energy guardian	Yes
Heating and electricity	Continuous monitoring of tender support options for renewable energy sources	Operator	Yes



IMPLEMENTED MEASURES AND ACTIVITIES

HUNGARY - Tápiószőlős - Újszilvás Calvinistic Primary School and Kindergarten - It is a member institution of Tápiószőlős

CATEGORY heating/ electricity)	TITLE OF THE MEASURE	WHO PARTICIPATED?	Was the measure provided in the context of E@S project?
Heating and electricity	Installed energy smart meters	Expert, Senior energy guardian	Yes
Heating	Replacing a part of the thermostatic radiator valves	Expert	Yes
Heating and electricity	Raised awareness among pupils with cultural campaigns	Senior and junior energy guardians	Yes
Heating and electricity	VEGTP and CECE trainings	Senior energy guardians, municipality employees	Yes
Heating and electricity	JEG trainings	Junior energy guardians, Senior energy guardians,	Yes
Electricity	At the end of the last education lesson, a team look at the lights, faucets that have been turned off and locked everywhere.	Junior energy guardians,	Yes

MEASURES TO BE IMPLEMENTED

HUNGARY - Tápiószőlős - Újszilvás Calvinistic Primary School and Kindergarten - It is a member institution of Tápiószőlős

CATEGORY heating/electricity)	TITLE OF THE MEASURE	WHO WILL PARTICIPATE?	Did you decide for the measure based on Energy@School activities?
Electricity	In the case of the need to replace electric consumers, they would have to purchase energy-efficient and energy-efficient consumers at the time they were purchased.	Operator, Senior energy guardian	Yes
Heating	Replacement of remaining inefficient thermostatic valves	Expert, Senior energy guardian	Yes
Heating and electricity	In order to maintain an environmentally conscious attitude, students and teachers are involved in related events	Senior and junior energy guardians	Yes



Heating and electricity	Continuous monitoring of tender support options for renewable energy sources	Operator	Yes
Heating and electricity	In the study created in the pilot project, the implementation of energy investments in case of availability of resources is proposed	Operator	Yes



7.6. PP9 - LANDESHAUPTSTADT STITTGART - DE

IMPLEMENTED MEASURES AND ACTIVITIES			
Germany - Ferdinand-Porsche-Gymnasium, Stuttgart			
CATEGORY heating/electricity)	TITLE OF THE MEASURE	WHO PARTICIPATED?	Was the measure provided in the context of E@S project?
Heating and electricity	Installed energy smart meters	Expert	Yes
Heating, electricity and water	Installation of an Energy Management System	Expert	Yes
Electricity	Replacement of lighting with LEDs	SEG	Yes
Heating	Perimeter insulation	Expert	Yes
Heating and electricity	Raised awareness among pupils with cultural campaigns	SEG and JEG	Yes
Heating and electricity	VEGTP and CEGE trainings	SEG, municipality employees	Yes
MEASURES TO BE IMPLEMENTED			
Germany - Ferdinand-Porsche-Gymnasium, Stuttgart			
CATEGORY heating/electricity)	TITLE OF THE MEASURE	WHO WILL PARTICIPATE?	Did you decide for the measure based on Energy@School activities?
Electricity	Replacement of remaining old lighting with LEDs	SEG	Yes
Electricity	Extension of the PV plant	Expert	No



IMPLEMENTED MEASURES AND ACTIVITIES			
Germany - WG-West, Stuttgart			
CATEGORY heating/electricity)	TITLE OF THE MEASURE	WHO PARTICIPATED?	Was the measure provided in the context of E@S project?
Heating and electricity	Installed energy smart meters	Expert	Yes
Heating, electricity and water	Installation of an Energy Management System	Expert	Yes
Heating and electricity	Raised awareness among pupils with cultural campaigns	SEG and JEG	Yes
Heating and electricity	VEGTP and CEGE trainings	SEG, municipality employees	Yes
MEASURES TO BE IMPLEMENTED			
Germany - WG-West, Stuttgart			
CATEGORY heating/electricity)	TITLE OF THE MEASURE	WHO WILL PARTICIPATE?	Did you decide for the measure based on Energy@School activities?
Electricity	Replacement of remaining old lighting with LEDs	SEG	Yes
Electricity	Potential determination for PV plant		



IMPLEMENTED MEASURES AND ACTIVITIES			
Germany - Birkenrealschule, Stuttgart			
CATEGORY heating/electricity)	TITLE OF THE MEASURE	WHO PARTICIPATED?	Was the measure provided in the context of E@S project?
Heating and electricity	Installed energy smart meters	Expert	Yes
Heating, electricity and water	Installation of an Energy Management System	Expert	Yes
Heating and electricity	Raised awareness among pupils with cultural campaigns	SEG and JEG	Yes
Heating and electricity	VEGTP and CEGE trainings	SEG, municipality employees	Yes
MEASURES TO BE IMPLEMENTED			
Germany - Birkenrealschule, Stuttgart			
CATEGORY heating/electricity)	TITLE OF THE MEASURE	WHO WILL PARTICIPATE?	Did you decide for the measure based on Energy@School activities?
Electricity	Replacement of remaining old lighting with LEDs	SEG	Yes
Electricity	Potential determination of the PV plant extension	Expert	No



IMPLEMENTED MEASURES AND ACTIVITIES			
Germany - Realschule Feuerbach, Stuttgart			
CATEGORY heating/electricity)	TITLE OF THE MEASURE	WHO PARTICIPATED?	Was the measure provided in the context of E@S project?
Heating and electricity	Installed energy smart meters	Expert	Yes
Heating, electricity and water	Installation of an Energy Management System	Expert	Yes
Heating and electricity	Raised awareness among pupils with cultural campaigns	SEG and JEG	Yes
Heating and electricity	VEGTP and CEGE trainings	SEG, municipality employees	Yes
MEASURES TO BE IMPLEMENTED			
Germany - Realschule Feuerbach, Stuttgart			
CATEGORY heating/electricity)	TITLE OF THE MEASURE	WHO WILL PARTICIPATE?	Did you decide for the measure based on Energy@School activities?
Electricity	Replacement of remaining old lighting with LEDs	SEG	Yes
Electricity	Potential determination of the PV plant extension	Expert	No



IMPLEMENTED MEASURES AND ACTIVITIES

Germany - Geschwister-Scholl-Gymnasium, Stuttgart

CATEGORY heating/electricity)	TITLE OF THE MEASURE	WHO PARTICIPATED?	Was the measure provided in the context of E@S project?
Heating and electricity	Installed energy smart meters	Expert	Yes
Heating, electricity and water	Installation of an Energy Management System	Expert	Yes
Heating and electricity	Raised awareness among pupils with cultural campaigns	SEG and JEG	Yes
Heating and electricity	VEGTP and CEGE trainings	SEG, municipality employees	Yes

MEASURES TO BE IMPLEMENTED

Germany - Geschwister-Scholl-Gymnasium, Stuttgart

CATEGORY heating/electricity)	TITLE OF THE MEASURE	WHO WILL PARTICIPATE?	Did you decide for the measure based on Energy@School activities?
Electricity	Replacement of remaining old lighting with LEDs	SEG	Yes
Electricity	Potential determination of the PV plant extension	Expert	No



7.7. PP10 - KLAGENFURT AM WÖRTHERSEE

IMPLEMENTED MEASURES AND ACTIVITIES			
Austria – in no. 14 participating schools in Klagenfurt on lake Wörthersee VS 1 Benediktinerschule (primary school) VS 8 / VS 24 Rennerschule (primary school) VS 21 Hörtenndorf (primary school) NMS 3 Hasnerschule (secondary school) VS 23 Wölfnitz (primary school) NMS 5 Wölfnitz (secondary school) NMS 11 Annabichl (secondary school) VS 22 Ponfeld primary school) NMS 2 Waidmannsdorf (secondary school) VS 9 / VS 10 Körnerschule (primary school) NMS 6 / NMS 10 St. Peter (secondary school)			
CATEGORY heating/electricity)	TITLE OF THE MEASURE	WHO PARTICIPATED?	Was the measure provided in the context of E@S project?
Heating, electricity and water	Installation of energy monitoring systems	Expert, Senior energy guardian	Yes
Heating and electricity	Raised awareness among pupils with cultural campaigns	Senior energy guardians and junior energy guardians	Yes
Heating and electricity	VEGTP and CECE trainings	Senior energy guardians, municipality employees, expert	Yes
MEASURES TO BE IMPLEMENTED			
CATEGORY heating/electricity)	TITLE OF THE MEASURE	WHO WILL PARTICIPATE?	Did you decide for the measure based on Energy@School activities?
Electricity	Replacement of remaining old lighting with LED lighting systems	Expert, Senior energy guardian	Yes
Electricity	Installation of photovoltaics	Expert, Senior energy guardian	In parts
Heating	Replacement of remaining inefficient thermostatic valves	Expert, Senior energy guardian	Yes
Heating	Replacement of remaining oil-fired heating systems with renewable energy sources	Expert, Senior energy guardian	In parts
Heating	Hydraulic balancing of heating systems	Expert, Senior energy guardian	In parts
Electricity	Installation of efficient circulating pumps	Expert, Senior energy guardian	Yes
Heating, Cooling	Optimization sunscreens; avoid summer overheating	Expert, Senior energy guardian	Yes



IMPLEMENTED MEASURES AND ACTIVITIES

AUSTRIA – in no. 1 participating school in Klagenfurt on lake Wörthersee

NMS 11 Annabichl (secondary school)

CATEGORY heating/electricity)	TITLE OF THE MEASURE	WHO PARTICIPATED?	Was the measure provided in the context of E@S project?
Heating	Installed energy smart meters	Expert, Senior energy guardian	Yes
Electricity	LED lighting system in two classrooms	Expert, Senior energy guardian	Yes

IMPLEMENTED MEASURES AND ACTIVITIES

AUSTRIA – in no. 1 participating school in Klagenfurt on lake Wörthersee

NMS 3 Hasnerschule (secondary school)

CATEGORY heating/electricity)	TITLE OF THE MEASURE	WHO PARTICIPATED?	Was the measure provided in the context of E@S project?
Electricity	LED lighting system in one sports hall	Expert, Senior energy guardian	Yes



7.8. PP12 - MESTNA OBČINA CELJE - SI

IMPLEMENTED MEASURES AND ACTIVITIES			
3. Primary school Celje Primary school Ljubečna			
CATEGORY heating/electricity)	TITLE OF THE MEASURE	WHO PARTICIPATED?	Was the measure provided in the context of E@S project?
Heating and electricity	Installed energy smart meters	Expert, Senior energy guardian	Yes
Electricity	Part of old lighting will be replaced with LED lighting	Expert, Senior energy guardian	Yes
Heating and electricity	Raised awareness among pupils with cultural campaigns	Senior and junior energy guardians	Yes
Heating and electricity	VEGTP and CEGE trainings	Senior energy guardians, municipality employees	Yes
Heating	Partial replacement of insufficient windows	Experts	Yes
MEASURES TO BE IMPLEMENTED			
CATEGORY heating/electricity)	TITLE OF THE MEASURE	WHO WILL PARTICIPATE?	Did you decide for the measure based on Energy@school activities?
Electricity	Replacement of remaining old lighting with LED lighting	Expert, Senior energy guardian	Yes
Heating	Replacement of remaining inefficient thermostatic valves	Expert, Senior energy guardian	Yes
Electricity and heating	Organizing educational workshops and lectures	Expert, Senior energy guardian, Junior energy guardian	Yes



IMPLEMENTED MEASURES AND ACTIVITIES

4. Primary school Celje
Primary school Lava
Primary school Hudinja
Primary school Frana Roša
Primary school Frana Kranjca

CATEGORY heating/electricity)	TITLE OF THE MEASURE	WHO PARTICIPATED?	Was the measure provided in the context of E@S project?
Heating and electricity	Installed energy smart meters	Expert, Senior energy guardian	Yes
Electricity	Part of old lighting will be replaced with LED lighting	Expert, Senior energy guardian	Yes
Heating and electricity	Raised awareness among pupils with cultural campaigns	Senior and junior energy guardians	Yes
Heating and electricity	VEGTP and CEGE trainings	Senior energy guardians, municipality employees	Yes

MEASURES TO BE IMPLEMENTED

CATEGORY heating/electricity)	TITLE OF THE MEASURE	WHO WILL PARTICIPATE?	Did you decide for the measure based on Energy@school activities?
Electricity	Replacement of remaining old lighting with LED lighting	Expert, Senior energy guardian	Yes
Heating	Replacement of remaining inefficient thermostatic valves	Expert, Senior energy guardian	Yes
Electricity and heating	Organizing educational workshops and lectures	Expert, Senior energy guardian, Junior energy guardian	Yes